The Bureaucracy of Social Media

An Empirical Account in Organizations
THE BUREAUCRACY OF SOCIAL MEDIA

An Empirical Account in Organizations

OSAMA MANSOUR

LINNAEUS UNIVERSITY PRESS
Abstract


This thesis examines organizational use of social media. It focuses on developing an understanding of the ways by which social media are used within formal organizational settings. From the vantage point of this thesis such an understanding can be achieved by looking at tensions and incompatibilities that might potentially exist between social media and organization because of their distinct characteristics. It is argued that the distinct characteristics of social media (e.g. openness, transparency, flexibility, etc.) and organization (e.g., hierarchy, formal relationships, standard procedures, etc.) may engender tensions and incompatibilities that affect the ways of using social media and their potential in organizations. The main premise here is that the possibilities, behaviors, and practices afforded by social media are recognizably different in nature from common and established organizational practices, behaviors, norms, and routines.

Through a structurational understanding of organizational use of social media, influenced by Giddens' theory of structuration and Orlikowski's practice lens for studying technology use, this thesis offers the perspective of immiscibility to capture tensions and incompatibilities driven by the distinctive characteristics of social media and organization. It basically offers a way of seeing social media use in organizations as a dynamic, in-practice interplay between social media and organization characteristics. One key argument in this thesis is that the immiscible interplay of social media and organization produces, at least in transition, ‘a bureaucracy of social media’. Social media, it is argued, are used in ways that are essentially bureaucratic, reflecting and also reinforcing established characteristics of formal organizations through the production and reproduction of structures which are driven by the immiscible interplay.

The development of such an understanding was achieved through multiple research studies focusing on the use of the wiki technology for knowledge collaboration and sharing in two large, multinational organizations: CCC and IBM. A number of qualitative methods were used in these studies to collect empirical evidence from the two organizations including interviews, field visits, observations, and document analysis. The overarching contribution of this thesis centers on offering a unique way of understanding organizational use of social media by putting forward tensions and incompatibilities between social media and organization and also by providing an understanding of how such tensions and incompatibilities affect the potential for change by social media.

Keywords: Wikis, Organization, Structure, Immiscibility, Social Media, Collaboration, Knowledge Sharing, Practice, Qualitative, Giddens
Abstract


This thesis examines organizational use of social media. It focuses on developing an understanding of the ways by which social media are used within formal organizational settings. From the vantage point of this thesis such an understanding can be achieved by looking at tensions and incompatibilities that might potentially exist between social media and organization because of their distinct characteristics. It is argued that the distinct characteristics of social media (e.g. openness, transparency, flexibility, etc.) and organization (e.g., hierarchy, formal relationships, standard procedures, etc.) may engender tensions and incompatibilities that affect the ways of using social media and their potential in organizations. The main premise here is that the possibilities, behaviors, and practices afforded by social media are recognizably different in nature from common and established organizational practices, behaviors, norms, and routines.

Through a structurational understanding of organizational use of social media, influenced by Giddens’ theory of structuration and Orlikowski’s practice lens for studying technology use, this thesis offers the perspective of immiscibility to capture tensions and incompatibilities driven by the distinctive characteristics of social media and organization. It basically offers a way of seeing social media use in organizations as a dynamic, in-practice interplay between social media and organization characteristics. One key argument in this thesis is that the immiscible interplay of social media and organization, produces, at least in transition, ‘a bureaucracy of social media’. Social media, it is argued, are used in ways that are essentially bureaucratic, reflecting and also reinforcing established characteristics of formal organizations through the production and reproduction of structures which are driven by the immiscible interplay.

The development of such an understanding was achieved through multiple research studies focusing on the use of the wiki technology for knowledge collaboration and sharing in two large, multinational organizations: CCC and IBM. A number of qualitative methods were used in these studies to collect empirical evidence from the two organizations including interviews, field visits, observations, and document analysis. The overarching contribution of this thesis centers on offering a unique way of understanding organizational use of social media by putting forward tensions and incompatibilities between social media and organization and also by providing an understanding of how such tensions and incompatibilities affect the potential for change by social media.

Keywords: Wikis, Organization, Structure, Immiscibility, Social Media, Collaboration, Knowledge Sharing, Practice, Qualitative, Giddens
Table of Contents

Part I: Kappa

Chapter One: Introduction 1
1.1 Prelude 1
1.2 Problem Space 3
1.3 Research Aims & Questions 7
1.4 Motivation & Opportunity 8
1.5 Outline of the Thesis 11

Chapter Two: Theoretical Considerations 13
2.1 Theories of Technology and Organization 13
2.2 Defining Social Media and Organization 23
2.2.1 Social Media 23
2.2.2 Organization 27
2.3 IT Use in Organizations 31
2.4 ‘twisting things together’ 35

Chapter Three: Theoretical Foundation 39
3.1 Structuration Theory (in IS) 39
3.1.1 Basic Elements of Structuration Theory 43
3.2 Practice Lens for Studying Technology Use 47

Chapter Four: Empirical Method 50
4.1 Method Discussion 50
4.1.1 Qualitative Inquiry 51
4.2 Empirical Cases – CCC & IBM 57
4.2.1 Consolidated Contractors Company (CCC) 57
4.2.1.1 The Knowledge Management Initiative 58
4.2.1.2 Introducing Fanous 59
4.2.1.3 Communities of Practice (CoPs) 60
4.2.2 International Business Machines (IBM) 62
4.2.2.1 IBM Connections 62
4.2.3 Empirical Inquiry – Collecting Data at CCC & IBM 63
4.3 Use of Theory – An Analytical Vehicle 69
4.4 Ethical Issues 72
Chapter Five: Research Studies

5.1 Overture
5.2 Research Study I: Exploration
5.3 Research Study II: Suspicion
5.4 Research Study III: Examination
5.5 Research Study IV: Digging Deeper
5.6 Research Study V: More Digging
5.7 Reflection – twisting things together

Chapter Six: Theoretical Discussion

6.1 ‘the question of social media use in organizations’
6.2 ‘organizing in and through social media use’
6.3 ‘the perspective of immiscibility’
6.3.1 ‘the immiscible interplay between social media & organization’

Chapter Seven: Concluding Issues

7.1 Conclusions
7.2 Further Research Opportunities
7.3 Final Remarks

References

Part II: Appendix

Research Studies
List of Tables

Table 1: A general outline of the thesis. 12
Table 2: Concepts based on agential realism vs. critical realism 17
Table 3: Problems of and solutions for sociomateriality 22
Table 4: Summary of social media affordances 26
Table 5: Key features of structuration theory for IS research 42
Table 6: Research participants from CCC and IBM 68
Table 7: Summary of the empirical data 69
Table 8: Summary of the research studies and their interrelationships 86
Table 9: Summary of the elements of social media and organization 100
# List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The simple model of ‘an organization’</td>
<td>28</td>
</tr>
<tr>
<td>2</td>
<td>The dimensions of the duality of structure</td>
<td>45</td>
</tr>
<tr>
<td>3</td>
<td>The enactment of technologies-in-practice</td>
<td>48</td>
</tr>
<tr>
<td>4</td>
<td>Increasing manpower and complexity at CCC</td>
<td>57</td>
</tr>
<tr>
<td>5</td>
<td>KM and CoP organization</td>
<td>61</td>
</tr>
<tr>
<td>6</td>
<td>Evolution of my research focus during the data collection</td>
<td>66</td>
</tr>
<tr>
<td>7</td>
<td>2D visual representation of the perspective of immiscibility</td>
<td>99</td>
</tr>
</tbody>
</table>
ACKNOWLEDGEMENTS

Jane Austin once wrote: ‘I am the happiest creature in the world. Perhaps other people have said so before, but not one with such justice.’ That is exactly how I feel at the moment. The moment when I am recalling every memory of my PhD studies in the past five years. These years have been exceptionally the happiest of my life. Not only because I had the chance to pursue my passion and get a doctorate, but also because of exceptional people who made all this possible. I therefore wish to offer them an acknowledgment which I hope would always remain a confession of my sincere appreciation and gratefulness to them.

My supervisor, Professor Anita Mirijamdotter, is one who made my life exceptionally happy and beautiful. No words can do just to Anita. She is an exceptional human being with the fullest meaning of every word. Anita was not only a supervisor, but she was a mother too. She has always been there for me; she supported me, encouraged me; taught me, and never hesitated to offer everything she can to help me in my studies and personal life. I always believed, quite strongly, that Anita is an angelic human being. I tell her that I have been truly blessed to have you as my PhD supervisor throughout all these years. And if I am to speak in earnest, I would say that as much as I am happy to complete my PhD, as much as I am sad that this whole experience will end. That’s why I will always feel indebted to you for everything you have done.

Linda Askenäs, the creative and gentle co-supervisor. Her gentle behavior, creative mind, and sharp thought have always been unique characteristics that define the beauty of her personality as a human being. Linda is a true friend of mine. I often had the most thought-provoking ideas when I discus with Linda. I must mention also that her creativity as a supervisor is combined with a sense of modesty as a person.
ACKNOWLEDGEMENTS

Jane Austin once wrote: ‘I am the happiest creature in the world. Perhaps other people have said so before, but not one with such justice’. That is exactly how I feel at the moment. The moment when I am recalling every memory of my PhD studies in the past five years. These years have been exceptionally the happiest of my life. Not only because I had the chance to pursue my passion and get a doctorate, but also because of exceptional people who made all this possible. I therefore wish to offer them an acknowledgment which I hope would always remain a confession of my sincere appreciation and gratefulness to them.

My supervisor, Professor Anita Mirijamdotter, is one who made my life exceptionally happy and beautiful. No words can do just to Anita. She is an exceptional human being with the fullest meaning of every word. Anita was not only a supervisor, but she was a mother too. She has always been there for me; she supported me, encouraged me; taught me, and never hesitated to offer everything she can to help me in my studies and personal life. I always believed, quite strongly, that Anita is an angelic human being. I tell her that I have been truly blessed to have you as my PhD supervisor throughout all these years. And if I am to speak in earnest, I would say that as much as I am happy to complete my PhD, as much as I am sad that this whole experience will end. That’s why I will always feel indebted to you for everything you have done.

Linda Askenäs, the creative and gentle co-supervisor. Her gentle behavior, creative mind, and sharp thought have always been unique characteristics that define the beauty of her personality as a human being. Linda is a true friend of mine. I often had the most thought-provoking ideas when I discus with Linda. I must mention also that her creativity as a supervisor is combined with a sense of modesty as a person
which has always impressed me as her student; this taught me modesty in thought and behavior. I therefore wish to acknowledge and thank her for her unique supervisory style.

Dave Randall, my great English co-supervisor. Dave joined my supervisory team after being an opponent for my Licentiate thesis. His intelligence and deep experience has taught me a lot. He has been particularly helpful in offering guidance to address reviewers’ comments on my research papers, improving my theoretical and methodological discussions, and my English language. In addition to his academic qualities, Dave is an excellent and generous cook. I got an invitation from him to visit his house in Liverpool where I was lucky to taste his very delicious bread. I thank you for your support and generosity.

Then, I wish to acknowledge other people who have contributed to my PhD studies in various roles. I wish to acknowledge Professor Mikael Wiberg for his elegant critique and discussion of my PhD thesis during the pre-seminar. I thank you for taking the time to come to Växjö and help me in preparing for my final PhD defense with insightful and clever comments. I also wish to thank Dr. Mustafa Abu Salah for his unfailing support during my PhD studies. His dedicated efforts to help me in getting access to CCC will always be appreciated. Thanks also go to Anne Schouenborg for her great efforts in allowing me access to IBM and facilitating my communication with the research participants.

Further, I wish to thank all my colleagues and friends at the department for an excellent social experience. I specifically thank Miranda, Sadaf, Antonia, Lina, Bato, and Didac for being such good friends. I also thank all my colleagues and friends at the Swedish Research School of Management and Information Technology (MIT).

A lot of love and appreciation go for my parents, sisters, and brothers. It is my hope that completing this work will be a cause of pride for all of them. Also, I must say that without the endless support and care of my parents since I started my studies in Sweden, this work would have never become real. Heartfelt thanks to all of you.

Last but not least, Ameera, my beautiful wife, who deserves my deepest respect, love, and appreciation. Ameera is the best thing that ever happened to me. With her I always feel like “I must learn to be content with being happier than I deserve”. And not only this. She has brought to me a piece of her, my little son Dodo, whose smiles just made our lives brighter. I find no words to describe my feelings for making me
a father. You are an amazing wife, mother, and friend who will always be loved and appreciated. And you must know, this is not an acknowledgement that will be forgotten in a while. But it is something that I want it to remain forever to remind you that you will always be my beloved soulmate.

Osama Mansour,
Onboard the train to Växjö,
September 20, 2013.
This work is specially dedicated to my precious wife Ameera.
this work is specially dedicated
to my precious wife Ameera
Work is love made visible; and if you cannot work with love but only with distaste, it is better that you should leave your work and sit at the gate of the temple and take alms of those who work with joy. - Jubran Khalil Jubran
“Work is love made visible; and if you cannot work with love but only with distaste, it is better that you should leave your work and sit at the gate of the temple and take alms of those who work with joy”

-Jubran Khalil Jubran
CHAPTER ONE
INTRODUCTION

This aim from this chapter is to introduce the reader to the main focus of the thesis. It provides a discussion of the core research problem and outlines central concerns in the area of organizational use of social media. It also shows the main research aims and questions.

Finally, it describes the motivation and opportunity for seeking an understanding of social media use in organizations.

1.1 Prelude

Change is the only constant (Heraclitus). Perhaps this notion might seem very true in the world of technology given the ongoing developments in the Web as well as the huge leaps in the numbers of Web users. The phenomenon of social media is often seen as a transformative evolution that has changed the Web from a stagnate environment into dynamic and evolving networked space, so-called Web 2.0. The change is inevitable given the huge advancements in Web technologies that enable more online connectivity and allow people to interactively connect and communicate with each other.

Wikipedia is an intriguing example of social media. Based on a simple technology, a wiki, Wikipedia has become one of the largest encyclopedias ever written. The unique style of collaboration and content generation that allows for dynamic production and co-production of knowledge is behind the incredible development and growth of Wikipedia. The fact that anyone, anywhere in the globe can access Wikipedia to collaboratively contribute and openly edit content makes Wikipedia one of the hallmarks of the change associated with the phenomenon of social media. Social network sites, such as Facebook, are equally important hallmarks of the social media phenomenon. Hundreds of millions of users are increasingly
CHAPTER ONE
INTRODUCTION

This aim from this chapter is to introduce the reader to the main focus of the thesis. It provides a discussion of the core research problem and outlines central concerns in the area of organizational use of social media. It also shows the main research aims and questions. Finally, it describes the motivation and opportunity for seeking an understanding of social media use in organizations.

1.1 Prelude
Change is the only constant (Heraclitus). Perhaps this notion might seem very true in the world of technology given the ongoing developments in the Web as well as the huge leaps in the numbers of Web users. The phenomenon of social media is often seen as a transformative evolution that has changed the Web from a stagnant environment into dynamic and evolving networked space, so-called Web 2.0. The change is inevitable given the huge advancements in Web technologies that enable more online connectivity and allow people to interactively connect and communicate with each other. Wikipedia is an intriguing example of social media. Based on a simple technology, a wiki, Wikipedia has become one of the largest encyclopedias ever written. The unique style of collaboration and content generation that allows for dynamic production and co-production of knowledge is behind the incredible development and growth of Wikipedia. The fact that anyone, anywhere in the globe can access Wikipedia to collaboratively contribute and openly edit content makes Wikipedia one of the hallmarks of the change associated with the phenomenon of social media. Social network sites, such as Facebook, are equally important hallmarks of the social media phenomenon. Hundreds of millions of users are increasingly
joining these networks to connect, interact, and share with each other. These networks allow people to transform the web into personal playgrounds where they can share their everyday lives, play games, engage with communities, and interact and connect with friends from all over the world. Interactive content generation, dynamic sharing, open interactions, and flexible connectivity are among several characteristics that define the change of the web and the evolution of social media.

Organizations were not distant from this change and evolution. In fact, organizations were scrambling to adopt social media technologies in order to exploit the potential of what I call 'social properties' of these technologies such as openness, flexibility, editability, transparency, etc. at the workplace. This interest by organizations is, I suggest, driven by the unprecedented growth in using wikis, social networks, blogs, and other kinds of social media as well as the endeavor to introduce and support new work practices using social media. So the explanation might be the widespread adoption of social media technologies in everyday life or the supposed "newness" of these technologies or both. In either case, a growing number of organizations are adopting different kinds of social media and trying to exploit their 'social' potential at the workplace, and this is a case in point. The structure of an organization is essentially complex because it consists of various formal and, most importantly, established bureaucratic characteristics such as degree of centralization, layers of hierarchy, span of control, standard routines and procedures, and so on that define the form and function of an organization. The introduction and use of any kind of new technology will, then, inevitably affect and be affected by this established complexity. If so, then one could reasonably argue that the notion of 'social' that is associated with social media might be at odds with dominant notions of structure and organizing that might exist in formal and bureaucratic organizations. Such interplay between social media and organizations represents the main problem that I wish to examine and understand in this thesis.

I believe that applying social media at the workplace involves implications for technology use practices as well as organizations' structures and ways of organizing. I would then argue that understanding these implications can be best achieved by examining how social media and formal organizational characteristics interplay with each other in practice. My argument emphasizes that social media and organizations are defined by diverse sets of characteristics that enable distinctive and evolving practices. Organizations are often characterized by tendencies to control knowledge and work practices, top-down hierarchic structures, formal relationships, rigid
information flows, etc. In contrast, social media are often characterized by informal relationships among people, open and transparent interactions, flexible and participatory production of knowledge, etc. The interplay, in other words, between such distinctive characteristics may potentially engender tensions and incompatibilities between social media and organization in practice. In this view, reflecting upon the first statement of this Prelude, I argue that while technology might constantly change the impact of any new technology does not necessarily induce fundamental change in organizations. Changing technology does not necessarily mean changing users’ practices or ways of organizing as yet. Broadly speaking, in this thesis I am trying to examine the change that social media might or might not bring to formal organizations. This is not to say that there is no change. Nevertheless, tensions and incompatibilities or what I call later ‘immiscibility’ or the ‘immiscible interplay’ that may exist between social media and organization might affect the exploiting of the potential of social media technologies within an organization. This thesis is thus focused on developing an understanding of that interplay as well as examining its impact on technology use practices and forms of structure and organizing within an organizational context.

1.2 Problem Space

The research problem in this thesis has evolved from an initial (relatively superficial) focus on the role of social media in organizational knowledge sharing into a deeper focus on the dynamic interplay between social media and the organization. This evolution was enabled and realized through a number of empirical studies that aimed at exploring (Mansour et al., 2011; Mansour, 2011) and later examining and analyzing (Mansour, 2012; Mansour et al., forthcoming; Mansour et al. 2013) the evolving relationship between social media and organization. That is to say that the current research problem was an outcome of an evolving empirical inquiry process centered on understanding the dynamics involved in the relationship between social media and organization. Ultimately, my research focus has shifted towards examining a possible dichotomy in this relationship. Indeed, the core research problem of this thesis is centered on developing an understanding of this dichotomous relationship. In framing this relationship, I use a metaphor from Chemistry by drawing on the concept of ‘immiscibility’ with the aim that it may provide me with a useful vocabulary to communicate and later theorize the core problem in this thesis.
The interplay between social media and organization can be metaphorically understood by immiscibility. Immiscibility is defined as a property of liquids that do not mix or blend together\(^1\). So when attempting to mix oil with water, for instance, two distinct layers are formed clearly separated by a curved meniscus. As such, when two or more liquids don’t mix in all proportions to form a homogenous substance and only very little mixing occurs between them they are called immiscible. However, complete immiscibility is rare. In the case of mixing oil with water, for instance, low concentrations of oil can be found in water and oil can also contain detectable amounts of water. Miscibility\(^2\) in contrast, is a physical condition between two or more liquids that will permit them to mix in all proportions without an existence of interference. In certain circumstances, of course, the introduction of a third element can produce what is termed an ‘emulsion’, mayonnaise being an example. This interplay between immiscible liquids is a useful metaphor which can be understood in two main ways. First, immiscibility only occurs between two different liquids consisting of different characteristics. Social media and organizations are similarly two different things with different characteristics. Second, when mixed together, attractions between like molecules of immiscible liquids are much stronger than attractions between mixed pairs, hence they don’t mix together. In metaphorical terms, when using social media in organizations they might potentially ‘not mix together’ in the sense of enabling change and novel ways of work and organizing because ‘attractions’ between social media and organizational characteristics might be ‘very low’ due to potential tensions and incompatibilities. It is worth emphasizing, however, that immiscibility is not treated here in an extreme sense that suggests ‘no mixing’ or no change at all. The way I use the concept in the context of understanding organizational use of social media mainly aims at stressing the distinct characteristics of social media and organization that might be thought of as ‘unmixable’ without assuming that there are no chances for these characteristics to metaphorically ‘mix’ or to enable various changes in organizations.

The examination of these issues is predicted on an empirical inquiry which is both comparative and longitudinal. Throughout my empirical inquiry I came to realize various signs of immiscibility in the interplay between social media and organization as I was examining how the wiki technology is used in two different organizational settings. The two organizations where I did my

\(^1\) Source: http://antoine.frostburg.edu/chem/senese/101/liquids/faq/miscible-immiscible.shtml

\(^2\) Source: http://www.onepetro.org/mslib/servlet/onepetropreview?id=00015794
The interplay between social media and organization can be understood in the context of understanding organizational use of social media mainly aims at emphasizing, without assuming that there are no chances for these characteristics that immiscibility is not treated here in an organizational practices and structures. These things, in my view, make for a complex immiscible relationship between social media and organization which may result in tensions and incompatibilities that affect their use at the workplace. In both organizations studied in this thesis there were various issues that contributed into immiscibility in different ways and these will be addressed later in the thesis while seeking to theorize the immiscible interplay between social media and organization.

To give some theoretical context for the problem, Grudin & Poole (2010) pointed to the tension that exists between the bottom-up character of a wiki and traditional top-down organizational structure. They argued that the typical hierarchic character of large enterprises is naturally incompatible with the character of a technology promoting open, flexible collaboration. Yeo & Arazy (2012) also discussed further tensions associated with technology use practices. They pointed to tensions between wiki affordances that are designed for open knowledge practices, peer production, and community governance and traditional knowledge management practices in organizations that are often centrally controlled and managed. In a similar vein, Macnamara & Zerfass (2012) argued for the need for balance between openness, strategy, and management to resolve potential tensions between open, uncontrolled practices and organizational strategy and management especially in relation to objectives, control, and governance. Other scholars (e.g., Majchrzak et al., forthcoming; Mansour et al., 2011; Hildebrand et al., 2013) noted possible contradictory influences of social media in terms of enabling and constraining organizational practices such as knowledge collaboration and sharing. Seldom, however, are similar accounts to
be found in the literature on social media use in organizations. In fact, the literature suffers from a shortage of studies that empirically examine the interplay between social media and organization (Aral et al., 2013; Majchrzak et al., forthcoming; Chai et al., 2010; Saldanha & Krishnan, 2012; Martine et al., 2013). Equally importantly, it suffers from a deterministic view of technology (Treem & Leonardi, 2012). This view has led many scholars to suggest that social media technologies are democratizing the flow of knowledge in organizations (Wager, 2006; Pfaff & Hasan, 2007), transforming the exchange of knowledge and expertise (Aral et al., 2013), flattening organizational hierarchies and reducing control (Bibbo et al, 2010), accelerating innovation and development of new products (Zwass, 2010), and so on. Further, in a comment about a theory of wikis Majchrzak (2009) raised a number of questions that center on what is really different about wikis and other social media technologies and how these technologies may drive us to rethink existing theories of social exchange and social capital. She also noted the need “to study how the web of relationships between the wiki functionalities, the organizational design, the norms of use, and the community affect how these affordances play out” (p. 19).

I should also note here that that both organizations in the study held to a somewhat deterministic view of the transformative power of the new media. In ignoring, or perhaps failing to recognize, established technology use practices and dominants forms of structure and organizing, they may also fail to effectively exploit the possibilities and affordances of social media. It is important not to read the preceding statement as if this research is primarily concerned with the social dimension of the problem prompting less emphasis on technology. In fact, I believe that the theoretical perspectives of determinism and constructivism that address the distinction between the social and the material are not adequate to account for the nature of the problem in this thesis. In a recent paper, Leonardi & Barley (2010) discussed the classical problems associated with determinism and constructivism where members of the two schools tend to focus on either the material or the social respectively and eventually fail to acknowledge their mutual interdependency in the drive for organizational change. Most importantly, they argued for the need for research that “demonstrates how various social construction processes come into play and entwine with technology’s material properties, as well as with the existing social structure of the context in which it is used” (p. 6). This thesis is primarily concerned with examining such a relationship in the context of social media use in organizations.
1.3 Research Aims & Questions

The aim of this thesis is generally focused on the phenomenon of using social media for knowledge collaboration and sharing within an organizational setting. My interests in this area, as stated earlier, have evolved from a superficial focus on understanding organizational use of social media into ardent curiosity about the interplay between social media and organization characteristics. This evolution was mainly driven by first a contrast between my own, empirically-grounded, work which prompted me to be attentive to the dynamics (e.g., organizational structures, power relations, organizing practices, etc.) involved in using and exploiting ‘the social’ in organizations and second by the empirically-groundless hype around the social media, especially within organizations. Hence my overarching aim in this thesis is to:

“examine and understand organizational practices that describe the ways by which social media are used within formal and established organizational settings.”

Then I also aim to:

“develop a way for understanding organizational use of social media that addresses the dynamic interplay between social media and organization characteristics in practice.”

In order for me to achieve these aims, I seek an answer for the following exhaustive question:

How to understand the use of social media within formal organizational settings?

To breakdown this question and focus on concrete issues related to the aims of this thesis, I also seek answers for the following questions:

What are the ways by which people organize or arrange their social media use practices within a formal organizational setting?

What characterizes the interplay between social media and organization and its effects on the ways by which social media are used within a formal organizational setting?
1.4 Motivation & Opportunity

Information Systems (IS) is a phenomena-driven discipline. Currently, the evolution of social media represents the phenomenon that is attracting much attention by business organizations, universities and schools, governments, scholars, journalists, rebels, public institutions, etc. On October 4th, 2012 Mark Zuckerberg, Facebook founder and CEO, posted on his personal Facebook page that his social network site has reached a total of one billion active users. What is most remarkable about this incredible number was the fact that it represented only the beginning of his ambitions. Probably with one billion active registered users one may assume that connecting the rest of the world would be something doable if difficult. Social networking sites might thus be the hallmark of the phenomenon of social media and growing amount of research is being published on the subject (e.g., boyd & Ellison, 2008; Ellison et al., 2007; boyd, 2009). Other research has also been published addressing the potential of social media technologies such as wikis, blogs, and microblogs to support novel ways of learning in schools and universities, participatory governments, user-generated content, and so on (e.g., Bibbo et al., 2010; Boulos et al, 2006; Jenkins, 2009; Shirky, 2011; Majchrzak et al., 2006; Wheeler et al., 2008; Van Dijk, 2009; etc.). Besides the growth of research on social media use in these areas, research on organizational use of social media has also gained interest by scholars within IS and many other fields such as organization studies, computer supported cooperative work (CSCW), computer-mediated communication (CMC), human computer interaction (HCI), technology enhanced learning (TEL), to name a few. Despite this attention and growing interest, research has focused on some areas while others are still nascent or even nonexistent (Aral et al., 2013).

Within organizations, research on social media has its own pitfalls. Treem & Leonardi (2012) published a comprehensive review on organizational use of social media and pointed out two main problems in researching social media use in organizations. First, there is a lack of empirical understanding of the implications of using social media technologies for organizational processes (Aral et al., 2013; Majchrzak et al., forthcoming; Martine et al., 2013; Saldanha & Krishnan, 2012; Stocker et al., 2009; Chai et al., 2010; Stenmark, 2008; Andriole, 2010; Jarrahi & Sawyer, 2013; Macnamara & Zerfass, 2012). It is suggested that the reason for this lack is that the adoption of these technologies in organizations is outpacing empirical and theoretical understandings of how these technologies are used and how and why they may alter organizational processes (Treem & Leonardi, 2012).
This is problematic, especially given Treem & Leonardi’s (2012) finding that scholars treat social media as a new class of technologies that can fundamentally alter organizational processes. This finding implies the second problem in current research on social media use in organizations.

The scholarly attitude towards the general use of social media often implies that social media have transformative impacts and are fundamentally changing the way we collaborate, communicate, consume, and create (e.g., Aral et al., 2013; Jarrahi & Sawyer, 2013; Pfaff & Hasan, 2007; Wagner, 2006). This, in my opinion, has resulted in a large amount of research that is for the most part conceptual with little empirical grounding (cf. Jarrahi & Sawyer, 2013). Treem & Loenardi (2012), for instance, noted that many studies on social media are either too focused on applications preventing generalizations across contexts or too broad; obscuring the ways the technology may influence behaviors. Still, it should be noted that there is a growing amount of efforts directed towards understanding organizational use of social media that aim at offering new perspectives such as the contradictory influences of social media affordances on knowledge sharing (Majehrzak et al., forthcoming; Mansour et al., 2011), exposing shortcomings of a company culture and even magnifying them (Huy & Shipilov, 2012), showing how community feedback on user-generated product designs creates lower satisfaction and variety (Hildebrand et al., 2013) and many other emerging perspectives.

Further, an interesting dimension of the problems associated with research on social media is the argument that using social media within organizations is entirely different from using social media in other contexts such as education, entertainment, etc. (Danis & Singer, 2008; Grudin & Poole, 2010). While largely agreeing with this argument, it remains the case there is little empirical foundation for it at present. Understanding how these contexts differ in terms of using social media is thus unclear and contributes to the general problem of understanding social media. I would strongly suggest, given the wide adoption of social media in everyday life, that using various social media applications such as social networks or microblogging in everyday life might in principle have a substantial impact on the ways people use them for professional purposes. Another similar and rather intriguing problem concerning the use of social media in organizations is the question of the ‘newness’ of social media. How the design and features of social media technologies might impact social and organizational phenomena is a critical issue that is not yet addressed (Aral et al., 2013; Hildebrand et al., 2013). It is also still unclear how social media really differ from existing enterprise technologies in terms of their potential to introduce new norms and
behaviors (Aral et al., 2013; Wu, 2013). Empirical research on these subjects is nascent despite the opportunities and challenges that organizations might face because of social media (Aral et al., 2013).

These problems provide me with a unique opportunity to offer what would be a timely understanding of organizational use of social media. Not only because it is a mainstream phenomenon that is not yet well understood but also because of the unprecedented and rather intriguing widespread adoption of social media in almost every aspect of our daily lives. Organizations too are experiencing wide adoption of social media. A survey conducted by McKinsey, a global management consulting firm, in 2010 found that more than 65% of surveyed companies reported the use of social media. Forrester research also predicts that corporate spending on enterprise social media will reach more than 4.6 billion US dollars annually by 2013. While the pace of adoption in organizational contexts might be slower than in non-organizational contexts, these numbers still show that interest is clearly growing and more organizations attempt to exploit social media at the workplace. This necessitates, and in fact provokes research, given the current state of research on social media use in organizations.

To sum up, I see opportunities in the problems that exist in researching social media use in organizations. It is thus my hope that by seeking to examine the interplay between social media and organization that I could contribute to 1) understanding not only how the material properties of social media can support certain organizational processes but also the effects of using social media on shaping technology use practices as well as forms of organizing or organizational structures 2) developing an understanding of the interplay between social media and organizations and the implications for technology use and the structure of the organization 3) and providing theoretical and empirical insights into the potential development of novel use practices (how do people use social media in organizations and what kinds of practices are involved in using them) and the emergence of new organizational arrangements (what kinds of organizing practices might develop when using social media and how do these new forms of organizing affect existing organizational structures) that structure the use of social media.
1.5 Outline of the Thesis

This thesis consists of two parts: the first is the ‘Kappa’ which includes seven main chapters, and the second is a collection of five research studies that provide the foundation for this thesis. Table 1 below provides a general outline of the thesis:

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>This chapter introduces the main focus of the thesis, the aims and research questions, problem space, and the motivation for the research.</td>
</tr>
<tr>
<td>Theoretical Considerations</td>
<td>This chapter presents key theoretical issues related to technology and organizing, concepts and definitions of social media and organization, and general discussions of IT use in organizations.</td>
</tr>
<tr>
<td>Theoretical Foundation</td>
<td>This chapter provides the theoretical foundation of the thesis. It presents two key theoretical frameworks: Giddens’ structuration theory and Orlikowski’s practice lens for studying technology use.</td>
</tr>
<tr>
<td>Empirical Method</td>
<td>This chapter outlines various issues related to the empirical work conducted throughout the research process. It discusses the method, inquiry process, empirical cases, use of theory, and the ethical issues.</td>
</tr>
<tr>
<td>Research Studies</td>
<td>This chapter provides summaries of various issues discussed in each of the five research studies included in this thesis. It also discusses the interrelationships between these studies.</td>
</tr>
<tr>
<td>Theoretical Discussion</td>
<td>This chapter provides a discussion of key issues related to organizational use of social media which were developed throughout the entire research process and drawn from the papers included in the thesis. It discusses the bureaucracy of social media, organizing with social media, and the perspective of immiscibility.</td>
</tr>
<tr>
<td>Concluding Issues</td>
<td>This chapter concludes the thesis by recounting the main ideas developed in the thesis, suggesting theoretical and empirical opportunities for further research, and making final remarks.</td>
</tr>
</tbody>
</table>

Part 2: Five Studies

Study I

This chapter presents a discussion of theoretical considerations and reviews various related studies and theoretical concepts. It starts with a discussion of theories of technology and organization and then provides a description of social media and organization. Then it offers a review of studies on technology use in organizations. The chapter ends with a theoretical twist that aims at bringing together the key theoretical concepts considered in this thesis.

2.1 Theories of Technology and Organization

I would like to start the discussion of my theoretical considerations in this thesis by presenting some theoretical ideas of the relationship between technology and organization. This is because I believe that understanding the interplay between social media and organization has its roots in this relationship. It also has its roots in the relationship between the social and the material. Leonardi & Barley (2008) argued, in this respect, that theorizing the relationship between technology and organizing often leads to contemplation of the line between the social and the material. Generally, there is an agreement that information technology and organization both arise at the intersection of social and material phenomena (Leonardi & Barley, 2008; Kallinikos et al., 2012; Leonardi, 2012; Schatzki, 2005; Orlikowski, 2007; Leonardi, 2011).

The relationship between the social and the material has been a subject of interest for IS and organizational scholars recently (e.g. Leonardi et al., 2012; Leonardi & Barley, 2008, 2010; Leonardi, 2011, 2012, 2013; Mutch, 2013; Scott & Orlikowski, 2013). The majority of scholarly arguments center on two main issues: first, contemporary organizational practices are essentially seen as

<table>
<thead>
<tr>
<th>Study</th>
<th>Reference</th>
</tr>
</thead>
</table>

Table 1: A general outline of the thesis.
CHAPTER TWO
THEORETICAL CONSIDERATIONS

This chapter presents a discussion of theoretical considerations and reviews various related studies and theoretical concepts. It starts with a discussion of theories of technology and organization and then provides a description of social media and organization. Then it offers a review of studies on technology use in organization. The chapter ends with a theoretical twist that aims at bringing together the key theoretical concepts considered in this thesis.

2.1 Theories of Technology and Organization

I would like to start the discussion of my theoretical considerations in this thesis by presenting some theoretical ideas of the relationship between technology and organization. This is because I believe that understanding the interplay between social media and organization has its roots in this relationship. It also has its roots in the relationship between the social and the material. Leonardi & Barley (2008) argued, in this respect, that theorizing the relationship between technology and organizing often leads to contemplation of the line between the social and the material. Generally, there is an agreement that information technology and organization both arise at the intersection of social and material phenomena (Leonardi & Barley, 2008; Kallinikos et al., 2012; Leonardi, 2012; Schatzki, 2005; Orlikowski, 2007; Leonardi, 2011).

The relationship between the social and the material has been a subject of interest for IS and organizational scholars recently (e.g. Leonardi et al., 2012; Leonardi & Barley, 2008, 2010; Leonardi, 2011,2012, 2013; Mutch, 2013; Scott & Orlikowski, 2013). The majority of scholarly arguments center on two main issues: first, contemporary organizational practices are essentially seen as
emergent, unpredictable, uncertain, complex and dynamic (e.g., Orlikowski & Scott, 2008; Zammuto et al., 2007), and second, the relationship between the social and the material is described as sociomaterial (e.g., Orlikowski, 2007; Leonardi, 2012; Kallinikos et al., 2012; Leonardi, 2013; Mutch, 2013, 2005; Orlikowski, & Scott, 2008; Kautz & Jensen, 2013). In respect of the first issue, it is argued that the pervasive role of technology in mediating a wide range of contemporary organizational practices is not only critical and indispensable but will continue to be so (Orlikowski & Scott, 2008; Dewett & Jones, 2001). Orlikowski & Scott (2008) argued that the diversity of technological entailments in organizations such as organizations’ continued quest to grow globally using technology, to move onto the web, to deploy enterprise-wide infrastructure systems, and invest in new communication media allows for emergent and unpredictable organizational practices and outcomes. In a similar vein, Zammuto et al. (2007) discussed the changing fabric of organizations by IT and how this change creates opportunities for emergent patterns of interaction or new forms of organizing. They argued that the evolution of information technologies and their advanced computing, networking and integrative capabilities have changed the nature of organizational work in the sense that people are now focused on complex and uncertain practices that require creative problem solving and judgment. Svanh et al. (2009) and Svanh (2009), for instance, discussed such practices in the context of digital innovation where the co-existence of the social and the material creates new emerging configurations that change traditional practices.

This emphasis on the emergent and complex nature of organizational practices leads to the second issue which centers on the fusion of the social and the material. The changing nature of organizational practices is argued to be a result of the combination of IT and organization features and practices (Zammuto et al., 2007) or the composition of “an array of agencies including configurations of space, technical heuristics, algorithms, qualitative expert judgments, physical mechanisms, categories, and so on.” (Orlikowski & Scott, 2008, p. 40). Such views suggest a simultaneous fusion between social and material agencies in organizations, which is often labeled as sociomateriality (Leonardi, 2013; Scott & Orlikowski, 2009; Kautz & Jensen, 2013; Orlikowski, 2007; Leonardi, 2011, 2012, 2013; Kallinikos et al, 2012). In this respect, some scholars have argued that understanding contemporary organizational practices requires flexible approaches to address emergent phenomena and that sociomateriality is one approach that resonates with the status and nature of technologies in organizations (Feldman & Orlikowski, 2011; Orlikowski & Scott, 2008).
While the evolution of emergent, fluid and dynamic technology-enabled organizational practices (Orlikowski & Scott, 2008; Zammuto et al., 2007) is one major motive to rethink the relationship between the social and the material using a new vocabulary, such as sociomateriality, scholarly efforts were also driven by the long classical debates that focus on deterministic and constructivist views of this relationship (Leonardi & Barley, 2010). Moving from hard, deterministic views that dominated scholarly works in the mid of 20th century into more constructivist views around the 80s and 90s (see Leonardi & Barley, 2010 for a detailed discussion) today’s scholars of technology and organization continue their efforts to build on these views to understand the increasing complexity of the relationship between the social and the material.

Sociomateriality, for instance, is proposed as a way to find a middle ground between determinism and social constructivism (Leonardi, 2012; Kallinikos et al., 2012) by challenging the ontological separation between the social and the material (Kautz & Jensen, 2013) and to redress the perceived neglect of the material in social and organizational theories (Orlikowski & Scott, 2008; Orlikowski, 2007). It is currently a popular way of thinking about theorizing the relationship between the social and the material (Leonardi, 2013; Orlikowski, 2007; Orlikowski & Scott, 2008; Leonardi, 2012; Fulkner & Runde, 2010) or, on a larger level, theorizing about IS in organizations and society (Kautz & Jensen, 2013). One of the central aims of sociomateriality is to remind scholars that materiality is always present in every social phenomenon (Leonardi, 2012; Orlikowski, 2007; Scott & Orlikowski, 2009). As Orlikowski (2007) explained “every organizational practice is always bound with materiality. Materiality is not an incidental or intermittent aspect of organizational life, it is integral to it.” (p. 1436). Orlikowski & Scott (2008) also argued that “practices are always sociomaterial, and this sociomateriality is integral, inherent, and constitutive shaping the contours and possibilities of everyday organizing.” (Orlikowski & Scott, 2008, p. 463). In general, Leonardi & Barley (2010) noted that most scholars of technology and organization agree on a fundamental ontological point: “technologies do not directly determine organizational structures and dynamics. Instead, the changes that technologies occasion are intimately tied to social dynamics that are likely to vary across contexts.” (p. 30). I should perhaps note here that to argue that the world is constituted materially is, in itself, rather trivial. The focus on materiality, however, is rather more than that since it argues for some kind of causal power, though not the naïve deterministic relationship being critiqued. Causality, that is, lies in the interface between materiality and sociality.
Terms like sociomaterial assemblages, constitutive entanglement, performativity, rationality and imbrication are new vocabulary often used to theorize man-machine reconfigurations (Kautz & Jensen, 2013). Orlikowski (2007), for instance, explained that constitutive entanglement is “a position that does not privilege either human or technology (in one-way interactions), nor does it link them through a form of mutual reciprocation (in two-way interactions). Instead, the social and the material are considered inextricably related – there is no social that is not also material, and no material that is not also social.” (p. 1437). She further discussed that such a position of constitutive entanglement departs from the mutual or reciprocal relations between the social and the material, which assume some priori independence between these entities, and instead emphasizes that there are no independently existing entities with inherent characteristics. In this light, Orlikowski also discussed, drawing on Latour (2005) and Pickering (1995) that giving up the treatment of the social and the material as distinct, independent entities requires “replacing the idea of materiality as ‘pre-formed substances’ with that of ‘performed relations’ in order to characterize the recursive intertwining of the social and the material as these emerge in ongoing, situated practice.” (p. 1438).

Some scholars, however, find the views of Orlikowski on the ‘inherent inseparability or inextricable relationship’ between the social and the material to be somewhat problematic (e.g., Mutch, 2013; Leonardi, 2011, 2012, 2013; Fulkner & Runde, 2010; Kallinikos et al., 2012; Leonardi & Barley, 2010). Leonardi (e.g., Leonardi, 2011, 2012, 2013) discussed three key issues concerning the notion of sociomateriality that I think span various scholarly concerns regarding the relationship between the social and the material. First, a “terminological concern” about the meaning of terms like social, material, and sociomaterial, that often appear in the discussions of sociomateriality. Some scholars, for instance, like Sutton (2010) described the use of these terms as ‘academic jargon monoxide’ and that scholars need not use complex terms, instead focus on using simple and understandable terms. The definitions of these terms and other related terms are summarized in Table 2 below based on two different ontologies of sociomateriality, agential realism and critical realism, that will be discussed momentarily.
### Table 2: Summary of concepts based on agential realism and critical realism (Leonardi, 2013).

<table>
<thead>
<tr>
<th></th>
<th>Agential Realism</th>
<th>Critical Realism</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Ontology</strong></td>
<td>There is no separate social interaction that is not distinct from materiality there is only a fused “sociomaterial”</td>
<td>The social context and the materiality that exist in it are separate. The social and the material become “sociomaterial” as people imbricate social and material agencies.</td>
</tr>
<tr>
<td><strong>General Epistemology</strong></td>
<td>Analysts make arbitrary distinctions about what is “social” and what is “material” (agential cuts) when looking at a unified whole (“sociomaterial”)</td>
<td>Analysts make determinations about how and why the separate “social” and “material” become the “sociomaterial” and persist that way over time.</td>
</tr>
<tr>
<td><strong>What is materiality?</strong></td>
<td>There is no materiality. There is only sociomateriality</td>
<td>The arrangement of an artifact’s physical and/or digital materials into particular forms that endure across differences in place and time.</td>
</tr>
<tr>
<td><strong>What is social?</strong></td>
<td>There is no social. There is only the sociomaterial</td>
<td>Abstract concepts such as norms, policies, communication patterns, etc.</td>
</tr>
<tr>
<td><strong>What is sociomateriality</strong></td>
<td>The inherent inseparability between the material and the social.</td>
<td>Enactment of a particular set of activities that meld materiality with institutions, norms, discourses, and all other phenomena we typically define as “social.”</td>
</tr>
<tr>
<td><strong>What is the practice?</strong></td>
<td>A sociomaterial accomplishment</td>
<td>The space in which social and material agencies become constitutively entangled through the process of imbrication.</td>
</tr>
<tr>
<td><strong>Methodological focus</strong></td>
<td>The sociomaterial practice</td>
<td>Social and material agencies.</td>
</tr>
<tr>
<td><strong>Potential conceptual contributions</strong></td>
<td>Showcase how all organizational processes are sociomaterial and how recognition of this fact can improve our theorizing about them. Demonstrate that organizing occurs in practice and that practice is neither social nor material; it is both.</td>
<td>Showcase how organizations and technologies come to be as they are and why people think they had to be that way. Move technology into a constitutive role in organizing and organizational processes while showing how organizing shapes technology.</td>
</tr>
</tbody>
</table>
In respect of materiality, Leonardi (2010) also pointed to the confusion about terms like materiality and material. He suggested that while most scholars often speak of materiality as if it is matter – or intangible stuff – in their studies they tend to focus on artifacts that have no physical matter – no tangible stuff. For instance, scholars often use terms like material properties, material features or material aspects to refer to menus, software algorithms, etc. He therefore suggested: “it seems that the traditional view of materiality as “matter” is not appropriate, nor does it convey the importance of software’s role in organizing activities. It appears, then, that we have two options. The first is to drop the adjective “material” when discussing digital artifacts. If “material” means “matter” and software has no matter, we are best off to dispense with the inaccurate modifier. But if we think there is something important about software or other intangible artifacts that distinguish them in key ways from patterns of interaction, talk, or other social practices, and that the word “material” points to that distinction, a second option would be to consider how the adjective can be used to represent these differences.” Further, Faulkner & Runde (2010) discussed materiality with a specific emphasis on the identity of technological objects, both material and non-material. They argued that emphasizing the role of materiality in organizing processes requires that we look beyond the material and consider what they called non-material that is technological objects with no intrinsic physical being such as digital images, web pages, computer programs, and so on. Their view has, as they explained, similarities with Orlikowski’s sociomateriality in the sense that material and non-material identities of technological objects are not intrinsic to these objects but are involved in an interweaving with the social. They also pointed to one major difference between the two views, that is, sociomateriality does not acknowledge non-material technological objects. They therefore argued for the ontology of sociomateriality to be extended and include them as distinct entities in their own right. Again, however, I should note that such ontological considerations are relevant only to their theoretical purpose. Materiality is scarcely a problem at a commonsense level. What is at stake here is the degree to which these ontological positions enable us to explain change.

In respect of the social Leonardi (2013) drew on Latour (2005) and Barad (1996, 2003, 2007). Latour’s actor-network theory precisely makes the argument that there are no differences between the material and the social in terms of their causal powers – they can both be treated as agents – and that scholars who draw distinctions between them do that only for political and practical reasons. In this view, Latour (2005) argued that no phenomena can be adequately described
unless such distinctions are abandoned and focus instead should be
directed towards how people, objects, ideas and nature are all joined
together in a network of associations. Leonardi (2013) then discussed
Barad’s view which has similarities with Latour’s view of the social
and the material. She argued that the social world is essentially
discursively constructed as people (e.g., scientists) attempt to use
various tools and equipments that help them develop particular
renditions of reality. In this view, Leonardi (2013) suggested that
Barad argues for agencies as products of the knowledge-making
process by the observers of phenomena, hence agency is enactment
rather than something someone has. Leonardi also discussed Barad’s
agential realism ontology based on which she argued that agencies
themselves are “the product of observer-phenomena relations” (p. 61).
He then explained “Barad’s ‘agential realism’ thus combines an
ontological commitment to treat phenomena as discursively
constructed and with an epistemological stance that treats our
knowledge about the natural world as something that is not only tied
to but inextricably bound with the technologies we use to observe it.”
(p. 62). This ontology of agential realism was appropriated by
Orlikowski in her discussion of sociomateriality (Orlikowski, 2007,
Scott & Orlikowski, 2008) and it will be discussed in relation to the
third concern.

The second concern is related to how really the social and the
material become entangled, intertwined, or mutually constituted in
practice. Leonardi (2011) suggested that most discussions on
sociomateriality focus on showing that the social and the material are
thoroughly intertwined but without considering how such
intertwining occurs. He therefore proposed imbrication as a
metaphor (cf. Taylor, 2001; Ciborra, 2006) to characterize the
interweaving process of material and human agencies (see Table 2)
and describe how they become sociomaterial (Leonardi, 2011). As a
way of thinking about sociomateriality imbrication allows for
maintaining the distinction of the social and the material while at the
same time recognizing their synergetic interaction (Leonardi, 2011).
In this way, Leonardi argued that the ways by which social and
material agencies are interweaved together produce empirical distinct
phenomena. So sometimes the interweaving between them creates or
changes routines, and some other times it produces or alter
technologies. In this respect, he further argued that the imbrication
of the social and the material produces an infrastructure of new
routines and technologies that provides context and means for
organizing to happen in organizations (Leonardi, 2011). Here
Leonardi emphasized that social and material agencies make for both
routines and for technologies. So, according to Leonardi, imbrication
is useful to understand the interweaving of the social and the material, hence sociomateriality, in three ways: first imbrication suggests that human and material agencies are effectual at producing outcomes only when they are joined together and that their interdependence does not belie their distinct characters. That is to say that both people and technologies have agency but ultimately people decide how they will respond to and shape a technology. Material agency can then be understood as the ways in which materiality acts (Leonardi, 2012). In this way, material agency may influence people’s actions (cf. Tylor et al., 2001) but this kind of agency can only be activated when people approach technology with certain intentions and decide which elements of its materiality to use (Leonardi, 2012). Second, imbrication is a reminder that all interactions between human and material agencies produce an organizational residue by, as stated before, producing routines and technologies that provide people with an infrastructure that provides context and means for organizing. As people continue to use these routines and technologies, Leonardi argued, past imbrications will influence how social and material agencies will be imbricated in the here-and-now. A third conceptual benefit of imbrication, therefore, is that it recognizes the accumulation of past imbrications and as such provides a language to explain how activities in the past condition rather than determine future social-material imbrications. While I see the potential in the metaphor of imbrication I think it still makes the assumption that the social and the material will eventually become entangled and intertwined, hence sociomaterial. This understanding, I believe, is problematic because the distinct nature of both the social and the material might affect any potential for imbrication in practice. In other words, the metaphor of imbrication does not take into account that there is a possibility that sociomateriality may not be realized due to distinct social and material characteristics. This issue is addressed later in the thesis in my proposal of immiscibility.

Finally, the third concern is ontological and it is one that I like to emphasize here because it has implications for my theoretical foundation and discussion later in this thesis. Leonardi (2013) aimed at laying some theoretical foundations of sociomateriality by reflecting on the debate between Scott & Orlikowski (2013) and Mutch (2013). The point of debate here centers on the underlying ontology of sociomateriality. Leonardi discussed Mutch’s critique of Orlikowski’s view of sociomateriality and its underlying ontology of agential realism. He mainly pointed to four problems outlined by Mutch with using agential realism as an underlying ontology of sociomateriality. The first problem is the lack of explanatory power of agential realism. Secondly, Mutch argues that the philosophical rejection of a subject-
object dualism in agential realism creates troubles for researchers when engaging with empirical data. The reason for that is operationalizing such ontological stance makes it difficult to study sociomaterial phenomena because researchers are forced to define what is material in the context they are studying. Thirdly, Mutch argues that agential realism ignores time. Leonardi discussed that such lack of focus on time results in a problem for scholars of technology and organizing to understand how organizational practices are sustained and changed. The temporal dimension, he further discussed, is necessary because without it scholars will find it difficult to relate to other organizational theories. The fourth problem highlighted by Leonardi from Mutch’s implicit arguments against agential realism is concerned with the mutual constitution of the social and material. Faulkner & Runde (2012), for instance, argued that basing a sociomaterial perspective on the grounds of agential realism suggests that all relations, including those between the social and the material, are constitutive. But they argued that not all relationships are internal and suggested that there are external relations in the sense that even if two entities are related they don’t necessarily need each other for either to exist. Leonardi then discussed that “treating all relations as mutually constitutive overlooks how and why phenomena get put into relationship with each other, and consequently how their relationship might change phenomena other than themselves.” (p. 67).

Leonardi then moved to discuss critical realism as an alternative ontology to solve the problems outlined by Mutch in using agential realism with sociomateriality. On a philosophical level, Leonardi noted that both agential realism and critical realism agree that there is a reality that exists apart from the humans that perceive it and they also agree on the ontological nature of realism and acknowledge empirical constructivism. But the main distinction between the two ontologies in relation to the social and the material is: “agential realism would argue that there is no ontological distinction between the two (hence the portmanteau word “sociomaterial”) ... By contrast, critical realism would argue that the social and the material are indeed separate entities that are put into relationship with one another and come to appear inseparable through human activity occurring over time.” (p. 69). The main crux here, Leonardi explained, is that agential realism treats sociomateriality as something that pre-exists peoples’ perceptions while critical realism argues that the social and the material are independent entities that become sociomaterial as they are put into relationship with one another through human activity. Mutch (2013) argued that this basic difference between the two ontologies may help to address many of
the problems of agential realism in the treatment of sociomateriality. Table 3 below shows a summary of the problems of agential realism and their solutions by critical realism:

<table>
<thead>
<tr>
<th>Problems arising from the adoption of “agential realism”</th>
<th>Reasons why problems exist</th>
<th>Solutions to problems from the adoption of “critical realism”</th>
<th>Reasons why problems are avoided with “critical realism”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of explanatory power (of empirical phenomena)</td>
<td>Conflation of realms of action and structure precludes an examination of “becoming” and shifts the focus to what “is,” which leads to descriptive studies.</td>
<td>Treating materiality as existing in the realm of structure and social action as existing in the realm of action</td>
<td>Use of an analytical dualism between structure and action</td>
</tr>
<tr>
<td>Inability to perform empirical studies that actually demonstrate “sociomateriality”</td>
<td>Empirical operationalization forces scholars to define at least implicitly, what is “material” in the context they are studying, which decouples a phenomenon that would otherwise be “sociomaterial.”</td>
<td>Treating materiality as existing in the realm of structure and social action as existing in the realm of action</td>
<td>Ontological separation of “social” from “material” accords with actors’ categorization with and experience of phenomena</td>
</tr>
<tr>
<td>Overlooks how practices are sustained and changed</td>
<td>Absence of a theory of temporality due to conflation of social and material.</td>
<td>Specifies mechanisms that link action and institution [social and material] over time</td>
<td>Includes an explicit theory of temporality</td>
</tr>
<tr>
<td>Treats all relations as mutually constitutive or co-dependent</td>
<td>Reliance on a thesis of “interpenetration” and a conceptualization of the social and the material as internal relations.</td>
<td>Examines how “social” and the “material” become constitutively entangled to produce the “sociomaterial”</td>
<td>Employs a theory of morphogenesis to argue that materiality, as a “structural” property, pre-exists action — people’s use of a technology</td>
</tr>
</tbody>
</table>

Table 3: Problems for sociomateriality arising from agential realism and their solutions in critical realism (Leonardi, 2013).
A critical realist stance, for instance, suggests that the social and the material are external relations rather than internal relations and in this way critical realists can talk about materiality while agential realists cannot (Leonardi, 2013). This is because for materiality to exist separately or externally from the social is to imply that they are not simultaneously social; a position denied by agential realists and appreciated by critical realists. Also, the position of agential realists focuses on materiality as a constitutive element of the social world and vice versa. The critical realist position, in contrast, suggests that materiality pre-exists action or the people’s use of technology. That is materiality is one important building block of sociomateriality, but it is not isomorphic with the social (Leonardi, 2012, 2013). Critical realism also addresses the issue of time by its emphasis on the idea that “all agency takes place in conditions that predate actions” (Mutch, 2013, p. 36). Here Leonardi (2013) explained that such notion implies a temporal analysis of the relationship between structure and action. He reflected on this by relating to his own metaphor of imbrication (cf. Leonardi, 2011): “This view of agencies imbricating over time is wholly compatible with a critical realist perspective, which works to elucidate the nature of agency, because it is through the exercise of agency that action and structure are put into conversation.” (p. 70).

Finally, Leonardi (2013) concluded his discussion by suggesting that sociomateriality need not be built on one type of foundation only. He discussed that the choice between theoretical foundations of agential realism and critical realism depends largely on what benefits one sees in either of them. In this thesis therefore I chose to subscribe to critical realism mainly to emphasize that any possible relationship (e.g., imbrication, entanglement, etc.) between technology and the organization, or the social and the material, only occurs in and through ongoing human activity.

2.2 Defining Social Media and Organization

2.2.1 Social Media
The most extensive discussion of social media and organizational use of social media to date is offered by Treem & Leonardi (2012). Their review of studies on organizational use of social media was focused on explaining how the use of new social media technologies differs from using previous technologies like emails and forums and how they are really used in organizations. Most importantly, they discussed how social media have important consequences for organizational communication processes and practices as they afford certain
behaviors that were impossible or difficult to achieve with previous technologies. They identified four key affordances that represent these behaviors. But before discussing these affordances I will start with describing what social media are.

Kaplan & Haenlein (2010, p. 61) defined social media as “a group of internet-based applications that build on the ideological and technological foundations of Web 2.0 and that allow the creation and exchange of user-generated content.” They also explained that Web 2.0 is the platform for the evolution of social media. The term Web 2.0 is often associated, and most of the time conflated, with social media and usually implies the evolution of the Web. It also implies as if there was Web 1.0 and that developments in web technologies have enabled a new version of the web that is Web 2.0 or the ‘New Web’. Scholars often trade these terms and others when discussing social media and Web 2.0. For instance, Gruber (2007) used the term social web to describe social media as a class of websites and applications where user participation and user-generated content is the primary driver of value. What is important about this terminological ‘disparity’ is that most of these terms emphasize basic principles underlying the evolution of the web.

Most often, these terms imply an understanding of the web as open, social, and participative environment (Ravenscroft, 2009; Kaplan & Haenlein, 2010; O’Reilly, 2007). There is also an emphasis on the rise of a second generation of web technologies that enable new forms of content generation and sharing (Kaplan & Haenlein, 2010), shift power relations and control of information to people (Stenmark, 2008), democratize the exchange of knowledge (Hasan & Pfaff, 2006), drive community-based policing (Majchrzak, 2009), etc. In general Treem & Leonardi (2012) explained that it has become some sort of an ‘academic norm’ when defining social media to refer to the types of technologies such as wikis, blogs, social networks, tagging, etc.) that people implicitly recognize as social media. Perhaps the reason for this is that understanding the evolution of social media was always, and is still, associated with, and also determined, by the evolution of several Internet-based platforms and applications such as Facebook, Wikipedia, MySpace, Delicious, Twitter, etc.

But despite the lack of a concise definition of social media to date, the description offered by Kaplan & Haenlein of social media is illustrative enough for my purposes. The importance of their description, I believe, lies in highlighting two key elements of social media: ideological foundations and technological foundations (Web 2.0). In respect of ideological foundations Stenmark (2008) argued that social media are based on norms and attitudes that are entirely different from those associated with previous technologies. He
mentioned that social media build on peoples’ ability to self-govern, interactivity, participation, creativity, etc. He further elaborated that social media are defined by two main attitudes: attitudes towards information ownership and attitudes towards productivity/activity. Attitudes towards information ownership, Stenmark explained, represent the shift, enabled by social media, from central control of information by management and information elites into the creation and ownership of information by people. In this respect Stenmark stressed that organizations have traditionally seen information dissemination as a managerial responsibility. Citing a review of management literature by Ciborra (2000) he discussed the view that centrality of control is one of the basic tenets of management in organizations and that the literature has unanimously argued in favor of rigid, highly standardized structures, tightly governed by top management. The problem with this kind of organizing is that information is often created independent from the people who use it on a regular basis (Tredinnick, 2006). Stenmark (2008) hence argued that social media enable a shift in these attitudes towards information in the sense that they allow information to become a product created by people and also owned by people.

In respect of attitude towards productivity/creativity, Stenmark explained that IT, as I discussed earlier and will discuss in the next section, has traditionally been used to automate organizational processes and practices in order to increase productivity. Stenmark argued that productivity is no longer the driving force for today’s organizations but creativity is. He further explained that social media allow information to be updated through interactive discussions and dialogues among people and also enable the development of ideas that might eventually be translated into creative products. He therefore argued that social media should be seen in terms of creativity rather than as productivity-enhancing tools and that creativity is the new productivity.

In respect of technology, scholars often refer to Web 2.0 technologies as an underlying technological platform for social media. Web 2.0 technologies refer to wikis, social networking tools, mashups, folksonomies, tagging, virtual worlds, etc. (Majchrzak, 2009). As I mentioned earlier, Treem & Leonardi (2012) identified four key affordances that represent unique behaviors of social media. These include visibility, persistence, editability and association. Table 4 below shows a summary of these affordances. Visibility refers to users’ ability to make their knowledge, preferences, behaviors and communication network connections that were once indivisible or very hard to see visible to others in the organization. Treem & Leonardi noted that this affordance distinguishes social media from
other forms of computer-mediated communication such as emails or instant messaging that often afford low levels of visibility. They also explained one common social media feature: the possibility to present content communally in a sense that contributed content can be easily located and viewed by other people.

![Table 4: Summary of social media affordances (Treem & Leonardi, 2012).](image-url)
The other affordance is persistence, related to the visibility of content. Persistence, Treem & Leonardi argued, refers to maintaining accessibility to content in its original form even after the contributor has finished his or her presentation. They referred to information posted on a blog, a wiki, or a social networking site in order to show how this information remains available for others even after the user logs out. This, they said, is different from information that is exchanged through an instant messenger, for instance, because in this case information would be bounded with time and usually this information is not recorded.

The third social media affordance is Editability. It refers to individuals’ ability to spend time and effort crafting and redrafting a communicative act before it is viewed by others (Treem & Leonardi, 2012). It can also refer to the ability to revise and modify content that has already been communicated. As an example, Treem & Leonardi explained that people have little to do to revise something in an email they sent to people compared to what they can do when they contribute something into a wiki in terms of revising, rewriting, and reorganizing content. This affordance can thus help users of social media correct any potential errors so other users may never know about them. It can also help them to take into consideration the context in which their content is likely to be viewed and tailor their ideas accordingly (Treem & Leonardi, 2012).

Finally, association in social media exists in two forms. First, association between one person and another. This kind of association in social media, Treem & Leonardi argued, is different from associations in using emails because it is more explicit (e.g., friendship associations on Facebook). In emails, they said, there is little information about peoples’ communications or the nature of their relationships. The other form of associations is between a person to a piece of information. Examples of this are a wiki contribution or a blog post. In general, these four affordances offered by Treem & Leonardi, in my opinion, are the most exhaustive illustration of what social media can do and how they are different from previous technologies in organizations.

2.2.2 Organization

The IS literature has often been focused on the bureaucratic, rational model that views organization as a goal-seeking machine driven by rational decision making in pursuit of organizational goals (Checkland & Holwell, 1998). The general dominance of this mode of organizing was discussed by Weber (1978) who argued that: “The decisive reason for the advance of bureaucratic organization has always been its purely technical superiority over any other form of organization.” (p.
Most interestingly, they argued that the bureaucratic model of organizations is dominant in IS because it fits best with the fundamental nature of the computer. This argument implies the interplay between features of technology and organizations. To elaborate, Checkland & Holwell referred to Dahlbolm & Mathiassen (1993) who described organization as a bureaucracy in which management makes decisions and plans separate from the actual production, and those who work for these bureaucracies are not supposed to make decisions but are responsible for producing services according to formal instructions given by management and reporting any deviations or problems. This bureaucratic view of organization implies a hierarchical structure that represents the "original thread from which the fabric of organization was woven." (Zammuto et al., 2007, p. 750). Hierarchy in this respect, Zammuto et al. further explained, specifies authority relationships, determines information flows, and serves as the primary mechanism for control and coordination of activities in organizations. Reflecting on the interplay between features of technology and organizations Checkland & Holwell (1998) suggested that the computer is just an electronic version of such bureaucratic understandings of organization, and they provided elaboration on this by quoting Dahlbolm & Mathiassen (1992, p. 16): "A bureaucracy is like a computer, it is a powerful expression of mechanistic ideals. A bureaucratic organization is programmed, its work tasks are explicitly defined and formalized. It is a machine in which computing machines have their natural place, providing efficient processing and communication of information about products, activities, and resources. The computer is a perfect bureaucrat..."

The role of technology or IT in these views implies that it was mainly used to automate existing operations by supporting routine information collection and storage tasks and replacing paper and people with electronic tools without really changing the way work was done (Zammuto et al., 2007). As a result, Zammuto et al. (2007) argued, IT reinforced traditional, bureaucratic approach for handling uncertainty and information complexity in organizations; something they called "automated plumbing". Zammuto et al. noted an interesting observation here that is because IT was only used to automate existing organizational practices and eventually reinforce the already bureaucratic structure of organizations the role of IT was often deemed negligible, and hence black boxed, in understandings of organization theory. Zammuto and colleagues explained that these views of IT were dominant in the 1980s and things started to change at the beginning of the 1990s when IT computing capabilities became more powerful supplanting the organization hierarchy’s role in

![Figure 1: The simple model of an organization presented, or implicit in much of the IS literature (Checkland & Holwell, 1998 after Aiba 1993).](image-url)
Most interestingly, they argued that the bureaucratic model of organizations is dominant in IS because it fits best with the fundamental nature of the computer. This argument implies the interplay between features of technology and organizations. To elaborate, Checkland & Holwell referred to Dahlbom & Mathiassen (1993) who described organization as a bureaucracy in which management makes decisions and plans separate from the actual production, and those who work for these bureaucracies are not supposed to make decisions but are responsible for producing services according to formal instructions given by management and reporting any deviations or problems. This bureaucratic view of organization implies a hierarchal structure that represents the “the original thread from which the fabric of organization was woven.” (Zammuto et al., 2007, p. 750). Hierarchy in this respect, Zammuto et al. further explained, specifies authority relationships, determines information flows, and serves as the primary mechanism for control and coordination of activities in organizations. Reflecting on the interplay between features of technology and organizations Checkland & Holwell (1998) suggested that the computer is just an electronic version of such bureaucratic understandings of organization, and they provided elaboration on this by quoting Dahlbom & Mathiassen (1992, p. 16): “A bureaucracy is like a computer, it is a powerful expression of mechanistic ideals. A bureaucratic organization is programmed, its work tasks are explicitly defined and formalized. It is a machine in which computing machines have their natural place, providing efficient processing and communication of information about products, activities, and resources. The computer is a perfect bureaucrat...”

The role of technology or IT in these views imply that it was mainly used to automate existing operations by supporting routine information collection and storage tasks and replacing paper and people with electronic tools without really changing the way work was done (Zammuto et al., 2007). As a result, Zammuto et al. (2007) argued, IT reinforced traditional, bureaucratic approach for handling uncertainty and information complexity in organizations; something they called “automated plumbing”. Zammuto et al. noted an interesting observation here that is because IT was only used to automate existing organizational practices and eventually reinforce the already bureaucratic structure of organizations the role of IT was often deemed negligible, and hence black boxed, in understandings of organization theory. Zammuto and colleagues explained that these views of IT were dominant in the 1980s and things started to change at the beginning of the 1990s when IT computing capabilities became more powerful supplanting the organization hierarchy’s role in
coordinating and controlling activities. These developments, Zammuto et al. argued, have changed the fabric of organization and new flexible, less hierarchical conceptions of organizing are therefore needed. I shall discuss these changes in more details in the next section.

But the position I take here, despite my agreement with Zammuto et al. about the potential for transforming organizations by IT, is that an organization is, in some sense, always hierarchically structured with formal relationships defining interactions among its members, rules, norms, and values governing the ways people work, and bureaucratic top-down decision making as the core of organizational practice and function. Some degree of structure and hierarchy, that is, has to be inevitable. The empirical questions have to do with how much transformation, and in what areas, are made possible with the introduction of new technologies, and how existing organizational structures might mediate that process. My motivation for adopting such a view is twofold. First, and most important, the two organizations examined in this thesis exhibited such characteristics and my empirical analysis of practices associated with using social media shows these tendencies of bureaucracy. Second, as Checkland & Holwell said, the bureaucratic model of organization is the most dominant in IS. I believe that the importance of this stems from the fact that, since the industrial revolution, and apparently until now, organizations often sought to apply and use different kinds of technologies, and more recently information technologies, to support and reinforce their bureaucratic structures. The situation might have changed, as Zammuto et al. suggested, due to increasing advancements by IT. But I believe that, despite considerable IT developments and large-scale adoption and use, organizations still maintain bureaucracy at the core for defining their formal character and structure. At least this is true for the two organizations studied in this thesis. I do acknowledge, however, that there might be a large number of organizations today that might have departed from bureaucratic forms of structuring and organizing in the strong Weberian sense. But by taking a position stressing organization as formal and hierarchic by definition one can see the problem of understanding the use of state-of-the-art technologies such as social media in organizations as an opportunity to address how such emerging and advanced technologies might affect the formal character of an organization.

To sum up, my view is that bureaucracy often defines the formal character of an organization. This bureaucrat character then defines role structures, norms, and values by which the work of members of an organization is determined. Finally, in light of my view of
organization, the compelling question that remains is how to understand the interplay between IT and organization, and one that underpins my specific aim in understanding the interplay between social media and organization characteristics. What effects might the changing character and role of IT have on the formal structure of organization and forms of organizing and how is this in turn mediated by existing organizational structures. This is a general and rather broad question. But its importance here lies in my interest in understanding how the use of social media, which many suggest have a transformational impact, by formal organizations, really affects their structures and forms of organizing. Referring back to the view that computer is a bureaucrat whether social media, as advanced technologies, act bureaucratically or not is an open question that is subject for investigation. This whole thesis is centered on investigating this issue by seeking to understand the ways by which potential changes associated with social media might affect the formal character of an organization.

2.3 IT Use in Organizations

In this section I aim to focus on the use of information technology (IT) in organizations and how they impact each other. The question of how IT is used in organizations is a central interest in IS research. In fact, this interest dates back to the times of the industrial revolution when organization theorists started to investigate the impact of technology on organization structures. At the time, technology was often used as a tool for automating existing organizational processes and practices to increase efficiency and performance (Zammuto et al., 2007). The use of technology for automation purposes resulted in an increased sense of certainty and control over organizational production by managers and in this way the main role of IT was to reinforce the hierarchic structures of organizations (Zuboff, 1988). Many organizational theorists (e.g., Woodward, 1958; Perrow, 1967) thus perceived technology as a material determinant of organizations’ structures and processes and was often equated with production systems (Leonardi & Barley, 2010; Orlikowski & Barley, 2001). As a result, most early research on the role of technology in organizations was primarily concerned in examining how technologies are used to support existing practices and routine operations in organizations without considering how technology might be used to support new emergent organizational practices and processes (Zammuto et al., 2007). So, in early stages, the relationship between IT and organization was primarily deterministic (Leonardi & Barley, 2010),
hence IT was limited in the sense that it was only used to support and reinforce existing organizational structures and processes.

Later rapid technological developments have arguably changed the relationship between IT and organization (Lucas & Baroudi, 1994; Zammuto et al., 2007). Robey & Boudreau (1999) explained that developments in computer and Internet technologies as well as increasing advancements in networking capabilities have led many to predict wide organizational transformations, revised structural forms, etc. Dewett & Jones (2001) explained that the early 1990s witnessed huge investments in IT by organizations that exceeded any other kinds of investments at the time. Zammuto et al. (2007) also explained that the early 1990s marked a shift in this relationship turning IT from a tool used to automate existing organizational practices into an enabler of large-scale organizational changes. For instance, they referred to integrative aspects of Enterprise Resource Planning Systems (ERP) and how these technological aspects decreased the need to move information through organizational hierarchy and allowed people to organize work and information by themselves.

This evolving relationship between IT and organization resulted in huge consequences for organizations (Lucas & Baroudi, 1994; Zammuto et al., 2007; Dewett & Jones, 2001). For instance, Zammuto et al. (2007) discussed how the fabric of organizations has changed due to these technological-triggered consequences. They stressed that the relationship between IT and organization has changed in the sense that IT is supplanting the role of organizational hierarchies in coordinating and controlling activities. Their central argument is based on the idea that combinations of organizational and technological features continue to create possibilities that affect organizational form and function. Lucas & Baroudi (1994) also discussed how IT helped to reduce and manage complexity of traditional organizations. They suggested that networked technologies have assisted in the transformation of centralized, hierarchical organizations into adhocracies and team-based organizations. These scholars of technology and organization have increasingly argued for constructivist ideas emphasizing that organizational change is essentially socially constructed (Leonardi & Barley, 2010). That is to say “organizational change emerges from an ongoing stream of social action in which people respond to a technology’s constraints and affordances, as well as to each other” (ibid, p.1).

Other scholars such as Robey & Boudreau (1999) argued that empirical research on technology and organization often suggests inconsistencies about the role of IT in enabling organizational change. Contrary to Zammuto et al. (2007) Robey & Boudreau explained that the use of IT might involve forces that both promote
and impede organizational change. They do acknowledge, however, and share with Zammuto et al., that IT is seen as a powerful force for enabling radically new designs for organizations. But they argued that the logic implied in this view is primarily deterministic. So they suggested the logic of opposition as one way to understand opposing forces and outcomes of using IT in organizations and account for possible contradictions and paradoxes that might result from using IT. They later discussed four theoretical logics that incorporate the logic of opposition and which can be used to acknowledge the contradictory organizational consequences of IT. I believe that these four logics are useful to understand the mutual interplay between IT and organization.

The four logics include organizational politics, organizational culture, institutional theory, and organizational learning. Organizational politics refer to power and opposing interests in using IT as a resource. Power, or the concept of disciplinary power, plays an important role in organizational politics in the sense that it is embedded in social structures and technologies that control social action and organizational change. Organizational culture, as one of the logics of opposition, implies that IT are produced and interpreted as cultural artifacts reflecting diverse beliefs, assumptions, and values (Robey & Boudreau, 1999). Robey & Boudreau discussed three perspectives on culture in organizations including integration, differentiation, and fragmentation. The integration perspective portrays culture as unified and consistent opposing organizational change. The differentiation perspective suggests that culture is composed of subcultures where conflicts and opposing interests exist across them. Then the fragmentation perspective implies that culture is essentially ambiguous since any cultural symbol (e.g., IT) can be interpreted differently resulting in contradictory consequences of IT in organizations. The institutional theory, the third logic of opposition, focuses on institutionalized patterns and practices in an organization that are often difficult to change. So using IT, from an institutional perspective, might involve adaptation to or reformation of these persistent patterns and practices, and difficulties to change them with IT. The last logic of opposition is organizational learning. The role of IT in organizational learning was suggested to be more than storing and retrieving knowledge in organizations. IT can also contribute into supporting organizational memory that determines the capacity for organizations to learn and develop new knowledge. The logic of opposition, in this respect, suggests that IT can both enable and disable organizational learning.

Further, Lucas & Baroudi (1994) treated IT as one of the variables for designing organizations. They explained that IT-enabled design
variables may be totally different from traditional design variables or extension of traditional ones. Variables such as virtual components, electronic communication, production automation, and electronic customer/supplier communication are among various components that Lucas & Baroudi presented as IT-enabled design variables. Later, they presented four prototypical organizations that exhibit a mixture of traditional and IT design variables including: virtual, negotiated, traditional, and vertically integrated conglomerates. One important observation here is that IT-enabled design variables are drivers for such organizations and each variable plays a distinct role either to substitute traditional elements or to maintain existing ones. This is in line with the discussion by Robey & Boudreau (1999) about the logic of opposition suggesting that IT may have contradictory consequences for organizations. It is also consistent with results from IS research using structuration models of technology (e.g., Orlikowski, 2000) suggesting the use of IT as a driver for structures that might either enable the emergence of new forms of organizing practices or reinforce existing ones.

A different yet related view to that of Lucas & Baroudi was suggested by Dewett & Jones (2001). They argued that IT can moderate the effects of organizational characteristics such as structure, size, interorganizational relations and culture on organizational outcomes, primarily on organizational efficiency and innovation, by altering or changing the impact of these characteristics. They identified two main mechanisms by which IT can do that: information efficiencies and information synergies. Information efficiencies, Dewett & Jones described, refer to cost and time savings that result from using IT by individuals and groups since IT helps them to do more work but with more efficient capabilities of gathering and analyzing data across organization units required to perform different tasks. Information synergies refer to performance gains by two or more individuals when IT allows them to pool their recourses and collaborate together to achieve their work tasks.

More recently, various kinds of information technologies have become ubiquitous and available in every aspect of our daily lives (Leonardi, 2011). Nowadays, the effect of IT on people, societies, and organizations is profound. For organizations ITs are no longer perceived as production systems or tools used to enable and support the automation of work. IT has become an indispensible enabler for almost every new and existing practice in the modern organizations. The phenomenon of social media represents the most recent evolution of this technology. Social media technologies are increasingly adopted by organizations for the purpose of enabling new practices and novel forms of organizing that differ from practices
enabled by previous technologies (e.g., Treem & Leonardi, 2012; Stenmark, 2008; Wagner, 2006; Hasan & Pfaff, 2006). In this respect, many scholars suggested that social media may have the potential to transform organizational hierarchies by reducing control and democratizing the flow and exchange of knowledge within and outside organizations (Aral et al., 2013; Wagner, 2006; Hasan & Pfaff, 2006; Bibbo et al., 2010; Holtzblatt et al., 2010). Treem & Leonardi, for instance, argued that social media involve affordances that have important consequences for organizational processes because they make possible new types of behaviors (cf. section 2.1.1) that were previously impossible to achieve. In a similar vein, Zammuto et al. (2007) discussed affordances of new technologies and new forms of organizing. They argued that the combination of IT and organization features might result in flexible and less hierarchical forms of organizing and suggested a shift from organizational forms into forms of organizing to account for unpredictable forms that might emerge as a result of this combination.

Literature on the role of IT in organizations can be summarized under two main themes: first the role of IT in supporting existing practices (and routines, norms, structures, etc.) and creating new ones, and second the impact of IT on organization form, function, practices and outcomes. I think these two themes characterize what much of the literature on IT and organization focuses on. Since technology continues to evolve there will continue to be new possibilities for the role of IT in organizations and how they might impact on organizational form and function. In the next section, I build up on this general discussion of the relationship between IT and organization but with a specific focus on the interplay between key components including technology, structure, practice, and organizing.

2.4 ‘twisting things together’: Technology, Organizing, Structure, and Practice

To conclude this chapter I discuss here four basic, interrelated concepts that will be present across several parts of this thesis. These concepts often appear in studies addressing the tensions between material and social agencies in relation to technology and organizing (e.g., Leonardi, 2012, 2011; Orlikowski, 2007; Kallinikos et al., 2012; Leonardi & Barley, 2008; Leonardi & Barley, 2010; Orlikowski & Scott, 2008). Most often, the focus of these studies is on understanding the interaction (or entanglement, imbrication, intertwining, melding, etc.) of material forces (determinism) and
social agencies (voluntarism) in the practice of using technology. They try to offer an understanding of how every organizational practice is bounded in some way by both the characteristics or affordances of material artifacts and peoples’ responses (human agency) to those affordances and constraints. They also address questions of how technological arrangements affect and shape the way people work and organize and eventually shift the institutional context where technology is embedded and used.

The primary motive for these studies, it is suggested, is to seek an entangled relationship between material and social agencies because technology is often missing in action and absent in the world of organizing (Orlikowski & Scott, 2008). So scholars attempting to understand how technology drives organizational change often tended to stick with debates on determinism and social constructivism (Leonardi & Barley, 2010; Leonardi & Barley, 2008). Early writings on the relationship between technology and structure portrayed technology as a causal agent for organizational change and overlooked how social systems affect and shape technology use (Leonardi & Barley, 2010; Kallinikos et al., 2012). It was in fact taken for granted that technology determines shifts in the occupational structures and other aspects of organizations. Later in 1980s and 1990s scholars started to shift from these deterministic ideas into developing more constructivist agendas as interest in understanding the social dynamics involved in using technology was increasing and researchers began to explore how people and organizations respond differently to technology (Leonardi & Barley, 2010; Leonardi, 2012).

Orlikowski & Scott (2008) conducted an analysis of research published on technology and organizing and identified two main streams based on their view of technology, and which they called: discrete entities and mutually dependent ensembles. In the first stream technology is viewed as either an independent or moderating variable. As an independent variable technology may have a range of effects and impacts on organizational outcomes. As a moderating variable technology here has various influences on the relationship between technological variables such as structure and organizational outcomes such as innovation and learning. Technology in the second stream is understood as part of the complex process through which organizing is accomplished. The focus here, Orlikowski & Scott explained, is on the interaction between people, organizations, and technology. This interaction and the outcomes associated with it are seen to be mutually dependent, integrative, and co-evolving over time. Later Orlikowski & Scott proposed a third stream to address the problems of stream one and two mainly the assumption that technology and humans or organization are separate. This third
stream they call sociomaterial assemblages. Instead of focusing on impact as in stream one or interactions as in stream two this third stream focuses on agencies. The central premise of sociomateriality, in their view, (cf. section 2.1 above for more details) is that “any distinction of humans and technologies is analytical only, and done with the recognition that these entities necessarily entail each other in practice.” (Orlikowski & Scott, 2008, p. 456). In this view Orlikowski & Scott (2008) stressed that sociomaterial practices are essentially important for organizing because these practices don’t just mediate work, but they also perform organizational realities. They further argued that “practices are always sociomaterial, and this sociomateriality is integral, inherent, and constitutive shaping the contours and possibilities of everyday organizing.” (Orlikowski & Scott, 2008, p. 463).

The concept of practice is central to sociomateriality and related arguments about technology and organizing. In this respect, theorists of this kind are moving away from a language of causation and, equally, away from an interpretive, or naïve constructivist, approach, towards an explanatory programme which recognizes the contingent and emergent nature of practice. The shift into more constructivist agendas was focused on how technology could engender various unexpected shifts in informal organizing processes (Leonardi, 2012). Leonardi summarized this as follows: “... technologies did not always bring predictable effects to the informal organization of work, or that one organizational structure best suited a particular type of technology. Instead it was only once technological artifacts were enmeshed in a web of organizational, occupational and institutional forces that people interpreted them and variously employed them in the practice of their work.” These shifts retained an explanatory purpose, but it became increasingly obvious that such an explanatory objective also needed a more solid empirical or descriptive/analytic foundation, especially if their dynamic character was to be explored. Hence, as scholars tended to shift their focus into emergence, enactment, and unpredictability terms like technologies-in-practice (see next chapter for more details), sociomateriality (Orlikowski, 2007; Kallinikos et al., 2012; Leonardi, 2012; Orlikowski & Scott, 2008; Leonardi & Barley, 2010) began to emerge and emphasis on practice was essential to understanding technology and organizing processes.

Practice is understood here as a social arena in which activities are collectively negotiated and therefore practice is not equivalent to individual activity (Leonardi, 2012). Following Giddens (1984) Leonardi reflected his view on practice: “the arena of practice is the medium and outcome of institutional structures that guide individuals’ processes of interpretation and evaluation, and hence
their activities.” (p. 16). In a similar vein, practice is also understood as the space where the material and the social become *constitutively* entangled rather than being seen as having a causal relationship (Orlikowski, 2010). Given this understanding, practice can be seen as sociomaterial reflecting how the material and social are performed together (Feldman & Orlikowski, 2011; Orlikowski & Scott, 2008; Leonardi, 2012). In addition, Feldman & Orlikowski (2011) discussed the importance of practice, or the practice lens, since it allows for understanding contemporary organizing that is often understood by novelty, unpredictability, and indetermination.
CHAPTER THREE
THEORETICAL FOUNDATION

This chapter aims to communicate with the reader the theoretical foundation upon which the empirical studies in this thesis are based. Mainly, it offers an overview of two main theories: Giddens’ Structuration Theory and Orlikowski’s Practice Lens for Studying Technology Use. Each theory is described and key elements and concepts pertaining to both theories are also outlined and discussed.

3.1 Structuration Theory (in IS)

It is said that the theory of structuration is a general and abstract social theory that is not specific to any particular field. In order to avoid a long theoretical discourse about this ‘broad’ theory and draw the boundaries that specify my areas of concern in structuration theory my discussion here will focus on aspects of the theory of structuration in the context of IS research. Scholars in the field of Information Systems have often borrowed various kinds of social theories from other fields in the social sciences. In fact, social theory plays, or even played, a substantial role in the development of the IS field (Rose & Scheepers, 2001). One of the most cited social theories in IS is Giddens’ structuration theory (Jones & Karsten, 2008). It is often considered a highly influential social theory in IS and many scholars (e.g., Orlikowski & Barley, 1991; Orlikowski, 1992; Orlikowski, 2000; DeSanctis & Poole, 1994) have tried to develop IS-specific version of the theory of structuration. Interestingly, structuration theory was developed by Anthony Giddens, an English sociologist, as a general theory for social organization rather than a theory specific to IS or any other field (Jones & Karsten, 2008). In addition to this, there is a total neglect of technology, which is a
prime concern in IS, in Giddens’ theory of structuration. But, despite this fact, Jones & Karsten (2008) explained a number of strengths that made structuration theory attractive, at least, for IS scholars. These include the provision of a non-dualistic account of the structure/agency relationship (which aimed at avoiding social or technological determinism), dynamic conceptualization of structure as being continuously produced and reproduced through situated practice (which allows the study of change), and the broad-ranging account of social processes (which interest many IS scholars). In this respect, of course, it can meet the explanatory, descriptive and processual purposes mentioned in the last chapter.

Rose & Scheepers (2001) discussed two different approaches by which IS scholars tried to use structuration theory: theorizing and analysis. In respect of theorizing, Rose & Scheepers explained that many attempts have been undertaken by IS scholars to theorize aspects of IS using structuration theory. The ‘duality of technology’ approach by Orlikowski (1992) and Orlikowski & Barley (1991) and Adaptive Structuration Theory by Poole & DeSanctis (1994) are two important IS versions of structuration theory (Jones & Karsten, 2008). For instance, the work of Orlikowski & Barley (1991) and Orlikowski (1992) was focused on developing the theoretical notion of duality of technology, drawing on the concept of duality (of structure) in structuration theory, in an attempt to understand the relationship between IT and organization. Orlikowski & Barley explained that this duality is expressed by both its constituted nature, that is technology is constituted by subjective human action within a specific structural and cultural context, and constitutive role, that describes technology as an objective set of rules and resources mediating human action and hence transforming the context where technology is created and used. Another attempt to theorize IS in terms of structuration theory was made by DeSanctis & Poole (1994) in their work on Adaptive Structuration Theory (AST). Such theorization attempts were labeled by Jones & Karsten (2008), as we have seen, as the development of an IS-specific version of structuration theory. Rose & Scheepers (2001) discussed the weaknesses in such theorizing attempts primarily stressing the issue of equating technology with structure and structural constraints. They argued that this issue is not consistent with structuration theory. The reason for this inconsistency, they further argued, is that Giddens emphasized structure as something that only exists in the minds of humans and therefore cannot be objectified as a property of material artifacts such as technology. The works of both Orlikowski & Barley (1991) and DeSanctis & Poole (1994) suffer from such a problem. More recently, Orlikowski (2000) offered a ‘modified’ structuration model of technology that addresses
the view of structure by proposing the practice lens for studying technology use. This lens constitutes a fundamental part of my theoretical foundation and will be discussed in more detail in the next section.

In respect of analysis Rose & Scheepers (2001) explained that analyzing using structuration theory means applying the theory to gain insight into empirical situations. Jones & Karsten (2008) provided a number of key features of structuration theory and their empirical relevance to IS research, which had an influence on employing structurational ideas in my empirical inquiry. A summary of these features is shown in Table 5 below.

There are various perspectives on the empirical relevance of structuration theory. Scholars such as Gregson (1989) criticized the relevance of structuration theory in empirical research arguing that the theory is too general to address the specifics of an empirical setting. Jones & Karsten (2008) suggested that Giddens seems to acknowledge this fact about his theory by describing it “as an example of theory, as a generic category, rather than of theories, or explanatory generalizations.” (p. 134). Jones & Karsten discussed that because of this general and abstract nature of structuration theory, some scholars have suggested that “structuration theory should be understood as a meta-theory, a way of thinking about the world, rather than an empirically testable explanation of social behavior.” (p. 134). Another aspect related to using structuration theory in empirical research is the kinds of methods that can be possibly used in such research. Jones et al. (2004) discussed Giddens’ views on qualitative and quantitative methods. They explained that Giddens sees these methods as complementary rather than antagonistic aspects of social research. While the hermeneutic epistemology of Giddens’ theory of structuration might make it more suited with empirical research using qualitative methods, Jones et al. (2004, p. 314) explained: “while not ruling out the use of quantitative methods, the positivist-testing style of research with which they are traditionally associated is inconsistent with Giddens’ hermeneutic epistemology...This doesn’t mean, however, that IS researchers employing Giddens in their work cannot undertake comparative studies or explore causal explanations, but that their findings cannot constitute the law-like generalizations sought by positivist researchers, since interpretation and human agency are fundamental to his position.”
<table>
<thead>
<tr>
<th>Key Feature</th>
<th>Implication for IS research</th>
</tr>
</thead>
<tbody>
<tr>
<td>All human beings are knowledgeable agents.</td>
<td>Researchers should consider social actors as being highly knowledgeable about what they do (even if they are not always able to express it verbally) and as actively involved in the enactment of social practices (rather than being controlled by structural forces of which they are unaware).</td>
</tr>
<tr>
<td>The knowlegability of human agents is always bounded on the one hand by the unconscious and on the other by the unacknowledged conditions and unintended consequences of action.</td>
<td>Social actors’ understanding of their practices is necessarily limited, so researchers should consider their accounts as offering only a partial explanation of their actions, which needs to be supplemented by other evidence.</td>
</tr>
<tr>
<td>The study of day-to-day life is integral to the analysis of the reproduction of institutionalized practices.</td>
<td>If researchers want to understand large-scale, institutional, social phenomena that persist over time, they need to study the everyday practices of the relevant social actors that constitute them.</td>
</tr>
<tr>
<td>Routine, psychologically linked to the minimizing of unconscious sources of anxiety, is the predominant form of day-to-day social activity.</td>
<td>Most everyday social practices that researchers study are routinized (tending to reproduce social structures), and hence stable over time, because this is psychologically reassuring for social actors.</td>
</tr>
<tr>
<td>The study of context, or of the contextualization of interaction, is inherent in the investigation of social reproduction.</td>
<td>To understand how social practices are sustained over time, researchers need to study the particular setting in which they take place rather than controlling it.</td>
</tr>
<tr>
<td>No unitary meaning can be given to constraint in social analysis.</td>
<td>A variety of different types of constraint (material, sanction, and structural) may enable and restrict social actors in a particular setting.</td>
</tr>
<tr>
<td>Among the properties of social systems, structural properties are particularly important, since they specify overall types of society.</td>
<td>Different types of society are characterized by different structural properties (that shape the norms, meanings, and power relations of social practices).</td>
</tr>
<tr>
<td>The study of power cannot be regarded as a second-order consideration in the social sciences</td>
<td>Accounts of social practices need to give particular attention to the operation of power relationships.</td>
</tr>
</tbody>
</table>

**Table 5:** *Key features of structuration theory for IS research (Jones & Karsten, 2008).*
In addition Jones & Karsten (2008) and Jones et al. (2004) discussed the application of structurational concepts in IS research as a background for analysis and to illustrate structuration in practice. But Giddens’ position, Jones & Karsten and Jones et al. further discussed, on the use of the principles of his theory is that they “do not supply concepts useful for the actual prosecution of research” (Giddens, 1990, p. 311). Still, Giddens proposed that the appropriate role of structuration in empirical research is the use of principles derived from it as sensitizing devices that “provide an explication of the logic of research into human social activities and cultural products (Giddens, 1991, p. 213). This description by Giddens of how he sees the use of structuration theory in empirical research best represents the way I used structurational concepts and principles in guiding my empirical data collection as well as analyzing this empirical data. In doing so, structuration theory often served the role of a background, informing theory that helps me to synthesize empirical instances in structurational terms. More discussion on the use of theory in my research can be found in the next chapter.

3.1.1 Basic Elements of Structuration Theory

Structure, Structuration: the concept of structuration, a term Giddens borrowed from French, represents the core concept of the theory of structuration. Jones & Karsten (2008) discussed that Giddens aimed at using this concept to emphasize that structure is continuously produced and reproduced in every day social practice. In this view, Giddens takes a position on structure that differs from the positions of positivists who portray structure either as law-like regularities or patterns of aggregate behavior. In this respect, Giddens & Pierson (1998, p. 76) explained: “We should see social life, not just as society out there or just the product of the individual here, but as a series of ongoing activities and practices that people carry on, which at the same time reproduce larger institutions.”

As such Giddens (1984) defined structuration as “conditions governing the continuity or transformation of structures, and therefore the reproduction of social systems”. In this respect, Giddens also takes a different view of structure. He defined structure as “a set of rules and resources, or sets of transformation relations, organized as properties of social systems”. In this view, Giddens (1984, p. 17) discussed that “structure is a ‘virtual order’ of transformative relations” in an attempt to emphasize that “social systems, as reproduced social practices, do not have ‘structures’ but rather exhibit ‘structural properties’ and that structure exists, as time-space presence, only in its instantiations in such practices and as memory traces orienting the conduct of knowledgeable human
agents.” Giddens & Pierson (1998) further explained that the rules and resources constituting structure are only in the heads of agents. Despite Giddens’ emphasis on the mentational nature of structure, Jones & Karsten (2008) explained, he acknowledges the existence of the material world and its effects on the actions of people. Structure, in other words, is something quite distinct from the material for Giddens. Structure, for him, is the persistence and predictability of human action.

The main force of Giddens’ work is to reconceptualize the relationship between structure and agency. Giddens rejected the traditional dualistic views that suggest objective social structures or autonomous human agents to be determinants of social phenomena (Jones & Karsten, 2008). Instead, Giddens proposed that structure and agency are a mutually constitutive duality.

**Agency:** Giddens’ view of agency, or human agency, is strongly voluntaristic (Jones & Karsten, 2008). Giddens argued that human agents have always the possibility to do the otherwise. Also, Giddens described human agency as the capacity to make a difference (Rose & Scheepers, 1998). Given this view of agency, structure (in the eyes of Giddens) is always enabling and constraining (Jones & Karsten, 2008; Rose & Scheepers, 2001). Further, Jones & Karsten (2008) explained that Giddens viewed power as a capability manifested in action. Giddens (1984, p. 14) stressed: “To be able to 'act otherwise' means being able to intervene in the world, or to refrain from such intervention, with the effect of influencing a specific process or state of affairs. This presumes that to be an agent is to be able to deploy (chronically, in the flow of daily life) a range of causal powers, including that of influencing those deployed by others. Action depends upon the capability of the individual to 'make a difference' to a pre-existing state of affairs or course of events. An agent ceases to be such if he or she loses the capability to 'make a difference', that is, to exercise some sort of power.” Agency, therefore, is intimately tied to power (Rose & Scheepers, 2001).

Giddens (1984, p. 15) further discussed that “action logically involves power in the sense of transformative capacity.” In this respect, power involves the exploitation of resources (Rose & Scheepers, 2001). These “resources (focused by signification and legitimation) are structured properties of social systems, drawn on and reproduced by knowledgeable agents in the course of interaction.” (Giddens, 1984, p. 15). Jones & Karsten (2008) discussed two types of resources: allocative that refers to transformative capacity generating command over objects, goods or material phenomena, and authoritative that refers to transformative capacity generating commands over persons or actors. In relation to power, Giddens
discussed that resources are “media through which power is exercised, as a routine element of the instantiation of conduct in social reproduction”. (p. 16). In addition, Giddens further added: “Power within social systems which enjoy some continuity over time and space presumes regularized relations of autonomy and dependence between actors or collectivities in contexts of social interaction. But all forms of dependence offer some resources whereby those who are subordinate can influence the activities of their superiors. This is what I call the dialectic of control in social systems.” (p. 16).

Duality of Structure: as I mentioned before the duality of structure implies that structure and agency are mutually constituted in social practice. This notion of duality is central to Giddens’ argument in his theory of structuration (Jones & Karsten, 2008). In developing the notion of duality of structure he sought to transcend traditional dualisms by recasting the independence of structure and agency (dualism) as a duality (Rose & Scheepers, 2001; Jones & Karsten, 2008). Giddens (1984, p. 25) explained: “Crucial to the idea of structuration is the theorem of the duality of structure ... The constitution of agents and structures are not two independently given sets of phenomena, a dualism, but represent a duality. According to the notion of the duality of structure, the structural properties of social systems are both medium and outcome of the practices they recursively organize.” He further emphasized that: “The duality of structure is always the main grounding of continuities in social production across time-space.” (p. 26). In order to explain the notion of duality and the mutual constitution of structure and agency he developed dimensions for the duality of structure. These dimensions are shown in Figure 2 below:

![Figure 2: The dimensions of the duality of structure (Giddens, 1984).](image-url)
As shown in Figure 2 Giddens divided social structures (signification, domination, legitimation) and human interaction (communication, power, sanctions) into three dimensions, mainly for analytical purposes. The modalities in the middle, what Giddens call modalities of structuration, “serve to clarify the main dimensions of the duality of structure in interaction, relating the knowledgeable capacities of agents to structural features.” (p. 28) As such, Giddens further explained the role of modalities of structuration, “Actors draw upon modalities of structuration in the reproduction of systems of interaction, by the same token reconstituting their structural properties” (p. 28). To further explain, Rose & Scheepers (2001) discussed that humans draw on interpretive schemes (which are “the modes of typification incorporated within actor’s stocks of knowledge, applied reflexively in the sustaining of communication. The stocks of knowledge which actors draw upon in the production and reproduction of interaction are the same as those whereby they are able to make accounts, offer reasons, etc.” (Giddens, 1984, p. 29)) as they communicate with each other in order to make sense of their interactions. At the same time, these interactions influence interpretative schemes, hence modify and reproduce them, which are embedded in social structure as meaning or signification.

An everyday life example illustrating duality of structure is provided by Jones & Karsten (2008). They suggested that the clothes that people wear at work reflect the influence of social structures that are reproduced by conforming to accepted practice. In respect of structures of signification, what people typically wear in an office or a hospital often reflects their roles. So when people meet somebody who is in a work setting and wearing a white coat they would assume that he or she is a doctor who works at a hospital or a laboratory. In this way, people draw on structures of signification and so they become informed about the role of the person. Jones & Karsten further discussed this example to clarify structures of domination. They said that clothes do not only indicate the identity of an individual but they also convey messages about the powers an individual may hold. The uniforms worn by police officers, they suggested, give them certain powers such as accessing a crime scene or influencing people’s behavior in ways that would be impossible if they were in plain clothes. In this respect, Giddens (1984) explained that domination depends upon the mobilization of authoritative and allocative resources. So domination, in the case of police officers, is a result of mobilizing authoritative resources allowing them to generate command over others. In respect of structures of legitimation, Jones & Karsten explained, they define the appropriate dress code in a particular work setting that may invoke sanctions. So there might be
certain limitations on how casual business attire might be acceptable or not.

Hence, this example by Jones & Karsten is a good way to understand the duality of structure in the sense of understanding how structure and agency are mutually constituted. But it also shows how social practices influence the production and reproduction of social structures. That is, for instance, when people are committed to the dress code it is very likely that it will influence new employees who will follow, hence maintaining, or reproducing, the dress code. If, however, certain individuals decided to challenge the code, new structures may be produced and new dress trends may become common.

### 3.2 Practice Lens for Studying Technology Use

The practice lens for studying technology use was proposed by Orlikowski (2000). Many IS scholars (Jones & Karsten, 2008) see the development of this lens by Orlikowski as a ‘departure’ from her earlier duality of technology model (see Orlikowski & Barley, 1991 and Orlikowski, 1992), as she offered a modified version of this structurational model of technology by emphasizing structure as ‘virtual’, hence making her argument more aligned with that of Giddens. Her earlier model on duality of technology suggested that technology may assume structure; something that is at odds with Giddens’ ‘virtual’ view of structure. The practice lens for studying technology use thus focuses on “emergent technology structures enacted in practice rather than embodied structures fixed in technologies.” (p. 408).

In seeking to theorize the enactment of structure in practice, Orlikowski made a distinction between the use of technology and its artifactual character. She described a technological artifact as “the bundle of material and symbol properties packaged in some socially recognizable form, e.g., hardware, software, techniques” (p. 408). She then discussed the use of technology as what people do with a technological artifact in their recurrent, situated practices. She explained that the use of technology involves “a repeatedly experienced, personally ordered and edited version of the technological artifact, being experienced differently by different individuals and differently by the same individuals depending on the time or circumstance. In this aspect, it may be termed a technology-in-practice, to refer to the specific structure routinely enacted as we use the specific machine, technique, appliance, device, or gadget in recurrent ways in our everyday situated activities.” (p. 408 - 409). She
Giddens, Orlikowski emphasizes the mutual constitution of structure and agency. As shown in Figure 3 above, Orlikowski developed an adapted version of Giddens' duality of structure, highlighting how multiple technologies-in-practice are enacted in the use of technology. Similar to the example I discussed above to describe the duality of structure in structuration theory, Orlikowski draws on the same logic to explain the enactment of technologies-in-practice. Briefly, when people use technology they draw on the properties of the technological artifact, expectations, power and assumptions about the technology, and their knowledge of the institutional context and cultural and social conventions. Orlikowski then explained that their use of technology becomes structured by these experiences, meanings, assumptions, etc. and that this structuring enables the enactment of rules and resources in practice that then serve to structure future use of technology as people continue to use it recurrently. As such, she further discussed, “over time people constitute and reconstitute a structure of technology use, they enact a distinctive technology-in-practice” (p. 410).

In addition, Orlikowski later explained that continued habitual use of technology enables the reconstitution of technologies-in-practice in two forms: reinforcement when actors enact the same structure with no changes, or transformation when actors enact changed structures. In respect of changes in technologies-in-practice, Orlikowski discussed that these can be and are changed as people’s knowledge, skills, experiences, assumptions, motivations, power, etc. change. She elaborated: “As people enact modified technologies-in-practice they also change the facilities, norms, and interpretive schemes used in their use of the technology (as shown with the two-way arrows in Figure 3) by enacting various interpenetrating (and perhaps even contradictory) structures, actors experience a range of rules and resources that may generate knowledge of different structures and awareness of the possibilities for structural change.” (p. 412). As a closing point, it is important to mention that since changes always occur both in technology (e.g., adding new features, upgrading the software, etc.) as well as how people use it (changing motivations, purposes, etc.), Orlikowski argued, that technologies are never fully stable or complete and that we can only say it is stabilized for now.

Figure 3: The enactment of technologies-in-practice (Orlikowski, 2000).

Because Orlikowski sees technology-in-practice as a kind of structure she draw on Giddens’ notion of structure and his dimensions of the duality of structure. This means that, just like
Giddens, Orlikowski emphasizes the mutual constitution of structure and agency. As shown in Figure 3 above, Orlikowski developed an adapted version of Giddens’ duality of structure, highlighting how multiple technologies-in-practice are enacted in the use of technology. Similar to the example I discussed above to describe the duality of structure in structuration theory, Orlikowski draw on the same logic to explain the enactment of technologies-in-practice. Briefly, when people use technology they draw on the properties of the technological artifact, expectations, power and assumptions about the technology, and their knowledge of the institutional context and cultural and social conventions. Orlikowski then explained that their use of technology becomes structured by these experiences, meanings, assumptions, etc. and that this structuring enables the enactment of rules and resources in practice that then serve to structure future use of technology as people continue to use it recurrently. As such, she further discussed, “over time people constitute and reconstitute a structure of technology use, they enact a distinctive technology-in-practice” (p. 410).

In addition, Orlikowski later explained that continued habitual use of technology enables the reconstitution of technologies-in-practice in two forms: reinforcement when actors enact the same structure with no changes, or transformation when actors enact changed structures. In respect of changes in technologies-in-practice, Orlikowski discussed that these can be and are changed as peoples’ knowledge, skills, experiences, assumptions, motivations, power, and so on. change. She elaborated: “As people enact modified technologies-in-practice they also change the facilities, norms, and interpretive schemes used in their use of the technology (as shown with the two-way arrows in Figure 3) by enacting various interpenetrating (and perhaps even contradictory) structures, actors experience a range of rules and resources that may generate knowledge of different structures and awareness of the possibilities for structural change.” (p. 412). As a closing point, it is important to mention that since changes always occur both in technology (e.g., adding new features, upgrading the software, etc.) as well as how people use it (changing motivations, purposes, etc.), Orlikowski argued, that technologies are never fully stable or complete and that we can only say it is stabilized for now.
CHAPTER FOUR
EMPIRICAL METHOD

This chapter provides a thorough discussion of the method used in this thesis. It offers a discussion of the motivation for choosing a qualitative empirical method to investigate the research problem. It also presents the two empirical cases, CCC and IBM, where the empirical investigation took place. Then, it discusses in details the inquiry process which describes the actual empirical data collection at the two organizations. It then provides a discussion of the use of theory to guide the empirical data collection, analyze the data, and develop further theory during the research process. Finally, it outlines a number of ethical principles to show how the ethics of research have been treated and dealt with throughout the entire inquiry process.

4.1 Method Discussion – “for something to be considered scientific it must use the agreed set of conventions – the scientific method.”

Science, in simple terms, is the search for understanding (Hirschheim, 1992). Research is the prime form of scientific inquiry that serves as a vehicle to achieving such an understanding. However, “for something to be considered scientific it must use the agreed set of conventions – the scientific method.” (Hirschheim, 1992, p. 1). It is thus essential in any kind of research to use a scientific method accompanied by a set of tools and materials that drives scientific inquiry and the production of scientific knowledge. In accordance with this necessity, I chose to use a qualitative method to understand and inquire about the problem presented in this thesis. Denzin & Lincoln (2000) defined qualitative research as “a situated activity that locates the observer in the world. It consists of a set of interpretive,
material practices that make the world visible. These practices transform the world. They turn the world into a series of representations, including field notes, interviews, conversations, photographs, recordings, and memos to the self. Qualitative research involves an interpretive, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them.” (p. 3). Clearly, this exhaustive definition of qualitative research emphasizes an interpretative approach that focuses on understanding the meanings that people associate to the things they do in their natural settings.

In my research, I used qualitative methods to collect qualitative empirical data that is interpretable and allow for making sense of the meanings implied in people’s experiences and practices. Because my aim was to understand these experiences and practices I needed to get such interpretable data, primarily text, through which I can obtain descriptions of actual technology use practices by people as well as of the organizational structure in which people and technology are embedded. It is useful to note at this point that some scholars (e.g. Rowlands, 2003) distinguish between qualitative and interpretative research based on their underlying episteme. My position here is that the type of qualitative inquiry in this thesis is essentially interpretive given my constructivist view of the nature of the problem. This is in line with the contention made by Klein & Myers (1999) that qualitative research may or may not be interpretive depending upon the philosophical assumptions of the researcher. Hence, my qualitative method is of an interpretive nature. In the next section, I provide a detailed account for why I chose a qualitative method as well as its importance in achieving the aims of my research. Later on, I provide a thorough discussion of the kinds of qualitative methods I used and how I used them throughout my research.

4.1.1 Qualitative Inquiry – “what one wants to learn determines how one should go about learning it”

The most compelling reason for me to inquire qualitatively about social media use in organizations was my deep interest in understanding the practices of using these media at the workplace. That is, understanding how people use social media technologies in a specific organizational context as well as the relationship between the ways they use these technologies and the social and organizational structures. Examining practice in this thesis was thus key in developing such understanding. So, in order for me to develop the argument about my choice of using a qualitative method it is important to lay some theoretical ground of what practice is.
Practice is often theorized to understand the social world and the dynamics of everyday human activity. Schatzki (2001) discussed that there are a myriad of practice theories and therefore there is no unified approach to understanding practice. But he noted that most practice thinkers theorize practices as arrays of activity. He then discussed that these thinkers tend to identify these activities as those of persons and that practices are essentially arrays of human activity. Such understanding of practice, Schatzki further discussed, portrays a distinct social ontology that implies the social as “a field of embodied, materially interwoven practices centrally organized around shared practical understandings” (p. 3). Many other social theorists such as Giddens (1984), Lave (1988) and Bourdieu (1997) provided further accounts of practice. In his outline of the theory of structuration, Giddens (1984) suggested that the arena of practice is the medium and outcome of institutional structures that guide individuals’ processes of interpretation and evaluation, and hence their activities. Lave (1988) discussed that the arena of practice is a negotiated order where peoples’ activities depend on structural conditions jointly enacted by them, and as such, practice is a common social space shared by the members of a community. Bourdieu (1977) provided a conceptualization of practice as an arena in which the dialectic of subjective experience and objectified reality is played out. Schatzki (2001) reflected upon such various accounts of practice and suggested that “practice accounts are joined in the belief that such phenomena as knowledge, meaning, human activity, science, power, language, social institutions, and historical transformation occur within and are aspects or components of the field of practices. The field of practices is the total nexus of interconnected human practices” (p. 2).

Reading through these diverse accounts of practice one may notice that a common overarching theme across them is centered on social issues that span human meanings, interpretations, collective actions, knowledge, shared understandings, etc. There is also some kind of implicit emphasis on emergence in the sense that social practices often involve a dynamic interplay between peoples’ subjective world and the objective reality in which they live that enables emergent forms of human activity. This is especially true of contemporary organizational practices which are seen as complex, emergent, and unpredictable due to dynamic combinations of technology and organization features and practices (Zammuto et al., 2007; Feldman & Orlikowski, 2011). In light of this understanding, examining practices such as the practices of using social media necessarily requires careful attention and emphasis on human and social issues as well as the potential emergent processes and dynamics associated with them.
To further elaborate, social media use practices are often defined (cf. Chapter 2) in terms of the collaborative and participatory ways in which people engage with each other for various purposes. People use social media to collaborate for common purposes, develop relationships with each other, engage in ‘peer production’ activities, share mutual interests, and so on. In this way, people enact various social practices that are both medium and outcome of social relationships, shared meanings and interpretations, collective actions, and many other aspects of what we typically call the social. Such use practices are therefore essentially social. It is interesting to note in this respect, for instance, that my colleagues and I (Mansour et al., 2013) made an argument about the enactment of wiki affordances in a communal manner. We argued that people sometimes enact affordances because of their joint perceptions of the possibilities that a wiki can afford and that these perceptions are essentially related to the communal and collaborative ways by which these possibilities are exploited. In other words, the enactment of wiki affordances occurs in and through social interactions among people. For all these reasons, I would then argue that the ways by which social media are used in an organizational setting can be seen as social practices and social media use in organizations can therefore be regarded a social phenomenon.

An additional important reason for such view might be related to recent theories, discussed earlier in chapter 2, of the relationship between technology and organizations, or synonymously the material and the social (e.g. Leonardi, 2012; Leonardi, 2013; Orlikowski, 2007; Orlikowski & Scott, 2008). Sociomateriality, for instance, is one theoretical approach that suggests understanding this relationship as entangled and mutually constituted in practice. A relevant argument of this approach is that everyday practice is necessarily sociomaterial. Scott & Orlikowski (2009) suggested that “everyday practice is configured and reconfigured by the multiple meanings and materialities that are fused together”. In this view, all social action is enabled by some materiality (Leonardi, 2012; Orlikowski, 2007). The relevance of these arguments here lies in their emphasis on treating practice as inevitably sociomaterial. Practice then is understood “as the space in which social and material agencies are imbricated with each other and, through their distinct forms of imbrication, produce those empirically observable entities we call ‘technologies’ and ‘organizations.’” (Leonardi 2012, p. 21). These arguments seem to be grounded in the work of practice theorists such as Schatzki (2001) who noted that a materialist approach to practice suggests that “understanding specific practices always involves apprehending material configurations ... because human activity is beholden to the milieu of constellation of nonhuman entities.” (p. 3).
In this light, because the main aim of my thesis addresses the relationship between technology (social media) and organizations, I found that theoretical arguments of sociomateriality and their emphasis on practice useful to draw some understanding about, and also acknowledge, how social action is implicated by the materiality of technology in practice (cf. Leonardi, 2012). Leonardi (2011, 2012, 2013), for instance, suggested a theoretical approach of imbrication that focuses on the ways by which the social and the material appear to be inseparable through human activity over time, hence sociomateriality. Leonardi’s view is grounded in critical realism, in contrast to agential realism, (cf. Chapter 2), which emphasizes that the social and the material are separate entities and they only come together or intertwine through human activity. Again, and for clarity, the position I adopt in this thesis is related to the kinds of research questions posed. That is, attention to the specific ways in which material affordances are entangled with social activities enables us to see sociomaterial practices as emergent processes. By adopting the critical realist stance, assuming that practice is sociomaterial would imply that emphasis should be placed on the human activities that enable the imbrication of the social and the material (cf. Leonardi, 2011).

So in order to develop the argument for my choice in using a qualitative method, theoretical understandings of practice and sociomateriality were presented here to make the case that social media use in organizations is a social phenomenon. The emphasis on the inherent social nature of practice as well as the centrality of human activities in understanding the relationship between technology and organization provide a solid theoretical foundation for such case.

Then, as a social phenomenon, the study of social media use practices in organizations can be best performed using a qualitative method. This method is often used to enable researchers understand social and cultural phenomena (Myers, 1997; Klein & Myers, 1999; Silverman, 1998; Denzin & Lincoln, 2000). A preference for using such method to understand social phenomenon in IS is acknowledged by many scholars (e.g., Walsham, 1995; Silverman, 1998; Klein & Myers, 1999; Walsham, 2006; Kaplan & Maxwell, 1994). On a philosophical level, Hirschheim (1992) noted that IS epistemology draws heavily from the social sciences as he believed information systems are fundamentally social rather than technical systems. The prevalence of social issues in understanding information systems within organizations was thus key to the growing adoption of qualitative/interpretive methods in IS research.
In respect with the aim of this thesis, Silverman (1998) argued that the main strength of qualitative research is its ability to focus on actual practice in situ by looking at how organizations are routinely enacted. In order to show how I used qualitative methods to do this I refer to three key reasons suggested by Kaplan & Maxwell (1994) for using qualitative methods in the study of computer-based information systems:

First, understanding how people perceive technology and what meanings technology has for them. The main purpose of using qualitative methods is simply to help researchers understand human thought and action in order to develop deep insights into the studied phenomenon (Klein & Myers, 1999). That was also my aim in using qualitative methods with respect to understanding organizational use of social media. I wanted to get data that helps me make sense of what people think about the technology and its use, what does it mean for them in the context where they use it, what potential they perceive in the technology, etc. Clearly, it is about understanding use practices through emphasizing peoples’ subjective meanings and understandings of technology and its possible uses. Interviews, for instance, were useful to obtain such subjective meanings and understandings by engaging in direct conversations with the participants (Schultze & Avital, 2011) that help in unfolding the meanings of peoples’ experiences and uncovering their lived world prior to scientific explanation (Kvale, 2006).

Second, understanding the influence of the social and organizational context on technology use. Kaplan & Maxwell (1994) explained that information systems do not exist in a vacuum and their use very much depends on the social and organizational context. In this respect, the use of qualitative methods (see section 4.2.3 below) has helped me to develop a better understanding of my participants’ perspectives by giving me the chance to interact with them in their life settings. For instance, interviews were useful to obtain contextual and authentic accounts of my participants’ wiki use practices (cf. Schultze & Avital, 2011). Also, getting the chance to visit my participants in their offices and join in their meetings (see section 4.2.3 below for more details) was particularly useful to develop further understandings of their perspectives as well as the context in which they use the technology. In fact, one of the most interesting experiences in using qualitative methods was getting closer to my research participants. The fact that I did interviews with them in their offices was really useful to get deeper insights into their ‘inner worlds’ with respect to using the wiki. While discussing with one of my IBM participants, for instance, he spontaneously turned on his computer screen and started to show me his profile on the wiki, the
content he shares, the network of people he interacts with, etc. This kind of social interaction, which was facilitated by qualitative methods, allowed me to obtain better insights and practical understandings of how people really used the wiki in context. I had the same experience when I joined one of the communities that use the wiki at CCC in their quarterly meeting by getting the chance to see a real-time, live discussion and interaction on the wiki between community members.

Third, investigating causal processes. Kaplan & Maxwell (1994) suggested that quantitative studies often demonstrate what causal relationships exist but they fall short in explaining how and why these relationships exist. As I was seeking to understand social media use practices through exploring the relationship between social media and organization, especially from a structurational perspective, it is important to understand that such causal relationships can never be fully isolated in their full necessary and sufficient sense, because all the relevant variables cannot be controlled. Instead, we are led to a different conception of causation, one where we can assert that, in contexts such as this, through a process of comparison, we can discern causal ‘tendencies’ in a dynamic way.

Using qualitative methods is often considered most useful to develop theoretical explanations about these relationships—to abstract from the immediate context through comparison—and their dynamics (Kaplan & Maxwell, 1994). In my research studies (cf. Chapter 5) where I used structuration theory and the practice lens, qualitative methods provided me with ‘thick descriptions’ (Walsham, 1995) or ‘rich data’ (Kaplan & Maxwell, 1994) that contain various details about such relationships and dynamics. Kaplan & Maxwell explained rich data as “data that are detailed and varied enough that they provide a full and revealing picture of what is going on, and of the processes involved.” (p. 44). For instance, interviews were particularly useful to obtain data about the influence of social and organizational structures on the ways people perceive and use the wiki at the workplace. The richness of this data in fact helped me to develop further theoretical elaboration that addresses emergent forms of relationships and dynamics like in studies four and five (cf. Chapter 5). The main point I am trying to make here is that data obtained through qualitative methods is rich enough to provide a sufficient level of theoretical explanatory power to address questions about why things exist the way they do and how. In the next section, I provide an overview of my empirical cases. Then, I describe the actual empirical inquiry process and the kinds of qualitative methods I used to collect empirical data.
4.2 Empirical Cases – CCC & IBM

The basis for the empirical data collection in this thesis is an investigation at two large multinational organizations: CCC and IBM. Each company does a different kind of business but both use wikis for similar purposes such as increasing collaboration, supporting knowledge sharing, and tapping expertise within the boundaries of each organization. In this section, I will provide an overview of each organization, their wikis and how they use them.

4.2.1 Consolidated Contractors Company (CCC)

CCC is short for Consolidated Contractors Company. It is a privately owned company which was founded in 1952 by two young engineers in Lebanon. The company is now considered one of the largest contracting and construction organizations in the world. In 2007, Engineering News Record (ENR) magazine ranked the company as number 13th in the top international contractors list. CCC is headquartered in Athens, Greece and has offices distributed around the globe in Africa, the Gulf and Middle East, CIS countries, Europe, Asia, South and Central America, and the Caribbean region. It primarily specializes in providing engineering, procurement, project management, and construction services for oil and gas, petrochemical, pipeline, building, heavy civil, marine, and maintenance works. The company, therefore, carries out various kinds of projects on a global level building road networks, tunnels, bridges, airports, mechanical equipment erection, oil plants, piping erection, etc.

![Figure 4: Increasing manpower and complexity at CCC (Source: KM dept.).](image)

CCC witnessed an exponential leap in the last decade in terms of increasing its manpower. The number of employees at the company jumped (See Figure 4 above) from 25000 in 2003 to more than 160000 spanning 90 different nationalities. Also, in the same period, the
company had achieved a record level in revenues that exceeded 4 billion US dollars in 2007. In the next section, I will provide an overview of the Knowledge Management initiative that aimed at addressing complexity associated with these developments and the increased sophistication of communication at CCC.

4.2.1.1 The Knowledge Management Initiative

Knowledge Management (KM) at CCC is a strategic initiative in its own right but interdependent with information systems and construction support sections. For CCC, KM is an initiative that puts in place a supportive social and technical framework and structure that encourage staff to contribute, share, and innovate knowledge for the benefit of CCC’s clients, employees, local businesses and partners. The mission of the KM department is: “to build a knowledge rich culture by tapping into the wealth of expertise already within CCC that embraces learning, sharing, and innovation.” The department also set its vision from implementing the KM initiative: “to be leader in leveraging and creating knowledge to achieve our strategic and tactical objectives in delivering projects to our customers.” The first ideas about KM came out in 2007, when the company started to realize the complexity of communication among its different groups and projects. Besides the rapid growth, as discussed before, there were also various challenges related to knowledge transfer and sharing within the company that contributed into driving the KM initiative. These challenges include lack of knowledge transfer processes among larger groups within CCC, uncertainty about what content to develop and transfer, projects’ need of timely feedback, inconsistent knowledge processes, high levels of decentralization in the sense that systems are not interconnected, lack of operational measures when it comes to assessing performance, etc. In general, there was a belief that the operating platform for developing people and sharing knowledge at CCC was inadequate to sustain CCC’s operations.

The KM department was then responsible for setting a strategy to address these challenges by developing a corporate knowledge network. The network aimed at enabling the sharing of knowledge, expertise, documents, insights, lessons learned from projects, and other relevant resources, providing a collaboration platform for bridging knowledge gaps, developing new areas of practices, and defining new approaches, and also building a directory of people profiles to easily locate experiences. Three key KM processes were defined to realize the potential from the corporate knowledge network including connecting people with each other and with content, enabling and facilitating conversation and engagement,
collaboration, and knowledge contributions, and also monitoring and reporting on behavior, knowledge flows, etc. These processes were designed to capture two main types of knowledge identified by the KM department: tacit knowledge which refers to the knowledge and expertise that people carry in their minds, and explicit knowledge which refers to knowledge that has been articulated, codified, and sorted in certain media. In the next two sections, I discuss the introduction of Fanous, which is the official name of the wiki platform, as well as the design of communities of practice which are two important dimensions of developing the corporate knowledge network at CCC.

4.2.1.2 Introducing Fanous

Fanous is the official name that CCC uses for their wiki. Fanous is an Arabic term that refers to an oil lamp or a lantern. Inspired by the old fable of Aladdin and his magical oil lamp, CCC wanted a name for their collaborative platform that represents an ideology of knowledge, guidance, and enlightenment. So just like when Aladdin rubs his magical Fanous to awake the genie who guides him and makes him rich and powerful, Fanous at CCC was introduced to be a carrier of knowledge that people can use to help them learn and become more knowledgeable about their work. The wiki was chosen by the KM department to serve as a central collaborative platform that helps in achieving their mission of building a knowledge rich culture and enabling learning, sharing, and innovation. It was officially launched in 2008. The wiki is only accessible within the organization through a secure network. This means that the wiki is only used for internal knowledge sharing rather than for external knowledge sharing with customers and partners.

For the KM department the wiki is not a knowledge management system in a traditional sense that only helps in storing and searching documents. The wiki is rather considered “a collaborative and social oriented medium that facilitates knowledge sharing and access”. In this respect, the KM department outlines a number of wiki characteristics including: articles can be created or edited at anytime by any member, articles are editable through the web browser, one-click access to the history or previous versions of the page, dynamic commenting, user profiles, content labels, monitored additions and modifications, easy revert of changes, and security and access privileges. In light of these characteristics, it should be mentioned that CCC employs different systems to monitor various activities on the wiki such as monitoring and approving content, assessing performance, etc. For instance, they use an approval system, similar to the academic peer-review system, through which different experts
or senior employees can review content and decide whether it should be made available on the wiki or not or even ask the contributor to make modifications in order to be published. The KM department also controls different kinds of rights and permissions to the wiki such as controlling whether one could view, create, edit, export or remove a wiki page. Further, it grants people certain rights and privileges based on their seniority levels, roles within a community, and expertise. In addition, the wiki is currently used by eleven communities of practice which will be discussed in the next section. There are more than 1000 active users, 200 monthly contributions, and 40 unique visitors.

4.2.1.3 Communities of Practice (CoPs)

Fanous is primarily used at CCC by several communities of practice (CoPs) as the KM department prefers to call them. These communities represent diverse professional areas in the organization and each community focuses on one specific area with members specializing in various subjects within that area. A CoP is formally defined at CCC as a group of people with common purpose, interests, and goals. This definition seems to originate from Lave & Wenger’s (1998) definition of CoP. Each CoP has a formal structure determining roles and relationships within each community. Key roles in each community include a community leader, a project manager, founding members and captains, subject matter experts (SMEs), and regular members. Community leaders and project managers are senior employees who often take the role of defining the scope and objectives of the community as well as manage and coordinate the CoP activities. Knowledge captains are responsible for reviewing any new content on the wiki as well as encouraging people to share and introduce new knowledge areas within the community. A SME is an individual recognized inside and outside CCC as an expert in a specific subject who often helps knowledge captains in reviewing content in certain subjects. What is also interesting to note is that regular members may belong to more than one community and usually these members do not necessarily work in the same project or the same location, hence they get a chance to collaborate and exchange knowledge with each other. Figure 5 below shows the structure of these CoPs.
The wiki started with five communities: pipe fabrication, hydrotesting and precommissioning, construction from design to handover, mobilization and remote areas, and earthworks and plant productivity. Each community has a dedicated space on the wiki. In fact, the structure of the wiki is built to serve these communities and provide community members a space where they can have access to community pages on the wiki. So basically the wiki is designed and structured in a way that allows each community to have its own space and the ways by which these communities work essentially determine how the wiki is used. Each space is divided into knowledge areas and subjects where community members can share their knowledge and expertise from projects through creating articles containing what they call method statements which are descriptions of specific techniques and procedures used to carry out certain tasks. They also share lessons learned from projects, online resources, files, etc. Members of a community have the possibility to contribute by creating new articles, commenting on existing articles, and also, depending on their rights and roles, they can sometimes edit content on the wiki.

In addition, it is important to note that besides using a review system each community set up meetings every three months where key members of the community meet to discuss issues related to their area, review content collaboratively, suggest new subjects, plan and coordinate what to do next, etc. Usually, the community would prepare an agenda with a number of action items to guide their conversation during the meeting. Since the introduction of Fanous six new communities were added resulting in a total of eleven communities of practice which will be discussed in the next section.
4.2.2 International Business Machines (IBM)

IBM is one of the largest software companies in the world. It started as a merger between three 19th-century companies: the Tabulating Machine Company, the International Recording Company and the Computing Scale Company of America creating the Computing Tabulating Recording Company (CTR) in 1911. The company later changed its name to become the International Business Machines Corporation, widely known as (IBM). Today, IBM is a Fortune 500 company with more than 430000 employees worldwide and net income exceeding 15 billion US dollars. The company is well known in producing a myriad of software applications for business and different types of organizations. Nowadays, IBM develops software for what they call social business. This software is called IBM Connections and is dedicated to supporting businesses that seek to apply and use various kinds of social software. In the next section, I discuss IBM Connections with a particular focus on wikis, which are one part of this software system, and how they are used at IBM.

4.2.2.1 IBM Connections

IBM Connections is an open and secure platform that includes various social collaboration tools and applications designed specifically to support various business practices and activities within organizations. It was released by Lotus Software, which is owned by IBM and is one of its five software brands, in their annual conference called Lotusphere in 2007. Connections, as commonly referred to inside of IBM, consists of wikis, blogs, microblogging, forums, file sharing, communities, user profiles, search, and ideation. So basically Connections is a universal platform that allows people to use various kinds of social tools for different purposes. My investigation at IBM was only focused on understanding how they use wikis for knowledge collaboration and sharing. IBM has a different setup of wikis compared to CCC. In IBM, Connections allows anyone not only to create wiki pages but also to create a whole wiki for specific purposes such as using a wiki as a collaborative platform within teams, a public community platform that is accessible by anyone within the company, a private platform that is only accessible by certain people, an innovation and ideation space where people can come together to brainstorm different ideas, solutions, and problems, and a personal platform to share opinions and thoughts. In this manner, wikis in IBM are not centrally controlled by a group of knowledge specialists.
or community leaders and captains like in CCC, but they are available to any individual or group. They are however controlled by those who create them. So a project team might create a wiki to share procedures and algorithms needed for programming purposes, for instance, and control who can see and access this content. An individual might also want to create a wiki to establish a public community that addresses common issues so that people can freely access content on the wiki and collaborate together to develop content in various ways. Another individual might want to create a wiki only to share and document personal thoughts, visions and opinions and might therefore setup the wiki in a way that only allows others to view content. These are common ways of creating wikis at IBM where control is divided among those who created them. Then, in terms of the actual use of these wikis it mainly depends on the purpose and the context of use. So, an individual who aims to share his personal opinions and thoughts often tends to setup a wiki so that people can only view and comment on content rather than edit content. A public community wiki in contrast might be setup to allow any kinds of updates like comments, editing, organizing, etc. by anyone. The use of wikis at IBM can therefore be either open or controlled and sometimes both like when a wiki is controlled by a project team so that it is only open to team members and not others.

4.2.3 Empirical Inquiry – Collecting Data at CCC & IBM
I started this chapter explaining that in order to produce scientific knowledge and achieve scientific understanding of problems there is a need for a set of scientific methods – scientific tools and materials – that help in obtaining data from people in their natural settings. Over two periods of time, I used several tools and materials to collect qualitative empirical data from CCC and IBM. I obtained the first set of data in this research from CCC in August 2010. This date marks the beginning of the first period of empirical data collection. At that time, I started to interview several people who work for CCC (see Table 6 below) at multiple locations across the globe. I completed a total of fifteen interviews by the end of September 2010. Due to the geographical distribution of my research participants, eight interviews were carried out via phone and five interviews over Skype. The two remaining interviews were conducted face-to-face during my first field visit at CCC headquarters in Athens in September 2010.

---

3 This first set of empirical data was used in my Licentiate thesis which was a preliminary work focused on understanding how people use wikis to share knowledge to lay the foundation for my PhD work.
Interviews were particularly useful as I sought to understand technology use practices by giving me the chance to engage in open discussions and conversations with my participants through which I obtained informative accounts of their practices and experiences (cf. Schultze & Avital, 2011). However, despite their richness, some instances in the interviews were a bit vague and I felt that I need more data that would clarify to me the different examples that my participants used to describe their experiences and practices.

During a four-day field visit I had the chance to get more data while visiting the Knowledge Management department (KM) at CCC. Besides hundreds of qualitative interview data transcripts, I was given permission to observe the wiki platform and get some observational data about how it works in practice. I spent several hours observing the design and structure of the wiki platform and browsing through its different parts. A senior KM specialist also helped me to understand the details of the wiki platform by showing me the list of communities, structure of articles, comments and discussion sections, user profiles, etc. I also got more observational data during a second field visit at CCC offices in Dubai in October 2010. I was invited to attend one of the community meetings, which are often held every three months as stated earlier, where several community members meet to discuss the progress of their community. This was an important visit for me because I had the chance to observe how community members discussed and reviewed articles that belonged to their community on the wiki. During the meeting, they used a projector to set up a large screen showing the details of their community pages on the wiki and even editing them live. I made notes documenting this experience for later analysis. Observing the wiki was thus very useful for me to get a better sense of its design and structure as well as how people used it for various collaborative practices. While my interviewees tried to explain the wiki platform and provide several examples to answer my questions about how they used the wiki in their daily work, it was only when I observed the wiki that I got to understand how it really works. This doesn’t of course mean that interviews did not render enough data but it was important to see how the technology is set up in order to get a better sense of how my participants really used it in context. To put it differently, observing the wiki, during the two visits, helped me ‘materialize’ my participants’ use practices by unpacking practices contained in their descriptions and mapping them to the wiki platform.

In order to further support my observational understanding of the wiki with documented data, the KM department provided me with several documents including KM monthly newsletters, KM presentations, and organizational brochures. I used these documents
for various purposes. KM newsletters were useful to get some statistical information about the use of the wiki such as number of monthly contributions, number of active contributors, etc. KM presentations were particularly useful to obtain information about the setup of the wiki, structure of communities, and even the setup of the KM department itself.

The first period of my empirical data collection has thus resulted in various kinds of qualitative empirical data that were used in Mansour et al. (2011) and Mansour (2011). In these papers, which will be presented later in Chapter five, I focused on how people perceived the use of wikis for knowledge collaboration and sharing and the role wiki openness played in their collaborative practices. I also focused on understanding how the use of a wiki differs from using conventional technologies such as an Email in the context of CCC.

My investigation of these issues and examination of the empirical data from the first period generated in me a new sense of curiosity, which later shaped my research focus and sharpened my problem, as the deeper and more complex aspects of using a wiki within an organizational setting have come to light. Examples of these aspects include power issues between junior and senior contributors to the wiki, tensions caused by the ‘immiscibility’ between organizational structures and wiki-related practices, and enactment of new social structures that governed and shaped both technology use practices and organizational structures. In my mind, I thought that arriving at these aspects suggest a problem in the interplay between social media use practices and organizational structures, practices and forms of organizing. This was the time when I decided to rethink my superficial focus and sharpen my problem to address such deeper aspects of social media use in organizations. Shifting my focus from understanding processes of collaborative knowledge production into understanding the interplay between social media and organizations was partly driven by the results from analyzing my empirical data and partly by the bulk of conceptual arguments in the literature that suggest a transformative impact of social media on organizations (cf. Problem Space; Motivation & opportunity).

As I have already suggested, the concept of ‘immiscibility’ helped me frame an argument about the interplay between social media and organizations at a level of detail that did not seem to be encompassed by the existing scholarly arguments. That is, understanding the precise processes by which organizational practices in relation to the wiki use came about over time required an analytic stance that high-level arguments about determinism against constructivism did not really deliver.
Then, in order for me to focus on examining this interplay I started to search for some way that would help me capture potential tensions involved in using a wiki in an organizational setting. Using the concept of immiscibility as a metaphor aimed at achieving this as I found that the concept has useful metaphorical power (cf. Problem Space) to describe and capture my new research focus. Figure 6 below shows an overall evolution of my research focus across two periods of empirical data collection.

**Figure 6: Evolution of my research focus during the data collection.**

One year later I started a second round of empirical data collection solely focusing on the interplay between social media and organizations. I interviewed twelve people from CCC between June and October 2011. Also, in mid October 2011 I was invited again to visit CCC headquarters in Athens. The purpose was to make face-to-face interviews and personally interact with my participants. Out of twelve interviews, five were face-to-face and the rest were conducted either via phone or over Skype due to geographical constraints. It is important to mention that seven out of my twelve interviews in the second period were conducted with people who participated in 2010. The reason behind this was my interest to get some kind of longitudinal data that might potentially suggest interesting shifts in my participants’ practices within a one-year time span.

But in addition to my data collection at CCC, and to further support the empirical breadth of my data in the second period of empirical data collection, I had a chance to get in contact with another organization – IBM, and study how they use wikis at work. I interviewed eleven IBM employees during the second half of 2011. Table 6 below provides an overview of my research participants from both CCC and IBM:
Then, in order for me to focus on examining this interplay I started to search for some way that would help me capture potential tensions involved in using a wiki in an organizational setting. Using the concept of immiscibility as a metaphor aimed at achieving this as I found that the concept has useful metaphorical power (cf. Problem Space) to describe and capture my new research focus.

Figure 6 below shows an overall evolution of my research focus across two periods of empirical data collection.

One year later I started a second round of empirical data collection solely focusing on the interplay between social media and organizations. I interviewed twelve people from CCC between June and October 2011. Also, in mid October 2011 I was invited again to visit CCC headquarters in Athens. The purpose was to make face-to-face interviews and personally interact with my participants. Out of twelve interviews, five were face-to-face and the rest were conducted either via phone or over Skype due to geographical constraints. It is important to mention that seven out of my twelve interviews in the second period were conducted with people who participated in 2010. The reason behind this was my interest to get some kind of longitudinal data that might potentially suggest interesting shifts in my participants’ practices within a one-year time span.

But in addition to my data collection at CCC, and to further support the empirical breadth of my data in the second period of empirical data collection, I had a chance to get in contact with another organization – IBM, and study how they use wikis at work. I interviewed eleven IBM employees during the second half of 2011.

Table 6 below provides an overview of my research participants from both CCC and IBM:

<table>
<thead>
<tr>
<th>Role</th>
<th>Company</th>
<th>Wiki Use in Years</th>
<th>Country</th>
<th>Medium</th>
<th>Interviewed 2010/2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR Specialist</td>
<td>CCC</td>
<td>1.5</td>
<td>Greece</td>
<td>Phone</td>
<td>Twice</td>
</tr>
<tr>
<td>Control Project Manager</td>
<td>CCC</td>
<td>3</td>
<td>Australia</td>
<td>Phone</td>
<td>Once</td>
</tr>
<tr>
<td>Control Project Manager</td>
<td>CCC</td>
<td>3</td>
<td>Oman</td>
<td>Skype</td>
<td>Twice</td>
</tr>
<tr>
<td>Plant Group Manager</td>
<td>CCC</td>
<td>3</td>
<td>UAE</td>
<td>Skype</td>
<td>Twice</td>
</tr>
<tr>
<td>Construction Manager</td>
<td>CCC</td>
<td>3</td>
<td>Kazakhstan</td>
<td>Skype</td>
<td>Once</td>
</tr>
<tr>
<td>Senior Administrator</td>
<td>CCC</td>
<td>2</td>
<td>Greece</td>
<td>Phone</td>
<td>Twice</td>
</tr>
<tr>
<td>Office Engineer</td>
<td>CCC</td>
<td>1.5</td>
<td>Greece</td>
<td>Phone</td>
<td>Twice</td>
</tr>
<tr>
<td>Automation Engineer</td>
<td>CCC</td>
<td>2</td>
<td>Oman</td>
<td>Skype</td>
<td>Once</td>
</tr>
<tr>
<td>Group Manager</td>
<td>CCC</td>
<td>2</td>
<td>Greece</td>
<td>Phone</td>
<td>Twice</td>
</tr>
<tr>
<td>Head of R&amp;D, Open Source</td>
<td>CCC</td>
<td>4</td>
<td>Greece</td>
<td>Phone</td>
<td>Once</td>
</tr>
<tr>
<td>Group Technical Manager</td>
<td>CCC</td>
<td>4</td>
<td>Greece</td>
<td>Phone</td>
<td>Once</td>
</tr>
<tr>
<td>Mechanical Construction Manager</td>
<td>CCC</td>
<td>3</td>
<td>Qatar</td>
<td>Phone</td>
<td>Once</td>
</tr>
<tr>
<td>Mechanical Manager</td>
<td>CCC</td>
<td>2</td>
<td>KSA</td>
<td>Skype</td>
<td>Twice</td>
</tr>
<tr>
<td>Head of IT Section</td>
<td>CCC</td>
<td>2</td>
<td>Greece</td>
<td>F2F</td>
<td>Once</td>
</tr>
<tr>
<td>Proposals Leader, Estimation</td>
<td>CCC</td>
<td>3</td>
<td>Greece</td>
<td>F2F</td>
<td>Once</td>
</tr>
<tr>
<td>Electrical Engineer</td>
<td>CCC</td>
<td>3</td>
<td>Greece</td>
<td>F2F</td>
<td>Once</td>
</tr>
<tr>
<td>Civil Engineer</td>
<td>CCC</td>
<td>2</td>
<td>Greece</td>
<td>F2F</td>
<td>Once</td>
</tr>
<tr>
<td>Engineer</td>
<td>CCC</td>
<td>2</td>
<td>Greece</td>
<td>F2F</td>
<td>Once</td>
</tr>
<tr>
<td>Estimation Engineer</td>
<td>CCC</td>
<td>1.5</td>
<td>Greece</td>
<td>F2F</td>
<td>Once</td>
</tr>
<tr>
<td>Engineer</td>
<td>CCC</td>
<td>2</td>
<td>Greece</td>
<td>F2F</td>
<td>Once</td>
</tr>
<tr>
<td>Learning Intelligence Leader</td>
<td>IBM</td>
<td>5</td>
<td>UK</td>
<td>Skype</td>
<td>Once</td>
</tr>
<tr>
<td>Social Media Evangelist</td>
<td>IBM</td>
<td>7</td>
<td>Spain</td>
<td>Skype</td>
<td>Once</td>
</tr>
<tr>
<td>Project Manager</td>
<td>IBM</td>
<td>1.5</td>
<td>Denmark</td>
<td>F2F</td>
<td>Once</td>
</tr>
</tbody>
</table>
Table 6: Characteristics of the research participants from CCC and IBM.

I published Mansour (2012) using data I obtained from IBM. Based on structuration theory (see Chapter 3), my focus in this paper was centered on understanding the evolution of social structures that might govern wiki collaboration. This paper was my first attempt to address structural issues in relation to using social technology in an organizational setting. Later on, I wanted to examine something deeper than this so I ‘published’ a comparative study in Mansour et al. (forthcoming) based on data from both CCC and IBM. In this paper, I focused on a comparative understanding of the enactment of structure while using social media as well as of emergent mechanisms of structuring technology use. The total number of interviews in the second period of empirical data collection at both CCC and IBM was 23 interviews. A summary of the empirical data I used in this research is shown in Table 7 below:
Table 7: Summary of the empirical data.

4.3 Use of Theory – An Analytical Vehicle

As I discussed in the previous chapter, the theory of structuration and the practice lens for studying technology use both serve as a theoretical foundation for my research. In this section, I provide a discussion of how I used these theories to guide my empirical data.
Cole & Avison (2007) discuss the use of theory in interpretive research. They identify three main ways by which theory is used in interpretive research: as an initial guide to design and data collection, as part of an iterative process of data collection and analysis, and as a final product of the research.

As an initial guide to design and data collection, Walsham (1995) suggested that theory is essentially used to create a theoretical framework or basis that acknowledges existing and relevant knowledge in a specific area. It is also used to inform the researcher about potential topics and themes that can be useful to begin the empirical work with. In my research, this way of using theory was applied in Mansour et al. (2011) and Mansour (2011). While no specific theory or framework was used in these two studies, the empirical data collection was mainly based on several theoretical themes and topics drawn from the literature on wikis, knowledge management, and communities of practice to help me in developing interview questions that address the main focus of each study. Theory in the other three studies included in this thesis (e.g., Mansour, 2012; Mansour et al., 2013; Mansour et al., forthcoming) was used as both an initial guide for data collection as well as part of an iterative process of collecting and analyzing data (see Table 7). So, in each paper, theory was first used to develop a set of thematic interview questions to guide me in the empirical data collection through interviews with my research participants. Theoretical concepts drawn from the foundational theories in this thesis provided the basis for developing this thematic set of questions. For instance, I used the three modalities of Giddens’ structuration theory to develop interview questions that represent each individual modality. It is worth noting at this point that these questions were not used in rigid ways. My discussions with the participants were rather open and the predefined set of questions mainly served as a basis to trigger other questions and elaborate on further themes and topics.

Then, in addition to using these theoretical concepts in the empirical data collection process, they were also used as analytical devices to read the empirical data during and after data collection. During the collection of data through interviews, I did some kind of simultaneous analysis by relating specific instances of this data to theoretical concepts for further analysis. This initial analysis aimed at making and capturing immediate interpretation of the data. At this stage, theory played a key role in guiding the data collection and offering an initial basis for the analysis of this data. While theory was used iteratively at this initial stage in terms of guiding the data collection process and supporting a preliminary analysis of the data, it

...
was later used as an analytical vehicle to conduct a comprehensive empirical data analysis. So, after completing the data collection and transcribing the interviews I did a deeper analysis of the empirical data based on key theoretical concepts of the foundational theories. The ultimate role of theory at this stage was to provide necessary theoretical concepts that can help me in carrying out the analytical interpretation of the empirical data.

With these theoretical concepts at hand I needed an analytical framework to help me in understanding and making sense of the qualitative text obtained through interviews. Given the interpretive nature of my research, I chose hermeneutics as a theory for interpreting textual data (Cole & Avison, 2007; Klein & Myers, 1999; Myers & Avison, 2002). Cole & Avison (2007) discussed two main tasks of hermeneutics. One of them is ascertaining the exact meaning or content of a word or phrase. This represents one basic practice of understanding, interpreting, and making sense of the meanings associated with the text. During the actual analysis, I was creating connections between pre-defined theoretical concepts and the text in an attempt to allocate empirical instances where the meanings of these concepts are expressed. As I went through the text I could then highlight and identify several empirical instances that can be used to provide empirical evidence and develop understanding related to the main aim of each study.

But this way of using theory and understanding textual data might seem to be limited because it may constrain the researcher from looking into other important instances that might not necessarily directly relate to the theory but still may imply crucial meanings and insights for developing further understanding of the studied phenomenon. This possible limitation of using theory was discussed by Walsham (1995) who suggested an iterative way of understanding interpretative data. So, in order to overcome this limitation and aim for further understanding that goes beyond the boundaries of foundational theories in this research I applied what is called the hermeneutic circle. The hermeneutic circle is one of the core principles of hermeneutics and is considered a foundational principle of all interpretative work of hermeneutic nature (Cole & Avison, 2007; Klein & Myers, 1999). Applying the hermeneutic circle in analyzing empirical data involves a number of cyclic iterations that help in understanding “a complex whole from the preconceptions about the meanings of its parts and their interrelationship” (Klein & Myers, 1999, p. 71). The actual application of the hermeneutic circle in understanding and analyzing my empirical data was therefore focused on a dynamic interplay between understanding the overarching aim of each study and key empirical instances and their interrelationships.
With the principles of the hermeneutic circle in mind I did this in a cyclic and iterative manner by going back and forth through the data trying to map concepts with empirical instances, eliciting meanings, and then developing an overall understanding that brings together the parts with the whole. In this manner, applying the principles of the hermeneutic circle in analyzing my empirical data was useful to develop deeper understanding of the text through enabling dynamic spirals of understanding and interpretation (Cole & Avison, 2007). Besides achieving a deeper understanding of the text using the hermeneutic circle it was also fundamental in allowing me “to pursue anomalous comments or findings. Rather than concentrating on the determination of textual meaning.” (Cole & Avison, 2007, p. 820). As I mentioned earlier, looking into the data through pre-defined theoretical concepts might be somehow limited in the sense of diverting the attention of the researcher from other important empirical instances. But the fact that I was aware about the need to look for unnoticed or hidden empirical instances in the data was key to develop further theoretical elaboration that goes beyond the boundaries of the foundational theoretical frame. Such theoretical elaboration was done in both Mansour et al. (forthcoming) and Mansour et al. (2013) in the form of developing theoretical descriptions and constructs that provide higher level of abstraction and further theoretical understanding of the studied phenomenon. In so doing, theory was also a final product of the research.

4.4 Ethical Issues

Just like any human activity, seeking to produce knowledge and understanding through research is confined by various ethical issues (Hammersley & Atkinson, 1995). It is therefore important to reflect upon how I dealt with the ethics of this research throughout the entire inquiry process. The ethics of research refer to “the assumptions about the responsibility of a researcher for the consequences of his/her research approach and its results.” (Iivari et al., 1998, p. 175). Exercising this responsibility, especially in interpretive research, means being highly sensitive about various ethical issues related to research participants as well as research findings and results. In this respect, Hair & Clark (2007) discussed that there are two major elements related to participants in a research work: first doing right through following the principles of justice, beneficence through assessing risk, and second preventing harm through protecting privacy, being honest, obtaining their consent, and respecting their right to withdrawal and their inherent value as a
human being. In order to do right and prevent harm in relation to the participants of this research a number of ethical issues must be dealt with. Hammersley & Atkinson (1995) identified five major ethical issues which I believe provide a good basis to reflect upon how I managed to deal with the ethics of research. These issues include: informed consent, privacy, harm, exploitation, and consequences for future research.

Informed consent is an ethical principle that implies that each research participant must have the right and freedom to consent to being researched in an unconstrained way and with full and accurate knowledge of what the research is about (Hammersley & Atkinson, 1995). It also implies that any research participant should be free to withdraw at anytime. Since the main empirical data in my research was collected through interviews with several research participants obtaining their consent was the first necessary step to start the actual data collection. It was particularly important when doing the data collection at CCC. This is because I had connections with senior KM managers at the company and it might be possible that those who were invited to participate in my research may tend to think that they have to, especially since a senior KM manager was the one who sent the invitation. But in order to make sure that they freely consent to participate, it was clearly explained in the invitation email that their participation is voluntary and they have the right not to participate or withdraw at anytime. Of course, it might still be reasonable to assume that because this email was sent by one of the KM managers they may think for various reasons that they have to participate even if they have the right not to. So, at the beginning of each interview with my CCC participants I again explained to them that their participation should be voluntary and that they have the right not to participate or withdraw at anytime if they wish so. One interesting issue here relates to the distinction made by Davison (2002) between informed and affirmative consent. Davison explained that an informed consent means that research participants are only informed about the research, procedures, etc. without necessarily stating their understanding or agreement for participation. He emphasized that an informed consent is not enough and that an affirmative consent is necessary so that each participant can explicitly state his or her understanding and agreement to participate in the research. Having this in mind, each of the participants from both CCC and IBM was asked about his or her understanding of the research as well as the freedom to participate in order to not only get their consent but also to affirm their participation in the research. This was one way to deal with the assumption that my CCC participants maybe influenced by their KM managers to participate and make sure that each one of
them has a proper understanding of the research and the freedom to participate.

Privacy is the second ethical issue discussed by Hammersley & Atkinson (1995). Privacy is simply concerned with making private things public. Maintaining privacy of research participants is often cited as a key ethical challenge especially in interpretive research like mine. The issue of privacy is further complicated because it is related to issues of confidentiality and anonymity of the research participants (Hair & Clark, 2007). Hammersley & Atkinson (1995) noted that determining what can be counted as public compared to private is somehow complex when it comes to ethical issues related to privacy. But in my research I believe that one can easily determine what might be counted, or at least be treated, as private because the research participants are professional employees working for two established organizations where they are held accountable for what they say and do. It is therefore easy to tell that they might be concerned about their identities when they speak up their opinion and views, their relationships to their seniors and other colleagues, and the way their data is going to be treated. Also, as I am doing my research within organizational settings each organization might be concerned with protecting the data that might be revealed by its employees. To deal with these privacy issues, each interviewee was given the choice to decide whether to hide or reveal his or her identity either by changing their names or using pseudonyms (Hair & Clark, 2007) when quoting them in my research papers. Besides informing my participants about the general purpose of the research I also informed each one of them about the way their data is going to be used in my research. So, at the beginning of each interview, I was very explicit in explaining that my discussions with them would only be used for research purposes in the sense of providing empirical evidence in my research. I was also explicit that these discussions will not be revealed or used in anyway that may cause harm to participants’ relationships with their managers or colleagues or threaten their jobs.

Preventing harm through protecting privacy and maintaining the confidentiality of the participants relates to the third ethical issue discussed by Hammersley & Atkinson (1995; see also Hair & Clark (2007)) which is that the researcher should prevent harm and wrongdoing to those being researched so that any negative consequences are avoided. I found privacy and harm to be very much interrelated because harm is only possible if the privacy of those being researched is breached by revealing data that might affect their work and everyday lives. It was therefore of utmost importance that I made sure the privacy and anonymity of my participants was and is maintained especially when a few of them required that their names
are kept confidential. Most of my participants had no problems with revealing their identities, however, and in fact only one or two asked me to keep their identities confidential. What was somewhat important to them is the way data is treated. Many of them asked me about how I was planning to use the data obtained through the interviews. So I explained, as mentioned earlier, that interviewing them aimed at collecting empirical data to provide evidence for my PhD research and that the data will only be used by me for research purposes. In doing so, the participants were assured that their data would not be made public to their company or any other non-academic individuals or organizations. It is important to mention that no written agreement was done but all issues and assurances related to privacy were audio recorded at the beginning of each interview.

The fourth ethical issue discussed by Hammersley & Atkinson (2007) is exploitation. Exploitation can be understood by weighing what is given and what is received or what costs and benefits are involved in the research process. While exploitation is a matter of judgment and is often difficult to assess it might still be quite reasonable to say that the benefits accrued by the researcher most often weigh more than the benefits accrued by those being researched. The simple reason is that the researcher intentionally approaches his or her participants with a pre-defined agenda to collect data from them that he or she can use for different scientific and academic reasons. In my case, I wanted to collect data from my participants for academic reasons (e.g., publication, etc.). But to deal with the issue of exploitation from an ethical perspective might really be quite complex. Still, one possible way to deal with this issue is to aim for a contribution for organizational and individual well-being through knowledge enhancement. I believe that what is more important than this is to have sincere intentions in the sense that a researcher should be honest about what he or she wants to do and why he or she is doing this. I would then assume that exploitation may possibly not be a problem because the researcher is getting help from willing individuals who understand the issues and are enthusiastic about the contribution they are making to research. I believe this is what has happened in the case of my participants. I was clear that I am doing this research for obtaining a PhD degree and they were in fact excited to discuss with me their experiences at work and even asked me to send them my papers so that they can read what I have done. Also, many of them explained that they would be willing to be interviewed again to talk more about things related to my research. Even on an organizational level both companies wanted to contribute into my research by allowing me to access their workplace and speak to their employees. So, in such a case, I would say from an
ethical perspective that the impact of exploitation might be minimal, although I acknowledge that this might seem hard to claim.

Finally, Hammersley & Atkinson (1995) discussed the consequences for future research as the fifth ethical issue. These consequences relate to the conduct of the researcher in a specific research setting as well as the type of his or her research results. Hammersley & Atkinson discussed that social researchers rely on obtaining access to specific settings to carry out their research. They further discussed that there might be consequences for obtaining such access in the future when people studied and the gatekeepers of the settings continue to find the research objectionable. In such case, they argued, conflicts between the researcher and those being researched might be to some extent inevitable. This may well be true especially when there are conflicting interests, and there always are, between the two sides. There is also another dimension of this issue which relates to the responsibility of the researcher to colleagues in the field. The researcher is often obliged, as Hammersley and Atkinson put it, “not to spoil the field” but still they acknowledged that this may not always be possible. Reflecting upon this issue in my research I would say that I have not been faced with any obvious conflicts with either my research participants or the organizations studied. I introduced myself as an outsider who is just trying to obtain some empirical understanding of their practices at work for research purposes. Perhaps, I may argue, because Hammersley and Atkinson discussed this issue in the context of ethnographic research where the researcher may be inhabiting the research setting to a much more serious degree, hence more involved with the participants, the ethics of my research in relation to this fifth point are less severe.
CHAPTER FIVE
RESEARCH STUDIES

This chapter aims to provide a brief overview of each of the research studies included in this thesis. There are five main research studies which provide the foundation that informs the theoretical discussion in the next chapter. Each research study is presented and key issues such as the focus of each individual study and its conclusions and contributions are highlighted. Then, there is an overall discussion and reflection that twists all the five studies together in order to show their interrelationships throughout the research process as well as recount the evolution of the research focus.

5.1 Overture

My empirical inquiry was not only about getting in touch with my research participants and collecting data from them. It was a transformative learning experience. This is because I realized in later stages of my research that what I often believed in about social media use in organizations has dramatically changed. I originally had strong, deterministic beliefs about the potential of social media technologies to transform the way people work and interact together. This was my position when I started my PhD research, as it was when I started my master thesis on the same theme six years ago. After years of research, I learned how things change as we continue to seek knowledge and understanding. My PhD research was thus a transformative learning experience not only because I learned new things but also because what I learned and believed in before has changed and evolved. This transformation was driven by a number of research studies that reflect and span the evolution of my research focus throughout the research process.

I discussed this evolution in the presentation of my empirical inquiry earlier in Chapter 4. In this chapter, I will discuss my
research studies that reflect this evolution and most importantly lay the ground for my theoretical discussion and elaboration. These studies essentially provide the backbone of my thesis in terms of providing a theoretical and empirical basis upon which my arguments are based. I have included five research studies in this thesis. Each one of these studies touches upon a different, yet complementary, focus that is related to the main theme of my research: social media use in organizations. In the next few sections, I will provide an overview of each study including a presentation of its focus and contribution. Later on I will provide an overall reflection that twists these studies together in order to show their interrelationships as well as highlight the basis upon which my theoretical discussion and elaboration in this thesis are based. It is worth mentioning that each study represents a unique phase that reflects the way I was thinking about the research problem during my empirical inquiry as well as shows the evolution of my research focus.

5.2 Research Study I: Exploration

The first study in this thesis represents an exploration of wiki use at CCC. It was my first attempt to empirically examine how a wiki is used and what factors influence its use for knowledge collaboration and sharing within an organizational setting. My aim from this exploration aimed at laying an empirical ground for addressing issues concluded in my Licentiate thesis (cf. Mansour, 2011) such as understanding the influence of structure and on using social media within organizational settings. So, in order to develop this ground I started collecting data about how members of communities of practice use a wiki to collaborate and share knowledge at CCC. Empirical data was obtained through various qualitative methods including interviews, field notes, documents, and observations, and was the first work with data in my research. As my first attempt to examine wiki use, this was an effort that shaped my beliefs about organizational use of social media and led me to think that many of the arguments in the literature need to be more carefully grounded. In fact, getting access into CCC and exploring their use of the wiki has fundamentally changed my attitude as a researcher towards social media. I often believed, influenced by the widespread use of social media as well as scholarly arguments about this phenomenon, that social media have transformative effects in our everyday lives and also in organizations. Things have changed as patterns in the data became more clear, at least about matters related to organizational use of social media.
At the time of collecting and analyzing the data it was interesting to observe that what was supposed to be the driver for transformational changes was also part of what would impede these changes. This was the central premise in study I which was focused on the dual impact of wiki openness. I found that the openness of a wiki might both enable and constrain knowledge collaboration and sharing. What was particularly interesting about this finding was that the enabling and constraining effects of a wiki were both associated with various forms of organizational structures. For instance, hierarchy, control, reputation, etc. are various organizational forms that relate to structure and were found as either enablers or barriers to using a wiki for knowledge collaboration and sharing in an organizational setting. Equally important, the dual impact also suggested paradoxical consequences of using a wiki that represented tensions in the interplay between wiki use and organizational structures. Study I was, therefore, a successful empirical exploration in terms of laying the ground for further research that addresses structural implications and new forms of organizing associated with organizational use of social media.

5.3 Research Study II: Suspicion

In between study I and III I did study II, with an emphasis on technology. There were two reasons for conducting this study. First, in almost every interview I had with my research participants, they often referred to email and tried to compare it with wikis. Second, while presenting and talking about my research in various settings I often got questions like: how does a wiki really differ from technologies like email, why should it be different, etc. So, since my data included many references to the answers of these questions I decided to write this paper in order to deal with the ‘suspicion’ about what is really different about wikis or even social media in general. Personally, I was also curious to empirically study possible differences and similarities between established organizational tools such as an email and a new technology like a wiki. The importance of this study as I see it to my research is that it focuses on technology and technological characteristics involved in enabling or constraining collaboration and knowledge sharing among people. So, my aim from this study was basically to understand perceived differences in using either a wiki or email for collaboration in an organizational setting. The analysis of differences between a wiki and an email was based on qualitative data obtained through 16 interviews at CCC. This data was collected as part of my empirical investigation at CCC that aimed at
understanding structural dynamics and processes involved in organizational use of social media. No specific theoretical framework was used in this study. Instead, I developed an interview protocol based on wiki and email literature. The protocol was developed to help me explore different aspects of using emails and wikis at the workplace. I used a hermeneutical method of analysis to identify themes characterizing the differences between wikis and emails.

In order to address the suspicion about the differences between traditional technologies such as an email and social media technologies such as a wiki, the findings from this study suggested five major themes characterizing the differences between a wiki and an email. These themes represent a combination of social and technological characteristics including: nature or purpose of use, patterns of collaboration, technological characteristics, representation of content, and habitual practices. Each theme represented certain differences between a wiki and an email in terms of both their design and use. These themes provided me with various insights into the technological characteristics pertaining to a wiki and an email and also how these characteristics play out in actual use practices. Hence, in my view, this study was one way to acknowledge technology in the larger discussion of organizational use of social media. In the next study, study III, despite its focus on social issues related to the evolution of social structures in using wikis in organizations, it still acknowledges technology by emphasizing openness as a key characteristic of a wiki.

5.4 Research Study III: Examination

This study was my first attempt to apply structurational ideas to understanding the organizational use of social media. As I discussed in study I, my exploration of the factors that influence the use of wikis for knowledge collaboration and sharing in organizational settings resulted in a number of insights that reflected a paradox between openness, as one major wiki characteristic, and organizational structures and practices. This was when I first noticed the structural implications of wiki use in organizations. I therefore started to prepare for a study by which I can examine how structure might play out in relation to using a social media technology like a wiki within a formal organizational environment. The study took place at IBM and it was my first empirical data collection in this organization.

Besides observing several potential implications of structure in relation to using a wiki in study I, I was also motivated by the bulk of scholarly arguments suggesting that social media technologies,
specifically wikis, have the potential to transform organizational structures and free collaboration and knowledge sharing among people. Openness is believed to be one key driver for such transformations. Further, since openness was a key theme in my first study I wanted to build upon my earlier results in order to develop a better understanding of the interplay between wiki use and organizations. Openness was thus treated as a key characteristic of the wiki in study III. In doing so, this study can be seen as my first attempt to examine potential tensions between wiki characteristics that are principally open and social, and organizational characteristics that are often defined by structure, control, and hierarchy.

The aim of this study was to examine potential development of social structures and also understand how these structures might shape and govern the use of a wiki for open knowledge collaboration and sharing in organizations. It is worth mentioning that my initial assumption in this study, primarily motivated by my results from study I about the dual impact of openness and observations of structural implications related to that, was that the use of wikis in organizations might not really be that open due to established organizational hierarchic structures and characteristics. This has given me one way to define my aim in this study and also to decide upon a useful theoretical framework that would help me investigate this aim. Given my empirical observations and assumptions, Giddens’ theory of structuration was chosen as a theoretical framework to guide my empirical inquiry in this study. I used the three modalities of structuration: interpretative schemes, facilities, and norms in order to develop interview questions. I also used them in my hermeneutic analysis of qualitative interview data collected from IBM.

The findings from this study were centered on a number of social structures that govern and shape wiki use in an organizational context. These structures were either reflected representing existing structures in the organization or emergent that people enact while using the wiki. The main conclusions from this study suggested that the use of social and open technologies in organizations (e.g., a wiki) is not independent of structure. There is, rather, a dynamic interplay between existing organizational structures and the use of a wiki that might result in new enacted structures that govern and shape knowledge collaboration and sharing. It was these conclusions and observations from study III that made me interested in examining how the constitution of structures takes place when using a wiki in an organizational setting especially given the ‘immiscible relationship’ that might exist in the interplay between wiki and organizational characteristics. The aim of the next study, study IV, was therefore focused on understanding these issues with emphasis on a deeper
look at underlying structuration processes associated with organizational use of social media.

5.5 Research Study IV: Digging Deeper

In the previous study, I used Giddens’ theory of structuration in order to examine the kinds of social structures that might develop when using a wiki at the workplace, and how these structures might shape social collaboration and knowledge sharing. After identifying a number of social structures and also seeing how the interplay between existing and emergent structures might govern the use of the wiki I wanted to dig deeper into these structural dynamics and avoid a limited application of structuration theory. Basically, my aim from this study was to go beyond looking at social structures and their potential shaping effects on using the wiki technology. I wanted to understand how the constitution of structures occurs when using a social media technology like a wiki in a formal organizational context. I also wanted to see how the immiscible relationship between social media and organization might play out in the constitution of structures and the eventual impact on structuring technology use practices. A key premise in this study was thus focused on the ‘immiscibility’ between a ‘social’ wiki and a formal organization.

So, in this study I offer a deep examination of structural dynamics and processes associated with organizational use of social media. I used Orlikowski’s (2000) practice lens of studying technology use as a theoretical guide to frame my data collection and analysis. Based on qualitative data collected from both CCC and IBM I did a comparative analysis of wiki use practices at the two organizations. Qualitative data included interviews at both organizations together with some observational data, documents, and field notes obtained from CCC. The actual analysis of this data was primarily manual. I used the three modalities of structuration: interpretive schemes, facilities, and norms, which are drawn from Giddens’ theory of structuration, in the practice lens in order to examine the enactment of structure, or technologies-in-practice, in the course of using a wiki at each organization. The structural variations between the two organizations resulted in different social structures.

In order to understand the constitution of structure I started my comparative analysis of data from the two organizations by looking for underlying structuration processes that enable the constitution of structure. This analytical stage was fundamental to understanding the constitution of structure. The comparative analysis resulted in three key mechanisms describing how structure is constituted. These
mechanisms were developed through observing systematic structuration processes underlying the constitution of structure in both organizations. The mechanisms aimed at providing an understanding of how structure is constituted in a context where immiscibility defines the relationship or interplay between social media and organizations. In addition to this, the mechanisms also aimed at reflecting organizing practices in the sense of showing how people organize around certain technological and organizational characteristics in relation to using a wiki in formal organizational settings. Overall, this study was a deep examination of structural dynamics involved in using a wiki in practice and the most important contribution of this study was highlighting key mechanisms associated with structuring technology use and organizing practices.

5.6 Research Study V: More Digging

This final study was centered on the issue of new forms of organizing and structuring in relation to material characteristics and affordances of a wiki. I was intrigued by the results from Study IV especially the role material characteristics of the wiki played in enacting mechanisms of technology structuring. People enacted these mechanisms in and through a dynamic interplay between wiki and organization characteristics while using the wiki in practice. But because less emphasis was placed on material characteristics compared to social and organizational characteristics in Study IV, I wanted to examine how the material characteristics of a wiki may contribute into enacting these mechanisms, which are basically seen as organizing practices, and also understand the consequences of wiki characteristics in driving new possibilities for organizing. This focus was primarily motivated and influenced by mainstream ideas about the interplay between material and social agencies (e.g. Orlikowski & Scott, 2008; Leonardi, 2012; Leonardi, 2011; Scott & Orlikowski, 2012; Leonardi & Barley, 2008), centering on the role materiality plays in organizing and how social practices are essentially bounded by the materiality through which they are performed. Having the main aim of this thesis in mind and based on these ideas, I also wanted to examine how material characteristics of a wiki enable and constrain social practice when used in an organizational setting. Further, on a general level, because the main aim in thesis is centered on the interplay between social media and organizations, which is essentially an interplay between material and social agencies, I wanted to conduct this study to ensure a fair acknowledgment of technology.
In order to do this, we applied the affordance approach (see Leonardi, 2011; Treem & Leonardi, 2012). The concept of affordance, which originally comes from Gibson (1986), is central in this approach and focuses on the possibilities that people perceive in certain material characteristics of technology in different situations and contexts. In this view, affordances might change across contexts because each individual may perceive the possibilities, either enablers or constraints, afforded by the materiality of an artifact differently depending on his or her goals from using this artifact. The concept of affordance was therefore very useful to help us understand not only the role material characteristics of the wiki plays in organizing processes but also to see how these material characteristics interplay with other social and organizational characteristics and eventually affect ways of organizing and structuring the use of technology.

Based on four key organizational affordances of social media proposed by Treem & Leonardi (2012), we carried out an analysis of empirical data obtained through interviews from both CCC and IBM. Our analysis was essentially hermeneutic in nature as we have been examining meanings in the text so that we can identify empirical instances that represent and correspond to each individual affordance. The outcome from this analysis was twofold. First, we have been able to locate and identify the four affordances proposed by Treem & Leonardi as well as several other affordances as wiki affordances. Second, we moved beyond identifying wiki affordances by suggesting and discussing a number of properties that defined how wiki affordances are perceived and enacted in practice. These properties aimed at providing an understanding of how affordances are enacted in the interplay between material and social agencies, how affordances relate to each other, how affordances affect the use or non-use of technology, etc. In doing so, the significance and contribution of this study mainly lie in showing how the material characteristics of the wiki may afford various kinds of possibilities and behaviors that influence organizing practices in relation to using a wiki within an organizational setting.

5.7 Reflection – twisting things together

As can be read in the description of my research studies above there was a gradual evolution in my research focus. A dominant theme that binds these studies together was centered on the structural dynamics involved in organizational use of social media.
<table>
<thead>
<tr>
<th>No.</th>
<th>Focus</th>
<th>Outcome</th>
<th>How it relates to the previous paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Explore how community members use a wiki to collaborate and share knowledge. Also, identify the factors that influence knowledge collaboration and sharing using a wiki at the workplace.</td>
<td>Arguing for the dual impact of wiki openness and suggesting that the use of wiki in organizations may both enable and constrain knowledge collaboration and sharing.</td>
<td>This paper follows my research at the Licentiate level during which I was looking at how wikis can be used for knowledge sharing and collaboration at the workplace.</td>
</tr>
<tr>
<td>II</td>
<td>Perform a comparative analysis of how people use wikis compared to emails at the workplace.</td>
<td>Identifying a number of characteristics that represent key differences between wikis and emails and also describe various ways by which each technology can be used.</td>
<td>I was intrigued and puzzled by many questions about how different wikis are from other technologies mainly emails. The paper was an investigation to pin point the uses of wikis compared to the uses of email.</td>
</tr>
<tr>
<td>III</td>
<td>Examine social structures that might evolve in relation to using a wiki at the workplace.</td>
<td>Identifying several kinds of social structures that influence the use of wikis for knowledge sharing and collaboration.</td>
<td>Influenced by observations in Paper I of power issues I wanted to examine how social and organizational structures affect the use of the wiki. In this paper, therefore, I looked at the enactment of structure in relation to wiki use.</td>
</tr>
<tr>
<td>IV</td>
<td>Examine how people structure and organize their wiki use practices. Also, investigate the structures involved in using a wiki and the enablers for enacting these structures.</td>
<td>Developing three key mechanisms that help in understanding the variations in using wikis as well as the constitution of structures that govern wiki use.</td>
<td>In this paper, I looked at how structures are enacted by people in practice. So, it was an effort centred on understanding how and why people enact certain kinds of structures.</td>
</tr>
</tbody>
</table>
Exploring the potential for exploiting affordances. Also, developing an understanding of the dynamics that underlie the enactment of wiki affordances. Extending the notion of affordance by theorizing new concepts that provide means for describing relational dynamics, situational and contextual conditions, and social factors involved in enacting, perceiving, and exploiting affordances. The mechanisms developed in the previous paper are essentially social mechanisms that represent various social practices. In this paper, I wanted to emphasize technology features by using the concept of affordance to acknowledge the 'materiality' of wikis.

**Table 8: Summary of the research studies and their interrelationships.**

See Table 8 above for an overall summary of the five studies and their interrelationships. My reflection here aims at twisting my studies together in terms of showing how each study was built on the results of the previous. This importance of such a twist is overarching because it aims to offer the reader of my thesis an idea about how I think of the relationships and interdependencies across all studies that form the basis for my theoretical discussion and elaboration in the next chapter. It is also important because it gives some reasoning for why I did subsequent studies through showing how each study builds upon the results of the previous. Table 8 above shows a summary of the five studies and their interrelationships:

These structural dynamics were salient from the earliest empirical exploration in Study I and consequently later studies, as I showed above, were focused around developing this theme. One interesting aspect of this evolution is the increasing depth of my focus on structural issues related to social media use in organizations. As I started Study I my assumptions about the use of social media in organizations were mainly deterministic, implying that social media are flexible technologies that have the potential to transform organizations. After obtaining my first empirical set of data, most of my assumptions were changed and this has led me to start thinking about the new observations in my empirical data. I had strong beliefs then about the importance of structural issues in relation to organizational use of social media and I started to get very much interested into understanding these issues and build upon my results from Study I. This was the original basis upon which my later studies were based.
The link (See Table 8) across these studies was thus established by maintaining a focus on structural dynamics associated with using social media at the workplace. It can be seen in Study I by looking at the results suggesting that structural properties of an organization (e.g., hierarchical relationships) have an important impact on using a wiki at the workplace. Then in Study III, I applied structuration theory in an attempt to address deeper structural dynamics. This attempt resulted in a deeper understanding of structural dynamics of social media use in organizations through highlighting a number of social structures that develop in association to using a wiki at the workplace. This study built on the previous results in the sense of providing more elaboration on the structural properties of the organization observed in Study I, by explaining the production and reproduction of structures that impact the use of a wiki at the workplace. One important observation in Study III, which in fact led me to develop Study IV, was centered on potential tensions between technology and organization characteristics. I have seen that the ways of using a wiki may not necessarily be in harmony with established ways of doing work in a specific organizational setting. In Study IV I wanted to examine how these tensions may play out in the constitution of structures that affect and govern the ways by which a wiki is used in an organizational settings. Here again structural issues were dominant and but also deeper as I sought to understand not only the kinds of enacted structures, as I did in Study III, but also examine how certain social and organizational structures are constituted in relation to using a wiki at the workplace. Potential tensions that were observed in Study III, and generally in the literature on social media, were salient in Study IV in the sense of seeing how these tensions might play out in the constitution of structure and eventually affect organizational use of social media. Finally, Study V was focused on organizing practices in relation to using a wiki in formal organizational settings. Using the affordance approach the focus in this study was centered on the combinations of material and organizational features in an attempt to understand the potential for novel organizing practices to emerge. So an emphasis on how certain wiki and organizational characteristics interplay with each other in using the wiki was made to highlight how these characteristics affect organizing and structure the use of technology.

Hence the prevalence of structural issues in my studies is the glue that twists all of them together. As a key theme across all my research studies in this thesis structural issues related to organizational use of social media suggest the need to emphasize these issues in my theoretical discussion and elaboration in the next chapter. Surely this discussion will build upon my observations in these studies and will
also further theorize them in order to produce an overarching understanding spanning all my results and conclusions. The aim is to develop a theoretical contribution that exploits the twist across my studies, hence achieving a concise theoretical understanding that satisfies my research aims and questions. The next chapter, Chapter Six, will be the place where I provide such understanding and contribution.
CHAPTER SIX
THEORETICAL DISCUSSION

This chapter is dedicated to discussing the key issues raised in my empirical investigation in relation to the main aim of this thesis: understanding the organizational use of social media. The empirical studies presented in the previous chapter form the basis of my theoretical discussion and elaboration of these issues. I will start with a discussion of the overarching question that represents one of the most central concerns in my thesis: how social media are used in formal organizational settings. In this discussion, I will draw on the results and conclusions from my empirical studies, highlighting how different characteristics of social media and the organization may play out in implicating the interplay between social media use and formal organizational structures. One key argument in this discussion will be centered on the bureaucratic use of social media in organizations. Then, I will provide further discussion of the role of materiality in organizing and structuring the use of social media in formal organizational settings. In this discussion I aim to acknowledge and shed light on the material characteristics of social media and discuss how these enable and constrain different social and organizational practices. Finally, I will provide a theoretical elaboration aiming at summing up the main theoretical arguments developed throughout the thesis. This elaboration will be offered through theorizing the perspective of immiscibility for understanding social media use in organizations.

6.1 ‘the question of social media use in organizations’

One of the major drivers for this thesis was trying to examine how the changing character and role of technology, primarily social media, might affect and transform established structures and practices in organizations. Technology, as discussed earlier in my theoretical
considerations, has often been seen as a taken-for-granted tool that is only used to support existing organizational structures and practices with no potential for altering these structures or enabling novel ways of organizing (Zammuto et al., 2007; Zuboff, 1988). Over the years, however, this view of technology has changed and the role of technology in organizational life became more explicit and central. It is often argued that perpetual technological developments have resulted in fundamental changes in technology use practices and forms of structuring and organizing (Leonardi, 2012; Zammuto et al., 2007). The evolution and development of social media is a case in point. Social media, as stated above, is argued to be a driver for such changes that fundamentally affect both organizations and the everyday lives of people. This thesis aimed at examining the potential of social media in driving such changes and effects with a particular interest in understanding how they are likely to be seen in formal organizational settings. So, the compelling question here is how social media are really used in formal organizations and how they can potentially affect established structures and practices in these organizations.

The answer to such a question is surely not clear-cut. But the findings and conclusions from my empirical studies (see Mansour et al., 2011; Mansour, 2012; Mansour et al., 2013) show some clear consistency in suggesting that the use of social media within formal organizational settings might not be really that social. In other words, social media might not, at least to some extent, be used in organizations in ways that satisfy their principally ‘social’ nature, contrary to the assumption that dominates the mainstream literature on social media (e.g., Aral et al., 2013; Bibbo et al., 2010; Hasan & Pfaff, 2006; Stenmark, 2008; Wagner, 2006; Grudin & Poole, 2010; Holtzblatt et al., 2010) or exploit their putative social characteristics like openness, flexibility, transparency, visibility, and so on. But what does this really mean? The principal understanding of social media as suggested by these scholars implies that social media may have the potential to democratize the flow of knowledge and information, reduce established hierarchies through enabling flat and horizontal structures, and enable fluid patterns of collaboration and communication within organizations. In practice, this may not usually be the case. From an empirical perspective, the use of a social media technology such as a wiki within an organizational setting is often governed by various kinds of social and organizational structures as well as other specific kinds of structures related to technology use, so-called technologies-in-practice, that may shape the potential of social media. So, basically social media use in organizations might well resonate with the use of many other kinds of traditional technologies.
Larsson (2012), for instance, made a relevant argument about using and exploiting interactive social media technologies, such as Twitter, in the context of online news and political participation, suggesting that people do not really use Twitter in fundamentally new ways and their traditional journalistic behavior is often maintained in practice. During my empirical investigation of the two organizations I observed that the formal, established organizational characteristics such as hierarchical structures and relationships, standard norms and routines, values, etc. have a fundamental impact on influencing the ways by which social media are applied and used in an organizational setting. This impact was captured in all the empirical studies included in this thesis and can be understood in a number of ways. In my first empirical study (Mansour et al., 2011) I argued that the openness of the wiki has a dual impact on knowledge collaboration and sharing. This impact, I further argued, was defined by enablers and constraints associated with various forms of social (e.g., motivation-to-use structure) and organizational structures (e.g., experience structure). Such structures shaped the ways by which a wiki is used in terms of enabling or constraining knowledge collaboration and sharing at the workplace. Further observations of the role of these structures in shaping and governing the ways by which a wiki is used have been made in study III (Mansour, 2012) and study IV (Mansour et al., forthcoming). Both studies showed that in practice existing social and organizational structures in a specific organizational setting might be reflected into the wiki platform, resulting in a reproduction of the structures that govern, and sometimes limit, as in the case of CCC, the ways by which a wiki is used. Similarly, the dynamic interplay between wiki use and various organizational structures enabled the production or enactment of new structures as well as the reproduction of existing structures that can either enable or constrain wiki use at the workplace. More elaboration on this interplay can be found in section 6.3 where I discuss the perspective of immiscibility. In this manner, various kinds of structures can be produced and reproduced in two main ways: reflection and enactment. The reflection of structures, which is essentially reproduction, represents a kind of mirroring of existing structures in the organization into the technological platform in and through using technology resulting in enforcement and augmentation of these structures. An empirical instance suggesting this is the reflection of hierarchical relations into the wiki in the sense that employees with less expertise, for instance, cannot edit, or sometimes comment on, wiki content made by those who have higher levels of expertise in the organization. This way of reflecting structures is similar to the first and second types of enactment discussed by Orlíkowskí (2000): inertia and application.
Then, the enactment of structures represents the production and development of new structures that often evolve in relation to the dynamic interplay between social media use and organizational structures and practices. This interplay can be understood, in structurational terms, through the duality of structure (Giddens, 1984) and the mutual constitution of structure and agency. So, when people interact with each other using the wiki they draw on existing organizational structures that govern their interactions. At the same time, people produce or enact new structures through these interactions, hence the duality of structure. Several instances of the enactment and production of structures (e.g., open structure) were observed in study three (Mansour, 2012) and study four (Mansour et al., forthcoming).

By and large, arguing that the use of social media within formal organizational settings is not really social might evoke two main ideas. The first is that it might be unreasonable to claim that the evolution of new technologies like social media may have the potential to fundamentally transform and change established ways of structuring and organizing in organizations as many scholars suggested (e.g., Wagner, 2006; Stenmark, 2008; Hasan & Pfaff, 2006). This is because such claims might not be realized in practice because the preeminence of established structures and practices in organizations may stand in the way of any potential changes, especially when these structures and practices may not necessarily be in harmony with new ways, practices, or values enabled by social media as will be discussed later in section 6.3. So while change will always occur, and is to some extent inevitable, still tensions may arise in association with the dynamics ways by which people may use social media and the ways by which an organization develops and defines its structures and practices. It was argued, for instance, in study IV (Mansour et al., forthcoming) that people, whether intentionally or unintentionally, often develop ways or mechanisms in relation to using the wiki at the workplace that facilitate and enable the constitution of various kinds of structures. These structures, eventually, may either enable or constrain any potential for change enabled by social media. This understanding, of course, should not be read as if I am a social determinist, ruling out the central role social media (and technologies in general) may play out in shaping the ways people use technology and organizations work and function. In fact, the mechanisms discussed in study IV (Mansour et al., forthcoming) were sometimes enacted by people in response to material and social characteristics of the wiki. For instance, the enactment of the policy-making procedures mechanism was driven by the material and social properties of the wiki. People wanted to ‘govern’ their use of the wiki
by developing policies that would structure and organize how open the wiki (material) should be and if it was open how openness (social) should be dealt with. A specific discussion of materiality and organizing is presented in the next section. So, generally speaking realizing the potential for change by social media might be hampered by intrinsic and enriched ways of doing things in organizations as well as the potential for tensions or incompatibilities between these ways and any new ways enabled by social media as will be elaborated later.

The second idea is more important and central to the current discussion than the first because it offers a new and rather different perspective on social media. It can be thought of in terms of Checkland & Holwell’s (1998) suggestion that the computer is just an electronic version of bureaucracy that exists in organizations (see also Dahlbom & Mathiassen, 1992). This insight is very useful when reflecting upon the implications associated with the interplay between social media use and organizations. Is it possible to think of social media technologies as bureaucratic technologies, rather than social, reflecting and even enforcing the bureaucracy of the organization in which they may be used? My argument, that the use of a social media technology within an organization might be governed by social and organizational structures, may imply this possibility. What is really important here, though, is not knowing whether technology is social or bureaucratic, but how technology might potentially become social or bureaucratic in practice. My empirical investigation, I argue, suggests that applying and using social media in formal organizational settings might go through a ‘process of bureaucratization’ enabled by the reproduction of established ‘bureaucratic’ structures in the organization. I would also argue, in structurational terms, that if we compare two possibilities, the production of new structures that might potentially have enabling effects as against more reproduction of existing structures occurs, the latter is more likely. One important reason for this might well relate to Weber’s (1978) assertion that bureaucracy is domination through knowledge. So one may argue that a recognition of the potential of social media to facilitate new forms of creating and sharing knowledge, for instance, by both people and organizations might make them more keen to maintain existing norms, routines, values, and practices that essentially enforce bureaucratic structures so that they ensure control over knowledge, sustain competitiveness, maintain power status, etc. What might be interesting to note in light of this argument is whether the use of social media may actually provoke practices that not only maintain existing structures and forms of organizing but also enforce them. So, instead of enabling new forms
of ‘adhocratic’ organizing (cf. Mintzberg & McHugh, 1985) the use of social media in a formal organizational setting may to some extent ‘push’ people and organizations to keep things the way they are, or in other words, keep structures of domination (cf. Giddens, 1984). In my empirical investigation at the two organizations I had some sense that the use of a social media technology like a wiki at the workplace might make existing established structures in the organization more reflexively available. I mean that, when both junior and senior employees realized that this technology enables a new way of creating and sharing knowledge, they tended to think about their roles, professional relations, expertise, etc. in a different way, especially in practice. So, people in both organizations were in fact very careful when attempting to contribute something into the wiki whether by adding new content, editing content, or even commenting on content. A junior employee at CCC, for instance, would think twice before attempting to edit or even comment on wiki content contributed by his manager or someone higher in rank. In IBM, expert people want others to consult with them before anyone can make a contribution into their wiki content. I would argue that such practices might make structures embedded in the organization (e.g., hierarchical structure, professional roles, etc.) more explicit and the degree of the effects associated with them on the use of social media possibly higher.

That is, of course, not to say that the use of social media technologies does not bring any changes because of potential constraining effects of these structures. But I would argue that the change may only be on a task or individual level rather than an organizational level despite the attempts made by an organization, as in the case of CCC, to make a large-scale change. The point is that change occurs on a small rather than a large scale. It has been observed during my empirical investigation that some employees, for instance, were influenced by the use of a wiki at the workplace by developing new perspectives about their work that make them more motivated to be open with others and share their knowledge and expertise. Even individual managers thought that technologies like a wiki might give them an opportunity to share their expertise and benefit others. These are empirical instances suggesting that change occurs on different levels and in different ways. I saw no instances suggesting changes on a more fundamental organizational level. It can perhaps be said that only varying degrees, which are often limited, of change on an organizational level may occur. In CCC, the introduction of the wiki may imply that the organization wanted to try something different by exploiting the wiki to become more open and flexible, even though this may not have happened in practice. IBM also wanted to increase and enrich collaboration possibilities by using
social software and allow people to interact and connect with each other through enabling dynamic sharing of knowledge. It is worth noting that IBM exhibited some kind of flexible ‘bureaucratic tendencies’ (e.g., allowing any individual employee to create their own wikis, although there are rules to govern their use of these wikis, rather than using a central wiki that is controlled by a group of administrators) towards the use of social media compared to CCC. Despite their varying degrees of flexibility, which maybe associated with various reasons (e.g., historical background and development of each organization), both exhibited certain structural patterns (cf. Mansour, 2012; Mansour et al., 2013) that contributed into governing the use of social media in different ways. Overall, perhaps the data might be limited in terms of offering a broader view on an organizational level but still it clearly suggests that the reproduction of structures is a barrier for fundamental organizational changes.

So why is it that despite the advancements associated with social media technologies their use in formal organizations might not bring about the expected changes. Are we using new advanced technologies just to help us do what we are accustomed to do? How can we possibly expect changes if technology is used in ways that reproduce established structures and practices? These questions may lead to another way of understanding social media use in organizations and their potential for transforming organizational structures and practices. That is, understanding social media use in organizations through the examination of tensions or incompatibilities that might potentially exist between social media and organizational characteristics. These tensions and incompatibilities, as previously suggested, are seen to be drivers for an immiscible relationship between social media and organization. What immiscibility might suggest to us in the context of the current discussion, I argue, is that the reproduction of structure, which is seen here as a barrier for change or at least as a way to keep things the way they are, may occur because both people and organizations perceive the affordances or ways of using social media to be at odds with common ways and practices of doing work. More clearly, because social media might be thought of by (senior and junior) organizational members as affording use practices that may potentially challenge or at least alter existing organizational practices, routines, norms, etc., they may perceive this potential as some kind of a ‘threat’ in a professional environment and refuse to accept such challenges and changes. Hence, they tend to maintain existing structures and practices and eventually reproduce structures that may essentially constrain the potential for change.

In light of this understanding of immiscibility, I should stress that change enabled by social media is not entirely impossible. As I have
already stated, the production or enactment of structures, compared to reproduction, in relation to using social media may involve changes in organizations. On the one hand, people tend to enact these structures primarily because of some perceptual and conceptual (See section 6.3 for more elaboration) shifts related to their use and understanding of technology that may lead them to change their attitudes and practices (e.g., employees seeing the use of the wiki as an opportunity to co-learn with others). On the other, organizations may also contribute into enabling the enactment of structures that may lead to change by changing existing norms or adapting certain ideological patterns (See section 6.3 for more elaboration) so that the potential from using social media can be realized. Immiscibility then can be understood not as if there is no possibilities for change but as one important reason for why structures continue to be reproduced limiting, rather than eliminating, the potential for change. In section 6.3, I propose the perspective of immiscibility for understanding social media use in organizations where I provide an elaborated discussion of the immiscible interplay between social media and organization. In the next section, I discuss the material and social characteristics of social media and how these play out in organizing practices.

6.2 ‘organizing in and through social media use’

Perhaps a good starting point to start this discussion with is to refer to Zammuto et al. (2007). In their paper, ‘IT and the changing fabric of organization’, they argued that the combination of organizational and technological features creates new possibilities that affect organizational form and function. They also discussed a number of affordances to capture these new possibilities for organizing. But how is it really that these new possibilities affect organization form and function? I believe that the argument made by Zammuto et al. is true to some extent given increasing technological developments. But I would argue in this section that the potential for any new possibilities afforded by the combination of social media and organization features might not necessarily bring changes that affect organization form and function (e.g., supplanting organizational hierarchies in the coordination of activities) as argued by Zammuto et al. One way to understand this is to focus on what technology might afford in terms of enabling or constraining new possibilities for organizing and how any potential affordances might play out in organizing practices. In Mansour et al. (forthcoming), Study IV, we discussed a number of
mechanisms that underlie the constitution of structure. These mechanisms can be seen as ‘new’ forms of organizing which are enacted in the interplay between technological and organizational features. The mechanisms provide means to understand variations in wiki use practices in organizational settings. They also provide means to understand potential uses and actions afforded by the wiki. In this way, we argued that people tend to organize their practices relative to organizational rules, roles and relationships, and culture and behavior. The possibilities afforded by a wiki then become implicated with the ways by which people think about these organizational factors. That is to say, the combination between the features of a wiki and an organization may either enable or constrain potential uses and actions. It is therefore important to realize that the relationship between technology and organization may result in unpredictable affordances and also unintended consequences for organizations. At least, that was the case with using a wiki at the two studied organizations.

Further, in Mansour et al. (2013), Study V, we used an affordance lens to further our understanding of possible combinations of technology and organization features. We found several wiki affordances that describe various uses of technology as well as organizational practices. These affordances represent possibilities enabled by the entanglement of wiki and organizational characteristics. This entanglement offers a unique opportunity to look at the material characteristics of a wiki in the sense of acknowledging and understanding how they really interplay with organizational characteristics to make certain affordances possible. Each affordance discussed in Mansour et al. (2013) represents unique possibilities or behaviors that are essentially enacted in a dynamic interplay between material wiki characteristics (e.g., openness, editability, etc.) and organizational characteristics (e.g., tendency to control). For instance, the affordance of validation reflects this interplay in the sense of highlighting the role visibility or openness of the wiki plays in driving certain organizing practices or behaviors that result in a tendency to validate and control content contributed into the wiki. In this way, the enactment of the validation affordance describes how people respond to or deal with the material characteristics of technology as well as how these characteristics shape their practices and ways of organizing (cf. Kallinikos et al., 2012; Leonardi, 2012; Leonardi & Barley, 2008).

To elaborate, because the wiki affords visibility of content, or because people perceive that the wiki affords visible content, they tend to behave in certain ways so that they only contribute something ‘true’ or valid. In some other cases, they choose not to contribute as
an expression of their perceptions of the affordance of visibility because, for instance, of their concerns about professional relationships with their colleagues or because they lack confidence to contribute in front of a large audience. This is an example that describes how people organize their wiki use practices relative to the wiki characteristic of visibility and their organizational roles and relationships at the workplace. It also shows that people may enact affordances that enable as well as constrain their practices. In this respect, we observed various dynamics that underlie the enactment of wiki affordances and shape how people enact, perceive, and exploit the possibilities in them. These dynamics –multiplicity, situatedness, referential, and communal– helped us in understanding the possibilities technology may afford, what affordances maybe enacted in certain contexts and situations, how the possibilities of one affordance may relate to the possibilities of other affordances, and how people jointly enact affordances. In other words, these dynamics, which we call properties of affordances, provide means to understand the interaction, or the combinations, between technology and organization features.

In addition, the use of wikis entailed various combinations of technology and organization features represented by affordances that can either enable or constrain practice in organizational settings. To say that such new combinations may affect organization from and function, as Zammuto et al. argued, may not necessarily be entirely true. The enactment of affordances like viewability and validation, for instance, suggest that people organize their wiki use practices in ways that satisfy, and sometimes enforce, existing organizational practices. This results in a reproduction of structures, hence a bureaucracy of social media. Most importantly, it implies that the enactment of such affordances maybe influenced by the tensions or incompatibilities, or immiscibility, that might exist between technology and organization characteristics. The enactment of affordances such as validation occurs because people perceive that certain possibilities of the wiki (e.g., co-editing of content) might not be consistent with the ways they do work. They then attempt to exploit other possibilities (that allow them to continue to do the same things they often do) enabling the enactment of affordances that do not necessarily entail any new possibilities for action. In this way, immiscibility plays a fundamental role in the enactment of affordances, and hence ways of organizing, by shaping the interaction of technology and organization features which provides a medium for enacting affordances.
6.3 Social Media Use in Organizations – ‘the perspective of immiscibility’

Understanding the production, and most importantly, the reproduction of structures that govern the use of social media in formal organizational settings can be achieved through what I call the perspective of immiscibility. I argue that one of the most fundamental drivers for the reproduction of structures is the potential tensions or incompatibilities, metaphorically described here by immiscibility, between social media and organization characteristics that may influence the ways by which social media are used in formal organizations. Figure 7 shows a two-dimensional representation that visually describes the potential ‘immiscible’ interplay between the organization and social media dimensions as well as the reflection and enactment of structures that may result from this interplay. This representation aims at providing a visual understanding of how I view immiscibility, how it influences the interplay between social media use and organization, and what results from this interplay.

**Figure 7:** A two-dimensional visual representation of the perspective of immiscibility and the interplay between social media and organization.

The visual representation consists of two main dimensions. The horizontal line denotes the dimension of organization and the vertical
line denotes the dimension of social media. Each dimension consists of three key elements. The dimension of organization consists of structural, behavioral, and ideological elements. The dimension of social media consists of artefactual, perceptual, and conceptual elements. Table 9 below provides an overview of the elements of both social media and organization:

<table>
<thead>
<tr>
<th>Elements of Social Media and Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Artefactual</strong> element refers to the characteristics that define the materiality of technology rather than its use.</td>
</tr>
<tr>
<td><strong>Perceptual</strong> (affordances) describe peoples’ perceptions and interpretations of technology and its use in practice.</td>
</tr>
<tr>
<td><strong>Conceptual</strong> (affordances) refer to general assumptions, beliefs, expectations, etc. about technology which are often developed by people in their diverse environments through a myriad of sources such as reading, word-of-mouth, news, Internet, etc.</td>
</tr>
<tr>
<td><strong>Ideological</strong> element describes abstract, established beliefs, ideas, and values held by employees and management about ways of work and organizing such as decision-making and reporting standards.</td>
</tr>
<tr>
<td><strong>Behavioral</strong> element is related to the ideological element but represents actual practices, routines, procedures, and so on that might be enabled by specific ideologies.</td>
</tr>
<tr>
<td><strong>Structural</strong> element refers to the formal hierarchical structure (e.g. role structure) of an organization.</td>
</tr>
</tbody>
</table>

Table 9: Summary of the elements of social media and organization.

These elements provide the basis for the potential emergence of immiscibility, or may give rise to some forms of immiscibility influencing social media use in an organizational setting. Each of these elements may span several characteristics pertaining either to organization or to social media. The development of these elements was in fact done to categorize or put together specific sets of characteristics into unique categories represented by the three elements on the organization and social media dimensions. The distinct nature of some of these characteristics is what causes potential tensions or incompatibilities between organization and social media, hence immiscibility. More on this and the influence of immiscibility will be presented in the next section. The influence of immiscibility can then be seen through the dashed lines in the middle
that represent structures enacted or reflected in and through the interplay between social media and organization characteristics in practice, or in other words, the actual use of social media within the formal structures of an organization. In structurational terms, the enactment of structures represents the production of new structures and the reflection of structures represents the reproduction of existing structures.

As stated before, each of the organization and social media dimensions consists of three different elements. On the dimension of social media the artefactual element essentially represents material characteristics of social media. The term artefactual is drawn from Orlikowski (2000) and I use it here to emphasize the distinction made by her between the technological artifact and the use of technology. So this element refers to the characteristics that define the materiality of technology rather than its use.

Then the perceptual element refers to perceptual characteristics or affordances of technology. This element mainly describes peoples’ perceptions and interpretations of technology and its use in practice. When an organization, for instance, decides to apply and use a specific kind of technology, say a wiki, both employees and managers may develop various perceptions about the possibilities afforded by this technology as well as the ways by which it can be used. Perceptions such as ‘a wiki as a tool that is used by some people to show off in front of a large number of people’, ‘a tool that drives innovation and collaboration’, or ‘a tool that is only used by the elite’, etc. represent examples of empirical observations that show various perceptual characteristics and affordances of a wiki that make for the perceptual element of social media. Such understanding of the perceptual element can be related to Giddens’ (1984) interpretive schemes. This is because peoples’ perceptions of technology and its use are most likely influenced by the stocks of knowledge that people possess through previous experiences and observations.

Further, the conceptual element refers to conceptual characteristics or affordances of technology and can be understood as general assumptions, beliefs, and expectations about technology which are often developed by people in diverse environments through a myriad of sources such as reading, word-of-mouth, news, Internet, etc. In this view, people do not necessarily use the technology but they develop some kind of a ‘worldview’ about the possibilities and constraints that a technology may afford. That is to say that the conceptual characteristics or affordances of technology are only developed in the minds of people and they essentially represent some kind of abstract characteristics of technology.
This is, however, should not to be construed as perception. There is a major difference in the way I view perceptual and conceptual elements of social media. Perceptual in the sense of the current discussion implies that people have experienced technology and developed some knowledge about its possibilities through actual use of technology, introduction or training by the organization, or observing other colleagues using it, etc. People therefore develop particular perceptions of technology and its use in practice. It is possible then to think about the perceptual element in terms of a practical understanding of what people think a technology might or might not afford them in practice (cf. Leonardi, 2011, 2012; Treem & Leonardi, 2012; Zammuto et al., 2007). In contrast, the term ‘conceptual’ describes what people suppose or assume a technology can or cannot do without necessarily experiencing its use in practice. People often develop and hold certain conceptions or worldviews about technology through various sources in their external environments without even using the technology. Examples of conceptions about the wiki from the empirical data may originate in my participants’ general ideas about the phenomenon of social media. For instance, almost all my research participants mentioned Facebook, Twitter, and other social media tools in an attempt to convey and also reflect their conceptual understanding of the use of such tools and how its influences their understanding of the wiki at work. What is particularly interesting about the conceptual element of social media is that a conceptual understanding of technology may have fundamental consequences for how people develop their perceptions about certain kinds of technologies and eventually affect the ways they use these technologies in practice. During my empirical investigation several participants referred to conceptual characteristics of the wiki such as “our wiki is not Facebook” or “using the wiki should not be journalistic where anyone can throw opinions” that affected how they use the wiki at the workplace. Hence, the combination of these three elements may describe social media as a material artifact, as an affordance, and as an idea.

On the dimension of organization, the ideological element of organization can be understood as a set of established beliefs, ideas, and values held by employees and management about ways of work and organizing such as decision-making, strategy development, reporting standards, etc. It essentially represents ‘abstract’ drivers for why an organization and its members would do things in certain ways. For instance, bureaucracy, as discussed in Chapter 2 and also in section 6.1 in the current chapter, might be one form of organizational ideology that drives and shapes the way decision-making, for instance, is carried out. My discussions with both
employees and managers at the two organizations reflected various insights into the ideology of each organization. For instance, CCC exhibits an ideology that is essentially bureaucratic because of the dominance of a top-down approach for designing strategies, organizing and structuring relations, sharing of knowledge, etc. It is interesting to note that such an observation was not made only during discussions with managers but with employees too, who tend to speak of their own practices in a way that expresses a bureaucratic style of their professional work. One observation from CCC was, for instance, when one of the participants informed me that she would like to be pushed by her manager to use the wiki implying that she doesn’t feel it is a ‘formal professional’ tool that she should use unless she is told to do so. IBM, in contrast, despite observing some bureaucratic tendencies (e.g., domination and influence of expert people), their practices are more flexible and hence their ideology is less bureaucratic. In the sense of Giddens’ structuration, the ideological element of organization may relate to interpretative schemes.

Then the behavioral element of organization is basically related to the ideological element in the sense that behavior is driven and shaped by ideology. The basic difference is that the behavioral element represents actual practices, routines, procedures, etc. For instance, in CCC behavioral practices related to using the wiki are primarily formal. Anyone interested in using the wiki is required to submit a formal request to the KM department to get access to the wiki. In IBM, such practices were very informal in the sense that anyone can create a wiki and use it for various purposes inside the organization. In this way, the behavioral element might relate to the norms modality in Giddens’ structuration.

The third element on the dimension of organization is the structural element. This element should not be confused with Giddens’ concept of structure. I use the structural element here to refer to the hierarchical structure of an organization. This describes the formal hierarchy (Zammuto et al., 2007; Weber, 1978) that determines organizational characteristics such as the lines of authority, reporting mechanisms, and control and coordination procedures. In my research, CCC and IBM exhibited different structural characteristics in terms of the hierarchical structure and ways of organizing. The communities using the wiki in CCC, for instance, have a hierarchical structure that involves specific roles such as community leaders, captains, etc. and serves as one way to control the wiki. Generally, in IBM no such structure exists and the use of the wiki is to some extent ‘adhocatic’.
6.3.1 ‘the immiscible interplay between social media and organization’

Earlier in this thesis, I discussed immiscibility as a metaphor to capture potential tensions or incompatibilities between social media and organization characteristics (see Grudin & Poole, 2010; Yeo & Arazy, 2012). But how can we understand such tensions or incompatibilities that underlie the potential immiscible interplay between organization and social media, or simply put, how does immiscibility emerge in practice? In the previous section, I focused on key elements associated with organization and social media dimensions in the visual representation of the perspective of immiscibility. In this section, I will discuss how these elements may play out in practice and underlie the potential emergence of immiscibility based on my empirical observations. Then, I will discuss how the immiscible interplay between social media and organization may enable reflection and enactment of structures that govern the ways by which social media are used in formal organizational settings.

The distinct nature of some of the characteristics pertaining to organization and social media, as discussed above, is what creates the tensions and incompatibilities that drive immiscibility. But how does the distinct nature of such characteristics create tensions and incompatibilities between organization and social media and how do these characteristics eventually contribute into the emergence of immiscibility in actual use?

In Chapter 1, I discussed some theoretical arguments (e.g., Grudin & Poole, 2010; Yeo & Arazy, 2012; Arazy & Croitoru, 2010; Patterson et al, 2007; Arazy et al., 2010) that center on potential tensions and incompatibilities between wiki and organizations characteristics. Some discussed incompatibilities between wiki ‘egalitarian’ practices and the command-and-control nature of corporate environments. Others discussed tensions between wiki knowledge production practices and common knowledge work practices in organizations. Using the perspective of immiscibility to understand organizational use of social media provides an empirical account of such tensions and incompatibilities that shape the interplay between organization and social media.

In practice, each element associated with organization and social media represents a unique set of characteristics that may or may not contribute to immiscibility. So, if one kind of social media is designed to support and facilitate co-creation of content (an artefactual characteristic), like in a wiki for instance, and then applied in an organization where dominant ideology is bureaucratic (an ideological characteristic) imposing top-down channels for creating and sharing
knowledge then immiscibility might occur. Immiscibility here might be expressed in two different ways. Firstly, through incompatibilities that may occur because of differences between flexible knowledge sharing practices that might be afforded (perceptual characteristic) or might be thought of to be possible (conceptual characteristic) by using technology and established top-down organizational knowledge sharing practices (behavioral and ideological characteristics). Secondly, through tensions that may occur when the organization may simply control technology (behavioral characteristic) making it difficult to be used in ways that satisfy what this technology is designed for (artefactual characteristic) or what is believed this technology might afford (perceptual and conceptual characteristics). In such a case when various characteristics of organization and social media interplay with each other in practice incompatibilities and tensions arise and then serve as drivers for immiscibility. This type of immiscibility maybe called complete immiscibility because change, or metaphorically speaking mixing (in the sense of enabling new ways or changing existing ways of knowledge sharing) is very unlikely to occur. So, one or more characteristics related to one or more elements of organization may involve tensions and incompatibilities with one or more characteristics related to one or more elements of social media. This creates an immiscible interplay between various organization and social media characteristics resulting in several consequences for technology use practices and ways of organizing. The immiscible interplay is represented by dotted curved lines in the visual representation above. It is worth noting that this interplay may sometimes involve compatibility and harmony, depending on the context where technology might be used, between various characteristics of organization and social media which may drive various kinds of changes, or metaphorically speaking ‘miscibility’, that enable or constrain the use of technology.

The application and use of wiki at CCC and IBM may offer some empirical explanation and justification for this understanding of immiscibility. CCC decided to apply a wiki aiming at enabling dynamic sharing of knowledge, capturing of expertise, etc. The company wanted to exploit the material characteristics of a wiki to achieve these purposes. But dominant ideology, common behavior and practice, and the hierarchical structure of roles and relationships led the company to control the wiki, which had constraining effects on wiki use practices and ways of organizing. In IBM, the interplay was similar but with different consequences. Established beliefs and values (ideological characteristic) in the organization may in fact support the use of a wiki for the co-production of knowledge (artefactual characteristic) because generally people think of their
organization as an innovative and creative company. In this case, immiscibility may not occur in relation to the ideological and artifactual elements because harmony is very likely to occur. But the interplay between characteristics related, for instance, to the perceptual and behavioral elements may involve immiscibility. One empirical instantiation was that of an expert software developer who believed that his project team members should consult with him before making any kinds of contributions to the content he shared on the wiki. This instance can be described by what I call partial or temporal immiscibility. Here, one can sense tension between perceptions of technology and common organizational structure, behavior, and ideology. As an expert, the software developer perceives the potential from using collaborative technologies but still he does not want others to override his work on a wiki without getting back to him. In this way, there is production or enactment (e.g., enacting collaborative use of technology) as well as reproduction or reflection (e.g., reflecting a hierarchical role of being an expert) of structures that can either enable or constrain the use of technology.

The dashed lines in the middle of the visual representation above capture these structures and their associated consequences. These lines aim at highlighting the outcome from a potentially immiscible or sometimes miscible interplay between social media and organization. So, in practice, any kinds of structure that might be produced (enacted) or reproduced (reflected) can be captured on the reflected and enacted lines. As can be seen in the visual representation, each of the dashed lines is denoted with the letter ‘s’ implying structure and a number (e.g., s1, s2, s3, ...) implying that more structures may continue to be produced and reproduced in and through the interplay between social media and organization. It is therefore possible that a combination of the enacted and reflected structures is captured on these dashed lines because the interplay, as stated before, may enable both the production and reproduction of structures. Further, each of the dashed lines represent a unique structure, and each structure may either enable or constrain technology use. Many kinds of structures were observed during my empirical investigation. A detailed account of these structures can be found in Mansour (2012) and Mansour et al. (forthcoming) where I discuss what kinds of structures are enacted or reproduced and how each structure contribute into enabling or constraining the use of technology.

In order to put things in context and further elaborate on the perspective of immiscibility I reflect below on my argument concerning the bureaucratic use of social media in formal organizational settings. The bureaucratic use of a wiki at CCC, for
instance, is enabled by various reflected and enacted structures and can be understood through the interplay between the elements associated with the social media and organization dimensions. Starting at the dimension of organization, the ideology at CCC is essentially bureaucratic, at least in relation to using the wiki. The hierarchic structure of the communities of practice and the appointment of various community leaders, captains, and subject matter experts are important examples why the ideology at CCC might be bureaucratic. This ideology, of course, influences behavior. So managers, for instance, often want to review content contributed by others onto the wiki to ensure its validity. The KM department therefore introduced a review system that allows those managers to control and filter content published on the wiki. This kind of behavior reflects the bureaucratic ideology and the hierarchic structure of the organization too. Then, looking at the dimension of social media, the wiki as a technology is principally open to allow for the collaborative production of knowledge. This is in fact the aim of using the wiki as envisioned by the KM department.

In this respect, people at CCC possess various perceptions about this aim. These perceptions were diverse among junior employees and also between junior and senior employees. Junior employees tended to perceive the wiki in different ways. Examples of such perceptions include a wiki as a library, a learning tool, a tool to show off, etc. It is important to stress that these perceptions were developed by both junior and senior employees in practice, in the sense of, for instance, experiencing the use of the wiki as a library which might be better than using an email where content might be difficult to find. In terms of conceptions, junior and senior employees at CCC had different conceptions of the wiki. Generally, the majority believed that the wiki is a good thing but their conceptions were often confronted with reality in practice. That is when people expect a free Wikipedia-style of collaboration in their organization they are often confronted, for instance, with norms and routines that require them to consider their relations to their managers, their level of expertise in certain areas, etc. In this context, tensions and incompatibilities, that drive the immiscibility, may arise in the interplay of various elements. For instance, the KM department introduced a wiki that is supposed to be open (artefactual) then they were required to lock it down because of validity concerns by the management. Here, immiscibility arises because of tensions between openness as an artefactual characteristic of the wiki and ideological and structural characteristics of the organization. In practice, these kinds of tensions drive the enactment of structures (e.g., controlled wiki use structure) and reflection of existing structures (e.g. hierarchical structure) (See...
CHAPTER SEVEN
CONCLUDING ISSUES

This chapter completes the thesis. It outlines the key conclusions and arguments presented throughout the thesis. It also provides a discussion of a number of research opportunities to further investigate the interplay between social media and organization as well as develop the perspective of immiscibility. The chapter ends with a number of final remarks that address potential questions and wonders by the readers about some key arguments in the thesis.

7.1 Conclusions

This thesis offers a number of key conclusions that provide various insights into understanding organizational use of social media. I would like to group these conclusions into two main sets, based on their relevance to the aims and questions of this thesis: the first set of conclusions addresses the aim of examining and understanding organizational practices that describe the ways by which social media are used in formal organizational settings. It also addresses the main question of how to understand the use of social media with formal organization as well as the question of what are the ways by which people organize or arrange their social media use practices.

The second set of conclusions addresses the aim of developing a way for understanding organizational use of social media that addresses that dynamic interplay between social media and organization characteristics in practice. It also addresses the main question of the thesis as well as the question of what characterizes the interplay between social media and organizations and its effects on the ways by which social media are used in organizations.

The main conclusions in the first set suggest various insights into actual social media use practices at the workplace. One key insight is that the use of wikis can be applied in the case of IBM which may suggest ‘less bureaucratic use’ of wikis. Hence, the application of an immiscible perspective in the case of IBM may show that it also accounts for potential changes that might take place due to the use of a new technology like a wiki at the workplace.

To sum up the central principle of the perspective of immiscibility, it is to look at how things are different instead of looking at how things are, or might be, similar, in order to understand the use of technology. That is understanding how use practices maybe mediated by the distinctive characteristics of social media and organization. Immiscibility as a metaphor helps in achieving such an understanding in two ways: firstly through an emphasis on and a recognition of the characteristic distinctiveness of social media and organization. Such emphasis and recognition is essential, at least principally, to understand that the differences that might exist between social media and organization may have a fundamental impact on technology use practices and any potential for change. Secondly, the perspective of immiscibility provides a way to understand the reproduction of structures that was argued to be a major driver for why social media use in formal organizational settings may not bring about the expected changes. It is important to recognize that the reproduction of structure is a dynamic process, with no certain outcome.
CHAPTER SEVEN
CONCLUDING ISSUES

This chapter completes the thesis. It outlines the key conclusions and arguments presented throughout the thesis. It also provides a discussion of a number of research opportunities to further investigate the interplay between social media and organization as well as develop the perspective of immiscibility. The chapter ends with a number of final remarks that address potential questions and wonders by the readers about some key arguments in the thesis.

7.1 Conclusions

This thesis offers a number of key conclusions that provide various insights into understanding organizational use of social media. I would like to group these conclusions into two main sets, based on their relevance to the aims and questions of this thesis: the first set of conclusions addresses the aim of examining and understanding organizational practices that describe the ways by which social media are used in formal organizational settings. It also addresses the main question of how to understand the use of social media within formal organizational settings as well as the question of what are the ways by which people organize or arrange their social media use practices.

The second set of conclusions addresses the aim of developing a way for understanding organizational use of social media that addresses that dynamic interplay between social media and organization characteristics in practice. It also addresses the main question of the thesis as well as the question of what characterizes the interplay between social media and organizations and its effects on the ways by which social media are used in organizations.

The main conclusions in the first set suggest various insights into actual social media use practices at the workplace. One key insight
was the bureaucracy of social media. Perhaps associating the notion of bureaucracy with social media might seem to a good number of people as an odd combination, since social media are often seen as enablers of democratic and participatory values that may naturally counter those related to bureaucracy. But this thesis shows that social media are in fact used in ways that both reflect the bureaucracy of the organization where they are used and also enforce some of its bureaucratic characteristics. The reason for this is that the use of social media in organizations is often governed by various kinds of structures that affect the potential from using these media. In this way, the use of social media might be subject to some kind of a ‘bureaucratization’ process enabled by continued reproduction of established, essentially bureaucratic, structures in the organization.

An interesting insight here is that, contrary to what is widely believed about the potential of social media to transform organizational structures and enable novel forms of organizing, the tendency to use social media in ways that reproduce existing bureaucratic structures may actually maintain and even enforce these structures in the organization. Such structures often involve potential constraining effects on organizational change by social media. In other words, people do not use social media in ways that exploit their putative social qualities which may suggest that the use of social media within formal organizational settings is not really social, but rather bureaucratic. One key driver for this is the preeminence of established structures and practices in organizations that may stand in the way of any potential changes, especially when these structures and practices may not necessarily be in harmony with new ways, practices or values enabled by social media.

This argument leads to the second set of conclusions which focuses on the perspective of immiscibility. This perspective aims at providing a unique and flexible way for understanding organizational use of social media by looking at the dynamic interplay between various social media and organization characteristics. It is essentially a perspective, rather than a model representing a specific reality or a framework constituting a way to view reality. It offers a particular attitude towards treating or regarding organizational use of social media as a dynamic, in-practice interplay between social media and organization characteristics which are essentially distinct in nature. In this view, the perspective of immiscibility emphasizes an understanding of organizational social media use practices through examining the interplay among such distinct characteristics in ongoing human activity. Central to this understanding is that the immiscibility of such interplay is basically related to tensions or incompatibilities that might emerge when distinct characteristics of
social media and organization interplay with each other or come together in practice.

Focusing on these tensions or incompatibilities was in fact essential in capturing and developing such immiscible understanding of the relationship between social media and organization. It has been shown throughout this thesis that such tensions or incompatibilities might emerge in practice because the characteristics of social media and their potential affordances may be seen as anomalous with respect to formal structures and practices enriched in the organization where the wiki is used. Immiscibility then occurs between social media and organization due to their distinct characteristics resulting in a tendency to deviate from using social media in ways that help exploit their potential and precipitate continued reproduction of whatever structures exist in the organization. The bureaucratic ways of using wikis in the two organizations studied in this thesis offer an example that describes how immiscibility drives such deviation in use and reproduction of bureaucratic organizational structures. This understanding of immiscibility should not be construed, however, as if people resist using social media within organizations. People do use social media and they often want to use them to transform the ways they work and become more empowered. But the ways by which they use these media often involve tensions and incompatibilities that enable an immiscible interplay between social media and organization. Eventually, such interplay results in limited possibilities for exploiting and realizing the potential from using social media at the workplace.

The importance of such understanding of immiscibility lies in its emphasis on the characteristic distinctiveness of both social media and organization as a driver for tensions or incompatibilities that affect technology use. This can be seen as a new way for studying technology use in organizations compared, for instance, to Orlikowski’s (2000) practice lens. Orlikowski offered one way to study the use of technology in organizations through looking at the interplay between structure and agency. It mainly focuses on examining the enactment of technologies-in-practice through facilities, interpretive schemes, and norms that describe structures recurrently enacted by people as they use technology in their everyday activities. While the practice lens mainly focuses on understanding technology use, it still lacks sufficient account of technology itself (see Loenardi, 2013). It also suffers, in my opinion, from a high-level of abstraction when it comes to understanding the actual role of technology in practice since it places much emphasis on showing enacted ways of using the technology and in so doing obscures how the technology as an artifact may affect use or play a
role in the enactment process. Using the perspective of immiscibility for studying technology use in organizations, in contrast, allows for equal emphasis on technological and organizational characteristics by treating their relationship as a dynamic interplay that involves mutual tensions and incompatibilities shaping technology use practices.

Such emphasis is necessary to achieve a proper understanding of the relationship between technology and organization and its implications for technology use practices. The mutuality of this relationship has in fact, recently, been a subject of high interest for scholars in IS and organization studies (e.g., Leonardi, 2013, 2012, 2011; Scott & Orlikowski, 2013; Mutch, 2013; Orlikowski, 2007; Kallinikos et al., 2012; Leonardi & Barley, 2008; Orlikowski & Scott, 2008) who seek to theorize about it in an attempt to ensure the central role technology plays in organizing by challenging the separation of technology and organization, or the social and the material (Orlikowski & Scott, 2008; Leonardi, 2013). The perspective of immiscibility can be related to such attempts in that it addresses the mutuality of the relationship between technology and organization and most importantly makes the role of technology in this relationship more explicit. But it distinguishes itself by offering a different angle on this relationship in terms of understanding the interplay between technology and organization through their distinct characteristics that may drive the emergence of various kinds of tensions or incompatibilities in the practice of using technology. An immiscible perspective for studying technology use in organizations is, then, necessarily grounded in critical realism because it suggests that such tensions and incompatibilities only emerge in and through ongoing human activity.

Finally, it is important to emphasize that an immiscible perspective on the relationship between technology and organization is not, and should not be considered, a way for arguing against the entanglement (Orlikowski, 2007; Scott & Orlikowski, 2008, 2009, 2013) or imbrication (Leonardi, 2008, 2011; Cibora, 2006; Tylor, 2001) of the social and the material. It is rather a way of thinking that offers the possibility to take a particular attitude towards understanding technology use in organizations through tensions or incompatibilities driven by various distinct technology and organization characteristics. So it does not make any assumptions about whether the social and the material may or may not come together in practice. In other words, it is just a way to understand how characteristic differences of technology and organization, and the tensions or incompatibilities they may drive, affect the use and the potential of technology rather than understanding how these characteristics might be entangled, mutually constituted, or imbricated.
7.2 Further Research Opportunities

The development of the perspective of immiscibility in this thesis may be seen as an initial effort to provide a unique and novel way for addressing the relationship between technology and organization. I see that this perspective can be further developed and extended in two different directions: empirical and theoretical.

There are many empirical opportunities to further examine and develop the perspective of immiscibility. The development of this perspective was based on empirical studies focused on the use of wikis within formal organizational settings. I believe that more empirical studies focusing on the use of other kinds of social media technologies and also other kinds of organizational as well as non-organizational settings might be useful to see how an immiscible perspective might potentially be applicable or not. In fact, such focus may be important to understanding how likely immiscibility is to occur in using various kinds of technologies in different settings. It could also be useful to do empirical research using the perspective of immiscibility to understand contradictory influences of using social media technologies and other kinds of technologies in organizations. This is because the emphasis of this perspective on distinct technological and organization characteristics provides opportunities to examine potential drivers for contradictory influences on technology use for various purposes. At the same time, such emphasis should spark empirical efforts to develop ways that would help in addressing immiscibility so that the potential from using technology can be adequately realized. That is, it can and should encourage more detailed empirical inquiry. In this way, these efforts may provide several possibilities to further extend the perspective of immiscibility.

In respect with theoretical opportunities there are many that can help in further developing the perspective of immiscibility. Immiscibility is essentially concerned with understanding the relationship between technology and organization through tensions and incompatibilities. It might be then useful to look at how this understanding of immiscibility may relate to other current understandings of the relationship between technology and organization such as sociomateriality. For instance, understanding how an immiscible relationship between technology and organization might affect our understandings of issues like entanglement, mutual constitution, and imbrication of the social and the material, how can we understand immiscibility in relation to other understandings that emphasize a fusion of the social and the material, what kinds of new tools, ways of thinking, or possibilities immiscibility can offer to us to understand technology use in organizations compared to other
existing theories, etc. The answers to such questions may contribute further theoretical insights into strengths, weaknesses, possibilities, and limitations of the perspective of immiscibility in understanding technology use in organizations.

### 7.3 Final Remarks

In conclusion, the aim is to shed light on some answers to questions that may develop in the minds of the readers concerning central issues in the perspective of immiscibility including: the ontology behind this perspective, the view of technology, the treatment of the relationship between technology and organization and also the assumptions that underpin immiscibility as a way of thinking.

First, the perspective of immiscibility emphasizes practice and the wider role that human activity plays in shaping the use of technology. That is to say immiscibility, as a way of thinking, relates only to influences on actual practice. In other words, tensions or incompatibilities can affect the ways of using technology only when people do use it to achieve certain goals and outcomes. This may seem to have implications for the philosophical ontology of immiscibility: critical realism. The emphasis on practice suggests that an immiscible relationship between technology and organization can only occur in and through ongoing human activities; a central premise of critical realism (see Leonardi, 2013). In this view, if we are to take an attitude towards understanding technology use in organizations that acknowledges immiscibility then it is essential to understand practice in order to see how the relationship between technology and organization may evolve and change. The main point I am trying to make here is that an immiscible perspective does not presume any predetermined relationships between technology and organization, or the material and the social, as in agential realism for instance (see Leonardi, 2013; Scott & Orlikowski, 2013), even though immiscibility may, at first sight, suggest that they may not come together. Put another way, while immiscibility is about taking an attitude that there might be tensions or incompatibilities between technology and organization still these can only be realized in ongoing human activities and practices. Assuming that there might be an immiscible relationship is essentially an interpretative rather than deterministic way of thinking about the relationship between technology and organization. It is simply a point of departure rather than an end result. Hence, such ontological position is flexible in the sense that there is a possibility for a miscible relationship to emerge, despite the initial assumption of otherwise immiscible relationship,
because it is practice that bounds the interplay between distinct characteristics of technology and organization and then enables a miscible or immiscible relationship to emerge between them.

Second, at the same time it emphasizes practice and human agency the perspective of immiscibility gives equal privileges to technology. Understanding practice alone may not necessarily tell us how and why immiscibility might emerge. Because immiscibility emerges in practice only when distinct characteristics of both technology (material agency) and organization (human agency) interplay with each other it is essential that we also have a clear understanding of what technology is and what possibilities it may afford us besides understanding practice itself. Technology should always be there if we are to understand the immiscible relationship between technology and organization because it may only come to exist through the mutual interplay of their distinct characteristics. This emphasis on technology in the perspective of immiscibility is achieved through an extended view which will be discussed momentarily. It should be noted that such emphasis on technology may help address the inadvertent lack of attention to technology in structurational studies of technology. Structuration theory and structurational models of technology such as the practice lens used in this thesis are often useful to explore how people structure their environments but they lack the capacity to theorize about the role of technological artifacts (Leonardi, 2011). The emphasis on technology in the perspective of immiscibility, therefore, addresses such problem by ensuring equal privileges of both material and human agencies.

Third, the perspective of immiscibility offers an extended view of the technological artifact in that it suggests three different categories of technology characteristics and affordances. It of course emphasizes the artefactual characteristics of technology (see Orlikowski, 2000) but it goes beyond this conventional view by acknowledging that there might be other technology characteristics that may be developed cognitively. The inclusion of conceptual and perceptual characteristics and affordances in the perspective of immiscibility may provide the ground for an extended view of technology. Suggesting that perceptions and conceptions might make for characteristics and affordances of technology is the basis for such view. As discussed earlier, people develop perceptions and conceptions about certain technologies and in doing so these perceptions and conceptions become part of what an artifact means for them. This can be well supported by a relational understanding of affordances (see Hutchby, 2001) which suggests that affordances of an artifact, an information technology in this case, are constituted in relationships between people and the materiality of the things they interact with. On this
ground, one may reasonably argue that concepts and perceptions may
and can make for technological characteristics and affordances. An
additional reason for such argument is that peoples’ perceptions and
conceptions may provide them with capacities for action in the sense
that depending on how they perceive and think about the technology
they tend to develop ways that help them to realize its potential and
seek certain goals and outcomes.

One final remark concerning the perspective of immiscibility is
related to the purpose of such perspective. The main assumption that
underpins this perspective is to study and learn about technology use
through understanding what might not be possible to do with
technology instead of what might be possible to do. The conventional
way of understanding technology has often been centered on
examining the ways by which people appropriate, adjust, or structure
their use of technology in various ways in order to achieve their goals.
Structurational models of technologies such as the technology-
triggered structural change model (Barley, 1986), duality of
technology model (Orlikowski, 1992), the adaptive structuration
model (DeSanctis & Poole, 1994), and the practice lens for studying
technology use (Orlikowski, 2000) are good examples of such
approaches. While these models exhibit various views of structure
and differing treatments of technology (Leonardi, 2013), still I believe
that all of them are concerned in examining the ways by which
technology can be used to help people and organizations in achieving
their goals and outcomes. The perspective of immiscibility, in
contrast, is concerned with examining tensions and incompatibilities
between technology and organization as a way of thinking about what
might or might not be possible to do with technology. In this way,
people might be able to study and learn about technology use in
organizations by looking at how different technology and organization
characteristics are and what implications the interplay between their
different characteristics might produce for the actual use of
technology.
One may reasonably argue that concepts and perceptions may and can make for technological characteristics and affordances. An additional reason for such argument is that peoples' perceptions and conceptions may provide them with capacities for action in the sense that depending on how they perceive and think about the technology they tend to develop ways that help them to realize its potential and seek certain goals and outcomes.

One final remark concerning the perspective of immiscibility is related to the purpose of such perspective. The main assumption that underpins this perspective is to study and learn about technology use through understanding what might not be possible to do with technology instead of what might be possible to do. The conventional way of understanding technology has often been centered on examining the ways by which people appropriate, adjust, or structure their use of technology in various ways in order to achieve their goals. Structurational models of technologies such as the technology-triggered structuration model (Barley, 1986), duality of technology model (Orlikowski, 1992), the adaptive structuration model (DeSanctis & Poole, 1994), and the practice lens for studying technology use (Orlikowski, 2000) are good examples of such approaches. While these models exhibit various views of structure and differing treatments of technology (Leonardi, 2013), still I believe that all of them are concerned in examining the ways by which technology can be used to help people and organizations in achieving their goals and outcomes. The perspective of immiscibility, in contrast, is concerned with examining tensions and incompatibilities between technology and organization as a way of thinking about what might or might not be possible to do with technology. In this way, people might be able to study and learn about technology use in organizations by looking at how different technology and organization characteristics are and what implications the interplay between their different characteristics might produce for the actual use of technology.
REFERENCES


Silverman, D. 1998. “Qualitative Research: Meanings or Practices?,”

Intranet or a Passing Hype?,” in *Proceedings of the 16th European

value of enterprise wikis: A Multiple-case study,” in *Proceedings
the International Conference on Knowledge Management and
Information Sharing*, Portugal, October 6 – 8.

Svahn, F., Henfridsson, O., and Yoo, Y. 2009. “A Threesome Dance
of Agency: Mangling the Sociomateriality of Technological
Regimes in Digital Innovation,” in *Proceedings of the Thirtieth
International Conference on Information Systems*, Phoenix, USA,
December 15 – 18.

Regimes in Digital Innovation,” in *Selected Papers of the 32nd
IRIS Seminar*, J. Mokka-Danielsen, (ed.), Trondheim, Norway:
Tapir Academic Press.

269 – 298.

Idea Group Publishing.

Tredinnick, L. 2006. “Web 2.0 and Business – A pointer to the
228 – 234.

Treem, J., and Leonardi, P. 2012. “Social Media Use in Organizations:
Exploring the Affordances of Visibility, Editability, Persistence,


Wagner, C. 2006. “Breaking the Knowledge Acquisition Bottleneck
Through Conversational Knowledge Management,” *Information

Walsham, G. 1995a. “Interpretive Case Studies in IS Research:
pp. 74 – 81.

Walsham, G. 1995b. “The Emergence of Interpretivism in IS


California Press.


PART II: APPENDIX
RESEARCH STUDIES
Wiki Collaboration in Organizations: An Exploratory Study
Conference Paper
WIKI COLLABORATION IN ORGANIZATIONS:
AN EXPLORATORY STUDY

Mansour, Osama, Linnaeus University, Department of Computer and Information Science, PG Vejdes SE-351 95, Växjö, Sweden, osama.mansour@lnu.se

Abusalah, Mustafa, Consolidated Contractors Company, Department of Knowledge Management, 62B Kifissias Avenue St., Marrousi, 15125, Athens, Greece, mabusalah@ccc.gr

Askenäs, Linda, Linnaeus University, Department of Computer and Information Science, PG Vejdes SE-351 95, Växjö, Sweden, linda.askenas@lnu.se

Abstract
The use of social media technologies in organizations has introduced novel ways of collaboration, communication, and knowledge sharing. In this respect, the present study is concerned with examining the use of one type of social media, the wiki technology, by members of several professional communities of practice to collaborate and share knowledge with each other. As such, it seeks to identify and understand the factors that influence their use of the wiki at a large multinational organization. To this end we used an interpretive exploratory case study which included 12 in-depth interviews with senior employees and managers as primary sources of data. Additional data was obtained during two field visits at the organization through observation of the wiki, field notes, and organizational documents. The study concludes with rich insights into the dual impact of the openness of wiki collaboration as well as the manner and value of using the wiki for knowledge collaboration and sharing at the workplace.

Keywords: Social Media, Wiki, Openness, Communities of Practice (CoPs), Collaboration, Knowledge Sharing

1 INTRODUCTION
The impetus for organizations to use social media has increased recently and more organizations are employing different social media tools at the workplace to enable collaboration and knowledge sharing amongst their employees (Yates et al., 2010; Majchrzak et al., 2006). Social media is defined as a group of internet-based applications which builds on the ideological and technological foundations of Web 2.0 and allows the creation and exchange of User-Generated Content (UGC). The wiki, as a type of social media, is defined as a simple dynamic web page which is open for anyone to share and discuss personal knowledge in a collaborative fashion (Yates et al., 2010; Rafael & Ariel, 2008; Happel & Treitz, 2008). In this context, the wiki is increasingly used in organizational settings for different internal Knowledge Management (KM) purposes (Yates et al., 2010; Happel & Treitz, 2008; Wagner & Majchrzak, 2007). Most often, the wiki is used in organizations by virtual Communities of Practice (CoPs) (Yates et al., 2010), which are central to KM strategies (Ardichvili, 2008). A CoP is described as a group of people informally bound together by shared expertise and passion for a joint enterprise, who deepen their knowledge and expertise by interacting on an ongoing basis (Wenger, 2004; Wenger et al., 2002; Wenger & Snyder, 2000). Ardichvili (2008) and Wenger (2004) believed that CoPs represent a strategic approach to KM in organizations.

Hasan & Pfaff (2006) and Wagner (2004, 2006) discussed the wiki as a conversational knowledge management tool used by CoPs to addresses specific knowledge needs. Given the nature of the wiki, it has also been described as a lean approach to web-based content management allowing multiple users to collaborate on the creation of documents (Happel & Treitz, 2008). Further, Stenmark (2005) found how the use of the wiki has enabled more participation and knowledge sharing in an organization that had wanted to activate its intranet system.
WIKI COLLABORATION IN ORGANIZATIONS: AN EXPLORATORY STUDY

Mansour, Osama, Linnaeus University, Department of Computer and Information Science, PG Vejdes SE-351 95, Växjö, Sweden, osama.mansour@lnu.se
Abusalah, Mustafa, Consolidated Contractors Company, Department of Knowledge Management, 62B Kifissias Avenue St., Marrousi, 15125, Athens, Greece, mabusalah@ccc.gr
Askenäs, Linda, Linnaeus University, Department of Computer and Information Science, PG Vejdes SE-351 95, Växjö, Sweden, linda.askenas@lnu.se

Abstract

The use of social media technologies in organizations has introduced novel ways of collaboration, communication, and knowledge sharing. In this respect, the present study is concerned with examining the use of one type of social media, the wiki technology, by members of several professional communities of practice to collaborate and share knowledge with each other. As such, it seeks to identify and understand the factors that influence their use of the wiki at a large multinational organization. To this end we used an interpretive exploratory case study which included 12 in-depth interviews with senior employees and managers as primary sources of data. Additional data was obtained during two field visits at the organization through observation of the wiki, field notes, and organizational documents. The study concludes with rich insights into the dual impact of the openness of wiki collaboration as well as the manner and value of using the wiki for knowledge collaboration and sharing at the workplace.

Keywords: Social Media, Wiki, Openness, Communities of Practice (CoPs), Collaboration, Knowledge Sharing

1 INTRODUCTION

The impetus for organizations to use social media has increased recently and more organizations are employing different social media tools at the workplace to enable collaboration and knowledge sharing amongst their employees (Yates et al., 2010; Majchrzak et al., 2006). Social media is defined as a group of internet-based applications which builds on the ideological and technological foundations of Web 2.0 and allows the creation and exchange of User-Generated Content (UGC). The wiki, as a type of social media, is defined as a simple dynamic web page which is open for anyone to share and discuss personal knowledge in a collaborative fashion (Yates et al., 2010; Rafael & Ariel, 2008; Happel & Treitz, 2008). In this context, the wiki is increasingly used in organizational settings for different internal Knowledge Management (KM) purposes (Yates et al., 2010; Happel & Treitz, 2008; Wagner & Majchrzak, 2007). Most often, the wiki is used in organizations by virtual Communities of Practice (CoPs) (Yates et al., 2010), which are central to KM strategies (Ardichvili, 2008). A CoP is described as a group of people informally bound together by shared expertise and passion for a joint enterprise, who deepen their knowledge and expertise by interacting on an ongoing basis (Wenger, 2004; Wenger et al., 2002; Wenger & Snyder, 2000). Ardichvili (2008) and Wenger (2004) believed that CoPs represent a strategic approach to KM in organizations.

Hasan & Pfaff (2006) and Wagner (2004, 2006) discussed the wiki as a conversational knowledge management tool used by CoPs to addresses specific knowledge needs. Given the nature of the wiki, it has also been described as a lean approach to web-based content management allowing multiple users to collaborate on the creation of documents (Happel & Treitz, 2008). Further, Stenmark (2005) found how the use of the wiki has enabled more participation and knowledge sharing in an organization that had wanted to activate its intranet system.
Despite managers’ recognition of the value of knowledge (Pfaff & Hasan, 2007; Wenger, et al., 2002; Wasko & Faraj, 2000) and the need to develop KM strategies in their organizations, they were still unclear about how to go about it (Wenger et al., 2002). Several attempts by organizations to use information systems to manage their knowledge have resulted in digital junkyards (ibid). Stocker et al. (2009), for instance, found that organizations using wikis struggled with the dilemma of a knowledge-sharing environment. While some managers perceive higher benefits from using the wiki to transfer and manage knowledge (Stocker et al., 2009), others tend to be uncomfortable with the idea that their content is open and accessible by a large number of users (Wagner & Majchrzak, 2007). In the same vein, Danis & Singer (2008) also argued that the uncoordinated use of wikis by many users might result in chaos: distrusted content, difficult navigation, and lack of consistency among wiki pages.

While there are numerous empirical studies which have examined wikis in educational contexts and Wikipedia, only a little amount of empirical knowledge is available on using wikis within organizational settings (Stocker et al., 2009; Danis & Singer, 2008; Stenmark, 2008; Majchrzak et al., 2006). It is important to mention that using wikis in education or Wikipedia is fundamentally different from using wikis at the workplace (Stocker et al., 2009; Danis & Singer, 2008). The current paper was notably motivated by the paucity of empirical knowledge on the use of wikis within organizational settings as well as the increasing growth and importance of using social media in organizations. It was based on an interpretative exploratory case study at a large multinational organization and involved multiple sources of data including interviews, observations, field notes, and documents. The paper sought to explore how members, who belonged to several professional CoPs, used a wiki to collaborate and share knowledge with each other at the organization. Accordingly, its ultimate aim was to identify and understand the factors that influenced the use of the wiki for knowledge collaboration and sharing within an organizational setting. It also focused on examining the value of using wikis by CoPs in organizations based on these factors. The paper falls into six sections. Section two provides a review of related literature while section three presents our research approach, the context of the study, and the data collection process. The empirical findings from our study are reported in section four. Section five discusses these findings. The last section provides some conclusions and recommendations for further research.

2 THEORETICAL BACKGROUND

2.1 Wikis

Wikis were introduced for the first time in 1994 by Ward Cunningham who wanted to have a collaborative medium that would serve as a shared place for software developers and designers to collaborate and share knowledge (Stenmark, 2008; Stenmark, 2005). A wiki, a Hawaiian word which means quick, refers to a simple dynamically updated web page that is open for anyone to add, edit, discuss, and track content. It consists of hyperlinked pages that allow anyone to collaborate openly for the creation and modification of knowledge (Yates et al., 2010; Happel & Treitz, 2008; Pfaff & Hasan, 2007). One of the unique attributes of wikis, which differs from previous technologies, is the free or open editability that enables anyone to edit others’ contributions in order to improve readability, organize pages, and integrate ideas (Yates et al., 2010; Rafael & Ariel, 2008). In this context, Yates et al. (2010) referred to the process of rewriting, reorganizing, and integrating the wiki content as “shaping”, a purposeful activity that transforms existing knowledge on the wiki into useful knowledge. Nowadays, one of the most famous examples of the wiki concept is the large online encyclopedia called Wikipedia (Happel & Treitz, 2008). Wikipedia represents well the concept of open wiki collaboration and voluntary knowledge contributions (Wagner & Prasarnphanich, 2007).

2.2 Wikis in organizations

Perhaps the term that best describes the use of wikis in organizations is Enterprise 2.0. Andrew McAfee (2006) coined this term to represent organizations which build and use social media or web 2.0 technologies, namely, wikis, blogs, and others at the workplace. The use of wikis in organizations is far different from how it is used in other contexts such as educational settings or open environments like Wikipedia (Danis & singer, 2008; Stenmark, 2008).
Many scholars (e.g., Hester & Scott, 2008; Wagner, 2006; Hasan & Pfaff, 2006; Wagner, 2004) argued that the wiki could be used as a conversational knowledge management technology. For instance, in a survey conducted by Majchrzak et al. (2006), several organizational usages of the wiki were found: project management, CoPs and user groups, marketing, resource management, etc. However, Danis & Singer (2008) argued that the nature of the wiki might introduce difficulties for organizations such as management of their content, which may result in chaos, inconsistent content, and difficult navigation. The following section discusses several aspects of using wikis by CoPs for knowledge collaboration, sharing, and management.

2.2.1 Wikis for knowledge collaboration and sharing

Wikis are increasingly used in organizations by virtual CoPs (Yates et al., 2010). In this respect, Ardichvili (2008) found that CoPs were gaining popularity as a vehicle for collective learning and knowledge creation within organizations. A CoP is defined as a group of people informally bound together by shared expertise and passion for a joint enterprise, who deepen their knowledge and expertise by interacting on an ongoing basis (Wenger, 2004; Wenger et al., 2002; Wenger & Snyder, 2000). Wenger & Snyder (2000) explained that CoPs differ from other forms of organization, i.e., project teams or formal work groups in terms of purpose, belonging, and bond among community members. The purpose of CoPs is to exchange knowledge and develop capabilities. Members of CoPs often select themselves to participate with others. Passion and commitment are bonds that hold them together. Ardichvili (2008) maintained that one of the most recognized benefits of CoPs is their ability to allow for the generation and dissemination of tacit knowledge, which is hard to communicate, as it is intuitive and embedded in a specific context. He referred to CoPs as a platform for sharing and internalizing tacit knowledge. Within organizations, Ardichvili (2008) further argued that CoPs play a central role in the KM strategy. However, Wenger (2004) believed that CoPs need a technological infrastructure that enables members to communicate regularly and accumulate documents.

In this context, Knowledge Management Systems (KMSs) refer to a class of information systems applied to management of organizational knowledge. They are IT-based systems developed to support and enhance the organizational processes of knowledge creation, storage, retrieval, transfer, and application (Alavi & Leidner, 2001). Wikis are an example of these systems used in organizations by members of CoPs to create, share, and aggregate their knowledge into a new intellectual capital (Yates et al., 2010). Wagner (2004) explained that conversational knowledge creation, using wikis, emerged as the most popular way for organizations to create knowledge in the context of online communities. Many benefits can be achieved by using wikis for collaboration. For instance, Majchrzak et al. (2006) believed that organizations might improve their collaboration, work processes, and knowledge reuse using wikis. As the modern economy runs on knowledge (Wenger & Snyder, 2000; Wasko & Faraj, 2000), KM is considered one of the major sources of competitive advantage in modern organizations (Wagner, 2004). KM is defined as the process of identifying and leveraging the collective knowledge in an organization for competition purposes (Alavi & Leidner, 2001). Knowledge, in the sense of CoPs, is an accumulated outcome of the ongoing process of exchanging and contributing knowledge to the community (Wenger, 2004). In addition, Wenger (2004) viewed CoPs as the social fabric of knowledge and argued that CoPs are the cornerstones of knowledge management. He identified three characteristics of CoPs which represent the foundation of a knowledge strategy in an organization: the domain that brings the community together, the community which is a group of people for whom the domain is relevant, and practice that is the body of knowledge that CoP members develop and share together.

3 RESEARCH APPROACH

Due to the paucity of empirical knowledge on the use of wikis by CoPs within organizational settings, this paper used an exploratory research approach. In other words, the paper explored the phenomenon of using wikis in organizations inductively. The choice of using exploratory research was stimulated by both the nature of the problem, being a new and complex social phenomenon, and the likely high-degree of its uncertainty due to the paucity of empirical knowledge (Trauth, 2001).
Given the nature of the present research problem, the study adopted an interpretive approach to research. It emphasizes, in a phenomenological sense, that an interpretive understanding of human experiences can be derived from data collected in real life settings (Rowlands, 2003). In this respect, the process of collecting and analyzing empirical data was informed by this interpretive philosophy which sought to produce a deeper understanding of the phenomenon as given by our participants (Walsham, 2006; Chen & Hirschheim, 2004; Walsham, 1995a). An in-depth case study research strategy was the vehicle for our exploration of the problem. The use of a case study as an exploratory research strategy was motivated by the need to get insights and increase familiarity with the problem and to identify further problems for more precise investigations (cf. Nunamaker et al., 1990). Equally important, case studies allow for combining multiple sources of evidence (Yin, 2009; Eisenhardt, 1989), thus increasing the richness of the empirical investigation (cf. section 3.3.1). Accordingly, the use of an interpretive approach combines with an exploratory case study was useful in capturing deeper meanings and interpretations of our participants’ interactions with each other within single, real life settings (Yin, 2009; Walsham, 1995a). The following sections present and discuss the context of our case as well as the processes of data collection and analysis.

### 3.1 Description of the case and the context of the study

This study took place at Consolidated Contractors Company (CCC), a large multinational contracting organization which has over 160,000 employees distributed all over the world. The *Engineering News Record* (ENR) magazine ranked CCC as the top construction contractor in the Middle East and the 13th contractor worldwide. CCC, headquartered in Athens, Greece, has offices in the five continents. It is specialized in civil and mechanical construction projects such as building harbors, airports, tunnels, and gas and oil plants. These projects often involved large numbers of employees ranging between 2,000 in smaller projects up to 30,000 employees in large projects, and they also covered many places across the globe. CCC often used traditional communication channels, such as emails, IP telephony, to connect these employees with their management. It also used a document management system that allowed project teams to store and organize their knowledge (e.g., technical method statements, procedures, lesson learned, etc.) into their own content management portals. However, these systems were ineffective to allow for a dynamic and flexible sharing of knowledge amongst employees. Also, the complex distributed nature of these employees and their increasingly large number, which has quintupled in the last ten years, had created difficulties for CCC to effectively leverage knowledge from its stationed employees. Therefore, the top management had decided and supported the establishment of a KM department to be in charge of developing and managing a shared platform for collaboration and knowledge sharing at CCC. Then, the KM department was officially established in July 2007. After eight months of planning, the KM Department launched a wiki in March 2008 (see next section). In order to put the wiki into operation, the KM Department established a core team of senior employees and top managers. This team included well-experienced organizational members. The team aimed at providing a basis for building and cultivating different specialized communities. The wiki was launched with five professional CoPs, as they referred to them in the company. Each community was specialized in a particular domain and was led by a community manager and a number of community captains. Also there were Subject Matter Experts (SMEs), who often aided community captains in managing the community in particular knowledge areas and subjects. In 2009, the wiki included 11 CoPs, 700 active members, and 3,237 contributions. Hence, the novelty of using the Wiki at CCC and the richness of the environment were major reasons for choosing it as our empirical case.

### 3.2 Wiki as a knowledge management tool at CCC

Document Management Systems represent a traditional method of storing, organizing, and searching for organizational knowledge at CCC. This knowledge can be accessed based on access rights criteria. However, the adoption of an innovative knowledge sharing platform requires a more collaborative and social oriented medium to facilitate knowledge sharing and access. In this respect, after studying different collaboration and KM tools, the KM Department at CCC, decided to use the wiki as a collaboration and KM tool. The wiki consisted of spaces which represented several CoPs. Members of these CoPs were distributed across different areas and projects within a particular field. They used their wiki space to collaborate, explore ideas, and discuss work problems.
The advantage of using a wiki over other collaboration tools, such as forums, is that all CoP members can edit articles published by other members; therefore more than one member can collaborate to prepare an article. Also contributors can track changes of their articles through wiki versioning. This practice is very important as it provides a basis for CoPs to collaborate in order to produce method statements that explain best practices, work flows, work procedures, etc. (Abusalah, 2008). As discussed before, in the introduction, uncoordinated contributions to the wiki may result in chaos. At CCC, the wiki was designed based on spaces. Each space is used by a particular CoP and is organized hierarchically based on areas and topics related to that CoP. Any new contribution should be categorized under the related topic. This method of categorization makes it easier for users to navigate and easily locate contributions. Further, the wiki contains contributions that are collaboratively created by more than one author while other contributions are based on personal or organizational experience and authored by a single author. To audit the quality of the contributions and to inspire additional coauthoring and editing, the KM Department employed “content review workflow”, implemented after the completion of this study, to produce high-quality contributions. This does not mean that some contributions were void or invalid. Rather, it means that two different contributors might author the same method statement in two different ways. Whenever a user accessed the wiki to search for this method statement, he would pick up the best practice out of these two method statements. Captains of CoPs could use the “content review workflow” to obtain best practices and to ensure the integrity of contributions. In addition, the wiki was semi-moderated so that members could only author articles related to work. An article or a comment might seldom be deleted due to the lack of relevance.

3.3 Data collection process

The data collection process aimed at obtaining data from several sources. These sources included interviews, field notes, observations, and documents. In order to start the interviewing process, we had to prepare for two important tasks. First, we developed a case study protocol which included general information about the study as well as a number of themes and questions related to the use of wikis in organizations. These themes were developed based on the literatures on wikis, knowledge management, and CoPs (cf. sections 2.1; 2.2; 2.2.1). We also developed themes based on our preliminary discussions with KM specialists about the wiki platform at CCC. For instance, we used themes, such as the openness of the wiki, to ask questions about the influence of openness on knowledge collaboration and sharing within communities. The protocol was mainly designed to guide our conversations during the interviewing process (Yin, 2009). Second, we defined selection criteria on the basis of which we chose a number of participants in our research. The selection criteria consisted of several factors: seniority level, membership in different wiki communities, level of activity, computer skills, age, gender, and geographic distribution. These criteria were defined to ensure a maximum level of background variations among our participants. The next section describes the selection of our research participants.

3.3.1 Selection of participants

The KM Department helped us in selecting our research participants out of 700 registered members in all CoPs. After revising their profiles, we decided that only 28 community members would best match our selection criteria. Then we sent invitation emails to all selected members to invite them for participation in our research. Each email included general information about the purpose and focus of our research as well as practical information related to the interviewing process such as the interviewing time, voluntary participation, and anonymity and confidentiality issues. Eventually, we received twelve positive responses from employees with different backgrounds. These employees represented members from several communities and geographical locations and with various levels of experience at the company. The range of our participants’ experience was between ten to thirty years. Most of them belonged to at least one community such as hydrotesting and precommissioning, mobilization to remote areas, pipe fabrication, safety, etc. Further, we had participants from different parts of the world including Australia, Greece, Kazakhstan, Oman, Saudi Arabia, Qatar, and UAE. More importantly, our selected participants had different roles and levels of activity within their communities. For instance, we had normal community members with roles were limited to reading or commenting on articles.
We also had participants playing the role of community leaders. These were in charge of leading and nurturing the community. In addition, we had participants playing the role of community captains who were active wiki users and were tasked with the motivation of community members, monitoring contributions, inviting new members, and suggestion of topics for discussions.

3.3.2 Data collection

The primary vehicle for our data collection was the in-depth semi-structured interview. However, we have used other sources of data such as field notes, organizational documents, and participant observations. The use of multiple sources of data is called triangulation, a major strength of case studies allowing for addressing a broader range of behavioral issues in our case (Yin, 2009) and increasing the robustness of our data (Rowlands, 2003) (cf. section 3.3.3). Given the geographical distribution of our participants in different parts of the world (cf. section 3.3.1), ten interviews were conducted over one month either via telephone or an online conferencing system (e.g., Skype). Only two face-to-face interviews were conducted during the first field visit. The average interviewing time was one hour, and we used a voice recorder to record all interviews for later transcription and analytical purposes. Pertaining to the interviewing processes, we used a fluid stream of themes and questions (cf. section 3.3) to follow the line of inquiry (Yin, 2009). This was useful to allow for a free exploration of our participants’ perceptions as well as for the emergence of new themes during the conversation with the participants.

Further sources of data were obtained during two field visits at the company. The first visit was to CCC headquarters in Athens, Greece and the second was to CCC offices in Abu Dhabi, UAE. The main aim of the first visit was to observe the wiki which was only accessible through an internal CCC network. The second author, a KM Department employee, helped us in making this observation by describing the structure and organization of the wiki. Our observation of the wiki has helped us to get deeper insights into how different communities were structured and categorized into specialized areas and also to understand how community members interacted with each other. We have documented the observation of the wiki by taking several notes and screenshots. Furthermore, during our discussions with the KM leadership, several notes were taken. These notes mainly contained information about several issues and challenges pertinent to the wiki, such as the introduction of new communities, sustainability of the current communities, etc. With respect to the second visit, its aim was to participate in the 10th quarterly meeting of the ‘hydrotesting and precommissioning’ community. Additional notes were taken during this visit describing actual discussions and interactions among community members while exchanging ideas and experiences related to the content of their community in the wiki environment. Our role as participant observers was particularly useful to perceive the reality of these meetings from within (Yin, 2009). In addition, we obtained several electronic volumes of the monthly newsletter published by the KM Department. The newsletter included a variety of information related to community updates, featured articles from different wiki communities, and monthly statistics about contributors and contributions. This information was a useful resource to provide us with additional insights into the activities of several CoPs.

3.3.3 Data analysis and validation

Perhaps the concept of hermeneutic circle, discussed by Klein & Myers (1999), best describes the process of our empirical data analysis. The concept of hermeneutic circle is foundational to all interpretive work (Klein & Myers, 1999). It emphasizes that a whole understanding of the phenomenon can be achieved through a circular understanding and interpretation of its parts and their interrelationships (Cole & Avison, 2007; Klein & Myers, 1999; Butler, 1998). Based on this, each interview transcript was reviewed and several segments or parts of data were identified and examined based on their significance and relationship to the main focus of the study. In this context, open coding was used to develop descriptive codes and themes which characterized the main message in each data segment (e.g., we used the code “Inhibitor” to describe what one participant said about the lack of confidence and courage to share knowledge due to the openness of the wiki) (Rowlands, 2003; Trauth & Jessup, 2005). These codes and themes represented the meanings and interpretations of using the wiki as given by the participants. After we completed the segmentation of data and the development of codes and themes, we used axial coding to create connections among related codes and themes (Rowlands, 2003).
We then went back and forth across codes in each transcript and eventually mapped related codes into each other, thus developing larger themes which addressed our main research focus. Cross-transcript analysis was also conducted to further develop general themes that spanned across several codes and themes found multiple transcripts. The use of both open and axial coding in our hermeneutic analysis was useful in terms of focusing on the particulars found in the data as well as developing an overall interpretation and understanding of our participants’ meanings of using the wiki for knowledge collaboration and sharing. However, interpreting qualitative, text-based data is often regarded as a subjective process influenced by the researchers’ values, beliefs, and preconceptions (Walsham, 1995b). Data validity, therefore, is essential to address the subjective nature of data collection and analysis (Walsham, 2006). In this respect, the triangulation of multiple sources of data in our case (cf. section 3.3.2) was one major approach for addressing validity issues in our research. Yin (2009) argued that the use of multiple sources of data provides multiple measures of the same phenomenon. For instance, though we obtained rich descriptions of the wiki environment through interviews, these descriptions were not enough to develop a practical picture of the structure and organization of the wiki. The observation of the wiki during the field visit was useful in terms of helping us in developing a clearer picture of how content and CoPs were organized and structured. In addition, we have managed to send interview transcripts to five participants, who had agreed earlier to receive them, to review and evaluate the conversations.

4 FINDINGS

4.1 Patterns of wiki collaboration in organizations

The dominant understanding of the wiki at CCC emphasizes a synonymous relationship between the wiki and KM. Many of our participants expressed the importance of this relationship to enable knowledge collaboration and sharing at the workplace. A proposal leader expressed this importance as follows: “In my opinion KM, wikis, and such applications in the professional environment are very important especially in an organization that has many years of experience. Everything is still in the brains of people, nothing on paper”. Further elaboration of this importance was provided by one of the group technical managers. He emphasized the importance of the wiki as a vehicle that helps to put together the experiences of a large number of employees and also spread knowledge to other employees. He stressed that it was the basic principle of KM at their organization. He said: “The basic principle of KM, first of all, is gathering of experience gained by the people in the company, which until KM was introduced, had been the property of this individual and it was not spread. And the second step of KM was the systematic analysis of the subject and the spreading of this knowledge to selected users. So this is the only vehicle. You cannot spread such information to such a vast number of employees by any other means”. As such, the introduction of the wiki enabled the company to leverage knowledge from distributed and mobilized employees. In this respect, one of the control project managers explained the value of referring to wiki CoPs with respect to the distributed nature of their work: “It’s much easier now. If I mobilize to a new area, I can easily go to this CoP, community of practice, for mobilization to remote areas, and I can access a lot of information, and it’s not only this. I can share my problems with my colleagues on the other side of the globe”.

Moreover, as the community involved managers and captains with long experience, they used the wiki to make this experience accessible to all other employees. One of the mechanical construction managers described it succinctly: “I am conveying whatever my experience is from 1984 up to now to the others”. Another construction manager also explained how community captains shared the responsibility of contributing to the wiki: “After the team and the captains are aligned ... we are sharing the responsibility; yes we have lots of contributions in this aspect”. Further, a senior administrator reflected upon the discussions on the wiki compared with face-to-face (f2f) discussions: “It’s also a way that you can, maybe, communicate with. It is not exactly the same as f2f but you can get something out of it which you cannot, maybe, get in f2f. I mean it doesn’t substitute f2f but it has other advantages”. The wiki use was not only limited to community members but it was also open to other people with variable degrees of accessibility to read and comment. A mechanical project manager explained how community members and others outside the community were making use of the wiki:
“We used it as a library in fact, and sometimes we exchanged ideas, we had sometimes points where we added our comments on that, of course between the members and any other man outside our community. Moreover, many of our participants reported that the wiki enabled them to meet new people through discussions. The head of Business Systems said: “It will give me an opportunity to know more about these people and what their titles, or functions are within the project or the company. So it introduces more people through this media instead of just sitting and knowing the persons around you”. A proposal leader added: “The wiki opens you up to people all over the organization, to their thoughts”.

In addition, a control project manager emphasized the importance of the knowledge available in the wiki compared to knowledge available in other resources: “Our KM is very specific to CCC, and very applicable towards our own procedures. I don’t want to get information from other sites that are good but at the end of the day they are not applicable to our procedures because our projects might be different”. In this respect, the use of the wiki in organizational settings has a specific objective as described by one of the mechanical construction managers: “We are a company and we need the optimum benefit out of this. We are not general users of the wiki; we have an aim from the wiki: to use it efficiently and effectively for our work and socially for our community, the CCC community”. A stronger opinion about this, emphasized the responsible use of the wiki and the sensitivity of its knowledge. It was expressed by a construction manager: “Actually it is not YouTube. Here, because we are relating to things totally pertaining to technical issues and things related to the lives of others … This is a source for all CCC staff all around the world. If you could take any piece of information and he will contribute it or practice it on site, any fatality, any accident, he will be responsible ... and we’ll find that our wiki is not used in the proper way”.

4.2 Perceptions of open wiki collaboration in organizations

Most of our participants embraced an open wiki environment at the workplace. However, the informal nature of the wiki was seen by many of our participants as a barrier to knowledge collaboration and sharing. One construction manager put it: “It is not a formal tool to be utilized as a sort of communication ... it is not that much official source that I get something related directly to my job and take it”. He justified it: “Because at the very beginning I said there were just only contributions ... someone would get something from his library and he wanted to have it shared with others”. In this respect, many of our participants believed that the training on how to use the wiki was not as much important as understanding its importance and need for both employees and the organization. One proposal leader said: “ Usually, in my opinion, you need someone to imprint a path goal as of why you are using it and how it is going to affect us”.

An important concern related to the introduction of the wiki was to see whether the company was willing to be more open and if it could nurture an environment in which people could use the wiki to openly share and exchange ideas with each other. The group plant manager expressed his opinion strongly on this: “I did not support that such thing. When it falls in the hands of others, it will make us less competitive. I totally disagreed with that”. He added that the company was becoming more open: “Gradually they were more open, let’s say they gave permission to other people to use the wiki, of course in the company; people became more open about it”. In the same vein, the head of R&D for Open Source Development described the importance of openness: “I believe that if you want to have a success story for your wiki spaces, knowledge spaces, knowledge topics … you need to create an uncontrolled space and you just allow people to go and talk ... if you want to make it formal, people will not talk, you need to make it really informal”. However, a construction manager had a strong opinion on the openness and free editability of the wiki when we asked him if he would edit others’ contributions (e.g., his boss): “I don’t want to edit for him in front of many users; he will see that I already attended his article ... he will consider that as an insult in front of others”. In spite of that, the nature of work and sense of responsibility have increased openness that is necessary when using a wiki at the workplace. For instance, the organization is sometimes required to share its experience with other companies as part of international cooperation. One of the group plant managers gave an example about the need to share experience and ideas of their efforts to reduce carbon effects at the company with an international organization: “I had to really share a lot with members of ‘ABC’ through meetings ... and we exchanged things related to carbon omission and how to reduce it”.
Moreover, there was a sense of responsibility and commitment by old organization members to share their experience with younger employees, which further stimulated openness at the company. One mechanical project manager explained: “You know we are the old guys in the company with many years of experience. The newcomers should get benefit from us”.

So when we asked about the motivation behind people’s contributions to different wiki communities, a mechanical project manager said: “This is, you know, upon their volition...because the more you contribute to this, the better for you”. One construction manager discussed the voluntary nature of people to share on the wiki: “You know what we are doing is spare; it is not our main duty. What we are doing is part time for us... This is, I will call it, voluntary. You do it as a volunteer”. A control project manager said that people had to believe that they could use the wiki to mutually share and benefit from each other: “Believe in it. Believe that you can contribute to others and you can get from others”. Further, the nature of the wiki as an open and informal technology had a motivating influence on people to share and collaborate with each other. One group plant manager described it this way: “To a certain extent, it is a less formal means of communication so people would voluntarily be more open to write things...so this is the sort of open mind you feel when it’s a wiki thing”. Other participants added more perspectives explaining the reasons of why they started to use the wiki. One control project manager explained: “I started to use it because it was introduced to us by the company, and the company encouraged us to start this technology; so basically it was my choice and the company’s choice to get these facilities”. A senior administrator gave an additional perspective on this: “I could initiate; I know that. But for some reasons (thinking) it’s, maybe, because it’s voluntary (laugh). Sometimes we need a bit of pressure to do things”.

Still, the use of the wiki has caused some behavioral changes among community members as described by one of the mechanical construction managers: “…We have more confidence in that we can get the information we need. Before, we used to spend much time and we would get nervous because we couldn’t get the information we needed”. He further explained the impact of using the wiki on his contributive and sharing behavior. He said: “For my part, I feel it; I have more interest... in giving information. I really feel my information is very valuable when I put it on the wiki, and people are looking at it”. The open and visible process of sharing on the wiki has stimulated an effect of the community within its members. For instance, a proposal leader explained how seeing other community members sharing and contributing to the wiki has motivated him to be more active: “When you see more people participating, when you see more people writing, when you feel more confident that the people who will read your input know what you are talking about you start to be more cooperative. I think this is what added and improved my perception”. One senior systems administrator added: “When you see more people online and more people sharing their opinions, posting things, and so on you feel more motivated”. Related to this was the emergence and enrichment of the sense of the community among community members. This was described by one group quality manager: “One thing is that this particular initiative and the wiki itself have brought all the experts closer in the community. What I mean, now we know who the expert in our domain is, whom we can talk to about a particular issue...Now we understand that we belong to a community, which is relevant to the project or the level of seniority”. One group plant manager further added: “You are sharing with others, you feel, especially categorizing these communities into different disciplines; you feel you are part of a group or a family. That feeling you don’t have with other means of communication”.

However, the open nature of the wiki has also caused challenges and barriers for the community as described by one group plant manager: “I was really against such thing that we just fill pages because you know people simply would like to show their contributions; quantity is sick sometimes”. The group quality manager also agreed that the quantity of contributions was not an indicator of expertise as knowledge contributed to the wiki was not necessarily of an adequate quality, which might cause problems in the wiki environment: “The more contribution to a particular topic is, to the other members of the community, the more they treat you as being an expert in this field. This is not necessarily true (laugh) because what we have to take into account is the quality of the contribution. Quantity can be huge but quality could be very low”. One proposal leader further described openness of the wiki as a barrier: “People were, maybe, a bit reserved to write their opinions. I was one of them, not because we don’t want to share, but because there was a bit of, maybe, a barrier with the audience that you felt.”
As a result, community managers and captains decided to introduce control and validation measures to the contributions on the wiki. In doing so, they aimed to ensure that contributions were reliable and valid. The introduction of validation rules to contributed knowledge as part of controlling the wiki collaboration was described by the group quality manager: “Once a piece of knowledge is submitted, a document for instance, it will be submitted to the knowledge expert who will review it and he will have to say yes or no, to put it on the wiki or not. The wiki will have only the validated knowledge available for the user”. We also discussed how the community treated conflicting opinions and disputes that might arise due to contributing distinct experiences and ideas. One control project manager told us: “Although we share ideas we may reach disagreement...Then some more senior people should interfere ... so it’s not sharing the knowledge. At the end of the day, when it comes to real execution of the job, somebody must have a say and say yes I agree. This is the way to do it”. The other way of controlling and validating contributions is through community meetings in which community managers and captains discuss the contributions made by others. One control quality manager told us that the role of these meetings was to filter knowledge and discuss further ideas on the wiki: “…It is not only exchanging ideas online, we have meetings, we go and people of these communities meet and discuss things, and the thing is that this is some kind of filtering and coming up with better ideas and coming up with consensus and agreement on these ideas, so it’s not only writing and reading”. In addition, these community meetings provided a basis for agreeing on different issues which are shared on the wiki. One construction manager said: “All the things, we agree on immediately, will go through the wiki and the people outside this meeting can access it immediately...”.

5 DISCUSSION

5.1 Open knowledge collaboration and sharing using a wiki

Our findings revealed that the wiki was used for open knowledge collaboration and sharing but to some extent in a controlled manner. Many of our participants believed that the wiki had to be open for all but at the same time some rules of control, such as monitoring and reviewing contributed knowledge, had to be applied. This is due to the formal use of the wiki which has a specific objective: to benefit both employees and the organization in performing the work. In this respect, our participants strongly expressed their satisfaction with the wiki as a medium that allowed knowledge and experience to be accessible by a large number of people at the company. We also noticed that the nature of the wiki as a voluntary tool was useful to stimulate people to share their knowledge and experiences as well as enrich their sense of belonging and responsibility to the community (cf. Wenger & Snyder, 2000). This is an intriguing aspect of the wiki especially when compared to other types of collaborative technologies used in organizations. The wiki gave experienced people the chance to share their experiences and make it accessible to a large number of people for the benefit of the organization. By providing communities with a shared place, the wiki also enabled community members to connect with each other and identify who the expert was within a particular CoP, thus strengthening their attachment and belonging to the community as it became a source of relationships with experienced members and useful knowledge to their work. Further, many of our participants expressed their satisfaction with the wiki as a technology. They said that it was easy to use and often did not require any training. Their main concern was mostly related to the fluid wiki structure and large amount of accumulated knowledge, which might become lengthy and difficult to follow. However, these issues were not considered barriers to use the wiki. A salient issue that was raised by many of our participants focused more on the need to explain the importance and purpose of the wiki at the organization. Hence these issues have more weight than training when introducing a wiki to the workplace as the lack of understanding the voluntary and open nature of the wiki, for community collaboration and knowledge sharing, is considered to be a more important barrier than the need to learn how to use it.

5.2 Impact of wiki openness on knowledge collaboration and sharing

Many scholars (e.g. Yates et al., 2010; Ardichvili, 2008; Wasko & Faraj, 2000), discussed several barriers and enablers that might impact knowledge contributions to CoPs. In this respect, we found further issues related to barriers and enablers of using a wiki for knowledge collaboration and sharing by CoPs. The openness of the wiki has a dual impact on the collaboration and sharing of knowledge within CoPs.
For instance, the open nature of wiki collaboration might deter people from contributing and sharing their knowledge, even if they are willing to do so, because they are not comfortable with revealing themselves to the public (cf. Wagner & Majchrzak, 2006) or an unknown audience. These people have two characteristics. First, they might be a kind of people who do not accept criticism or might not accept the comments made by others to edit or shape their contributions (cf. Yates et al., 2010). Second, it might be that they feel shy to reveal themselves to a large number of people or prefer personal communication as a personal trait. Related to this is the lack of confidence and courage to comment on contributions made by higher-level contributors, as people do not feel comfortable to openly discuss or comment on issues made by senior people, higher in rank and experience. As a result, hierarchy and ascendancy are carried out to the wiki environment, and they might serve as barriers to wiki collaboration. The assumption that people might take the opportunity to contribute in order to be proud of themselves (e.g., contribute to show off in front of a large number of fellow employees and members) in the open environment was conceived to be a threat to the quality of contributed knowledge. Further, the voluntary and informal nature of wiki collaboration can also be a barrier to share and contribute to the community in the sense that people do not see the wiki as part of their jobs. In this context, a number of our participants expressed the need for organizational pressure to consider the wiki as a required tool at the workplace.

In contrast, although the openness of the wiki has created several barriers to collaborate and share, it has also attracted people to freely express themselves and voluntarily collaborate and share knowledge with others. This has made it easier for the community to access knowledge and locate experiences. More important, people feel that their knowledge is more valuable when it is open for others who read it and apply it in their real work. Moreover, the openness of the wiki is an important factor to stimulate the effect of the community on others. So when people see others contributing and sharing, they become motivated to do the same which to some extent reduces the constraining effect of hierarchy. In this respect, we found that wiki collaboration has enriched the sense of the community at the organization. The openness of wiki collaboration has made people closer in the sense that they can socially interact with each other and meet new people who might be experts in relevant areas. Accordingly, the wiki is considered as a source not only for knowledge but also for relationships with knowledge contributors which might emerge during open discussions and commenting on the wiki among community members.

By and large, the issue of openness of the wiki and the quality of contributed knowledge were not considered barriers by many of our participants who were in favor of a controlled wiki environment (cf. Hasan & Pfaf, 2006). While many of them expressed their concerns about these issues, being an internal and controlled environment, and only accessible to selected experienced organizational members, made it a secure medium for sharing reliable knowledge. Most importantly, the organization applies some control in terms of monitoring the contributions by both community managers and captains as well as the knowledge management department, conducting offline meetings in which community managers and captains discuss the contributions made by the members of the community, and controlling the accessibility to the wiki. In other words, there is a level of control applied to the use of the wiki in organizational settings, thus limiting any potential problems with the quality of knowledge and security issues that might exist because of its openness and free editability. In addition, the sense of responsibility by experienced organization members has driven openness at the company in the sense that the wiki has given them a chance to make their experience public and accessible to everyone. Once this experience is available on the wiki, the nature of work, which requires employees to look for different necessary procedures and methods to do their jobs, drives them to join wiki communities to access the experience. Both the nature of work and the sense of responsibility are not only driven by open wiki collaboration but they are also vehicles for openness.

5.2.1 Value of wikis in organizations

The value of using wikis within organizations can be understood from the enabling impact of wiki openness for knowledge collaboration and sharing. We have discussed above several aspects of the enabling impact of wiki openness on how members of CoPs collaborate and share with each other at the workplace. This section focuses on understanding the organizational value of wiki openness. It discusses each enabler with respect to the perceived value of using wikis in organizations.
This value may have two dimensions: the first is flexible and dynamic sharing of knowledge and the second is the effect of the community. With respect to the first dimension, it has been observed that the informal nature of the wiki, in the sense of being open for anyone to freely read, comment, and create and shape knowledge on the wiki, was one important factor behind the stimulation of flexible collaboration and knowledge sharing within communities. This could be attributed to the low cost of sharing, discussed extensively in the literature (e.g. Cabrera & Cabrera, 2002; Dyer & Nobeoka, 2000). It could also be attributed to enabling of the community approach to knowledge sharing resulting in knowledge to be owned by the community since everyone could participate in the development of knowledge (cf. Stenmark, 2008; Hasan & Pfaff, 2006). Related to this was the open accessibility to knowledge which allowed community members to freely access knowledge available on the wiki. Despite the application of control rules, mainly for editing and shaping content, anyone in the organization can still access and read this content. Hence, the flexible ability to create and share knowledge by communities can help organizations in empowering knowledge collaboration and sharing, thus leveraging knowledge effectively.

Pertaining to the second dimension, there are many aspects associated with the community effect enabled by the openness of wiki collaboration. Open and visible interactions within the community allow community members to identify expert contributors, thus getting influenced to contribute more as well as creating new relationships with them. For instance, community members in our case tended to seek these expert contributors and their contributions either through commenting and discussions or even through community meetings and offline phone conversations. This has accordingly increased the feeling of the value of sharing knowledge with others by knowledge contributors. It has also helped in fostering reciprocity and recognition as well as trust among community members (cf. Ipe, 2003; Orr, 1990). Knowledge contributors tended to appreciate it when other community members discussed or called them to further elaborate on specific contributions. It can be argued that such interactions and relationships may provide means for building mutual trust among community members and further stimulate the community effect in the wiki environment. Accordingly, organizations seeking to build and nurture a knowledge sharing environment might benefit from open wiki collaboration which can facilitate the development of critical factors such as reciprocity, trust, and recognition, thus motivating and increasing knowledge collaboration and sharing among community members.

6 CONCLUSIONS AND FURTHER RESEARCH

The main aim of this paper was to examine and understand the factors that influenced the use of the wiki by members of CoPs for knowledge collaboration and sharing at the workplace. The openness of the wiki was found to be one major factor that had a dual impact on determining peoples’ behavior towards the use of the wiki in organizational settings. In this respect, the open nature of wiki collaboration was found to be both a barrier and an enabler to collaborate and share within CoPs. The hindering impact of openness could deter or lead to less collaboration that might result from the lack of comfort by people to openly contribute in front of a large number of fellow employees or an unknown audience. This might be caused by the fact that these people are not willing to accept others’ comments and edits or they feel more comfortable with personal and less disclosed communication. Hierarchal constraints are also carried out to the wiki environment, which may prevent people from editing and commenting on articles by their superiors in public. In contrast, the enabling impact of openness has helped to attract more contributors into the community through the effect of transparent community interactions and the creation of new relationships among people. The open accessibility of knowledge also has a positive impact on knowledge contributors in the sense of feeling that their knowledge is more valuable especially when others can read and use this knowledge. Understanding the dual impact of open wiki collaboration and its value is increasingly important as more organizations are adopting wikis at the workplace. This importance stems from the fact that openness as a major wiki property may have a determining impact on the success or failure of implementing a wiki as a medium for collaborative practices at the workplace. Therefore, research is needed to further examine the dual impact of open wiki collaboration and the enactment of paradoxical organizational structures and cultures. We also recommend longitudinal studies that focus on examining gradual behavioral changes with respect to openness.
References

Wiki vs. Email – Understanding Collaboration within Virtual Communities
Conference Paper
ABSTRACT

The email has been for many years an indispensable organizational tool for personal communication and group collaboration. However, recently, the evolution of the wiki technology has introduced novel forms of open collaboration and flexible communication. More organizations are increasingly adopting and using this technology at the workplace. This paper reports on results from an interpretive case study which explored the evolution in collaborative and communicative practices. It examined the perceptions of members of communities of practice towards the differences between using a wiki and an email for collaboration within their communities. The case was primarily based on 16 interviews at a large multinational organization. The paper concludes with rich insights into five themes which characterize the major differences between wiki and email collaboration. These themes are nature or purpose of use, patterns or forms of collaboration, technological characteristics, representation of content, and habitual behavior.

KEYWORDS

Wiki, Email, Collaboration, Communities of Practice (CoPs), Knowledge Sharing.

1. INTRODUCTION

The advent of the social media has introduced novel ways of collaboration, communication, and knowledge sharing in organizations. Social media is defined as a group of internet-based applications that build on the ideological and technological foundations of Web 2.0. It allows the creation and exchange of user-generated content (Kaplan & Haenlein, 2010). In this respect, Web 2.0, a platform for the evolution of social media, describes technologies like wikis, Blogs, social networks, etc. Many scholars argue that social media is changing the way people interact and work together (Hirschheim & Klein, 2010; Majchrzak, 2009). For instance, Stenmark (2008) explained that social media involves new ideas, services, and attitudes on the web. Other scholars, such as Kaplan & Haenlein (2010), maintained that while Web 2.0 is argued to refer to the old roots of the web, still it involves technical advances which enable novel forms of virtual collaboration and communication that are fundamentally different from earlier technologies.

However, long before the social media, emails existed as major and established communication channels ingrained in organizations as the most widely used communication technology after the telephone (Wagner, 2004). The use of emails has a long history as a communication tool both for personal and group interactions (Muller & Gruen, 2005; Whittaker & Sidner, 1996). An email or electronic mail is a one-to-one or one-to-many tool and is used for asynchronous interactions with no central knowledge repository or knowledge organization facility (Wagner, 2004; Markus, 1994). In this respect, emails together with other types of technologies, such as electronic discussion forums and bulletin boards, are often used by electronic networks of practice to extend their reach of collaboration and sharing on the web (Wasko & Faraj, 2005).

Each of these technologies has different characteristics and allows for various forms of collaboration and interaction on the web.

Hence, the paper focuses on understanding perceived differences in using the wiki and the email for enabling collaborative practices among distributed members of CoPs in a large multinational organization. It seeks to find out how members of CoPs use wikis and emails for knowledge collaboration and sharing within an organizational setting. The paper eventually contributes rich insights into the differences between using the wiki and the email for collaboration based on five major themes: nature or purpose of use, patterns or forms of collaboration, technological characteristics, representation of content, and habitual behavior.
ABSTRACT
The email has been for many years now an indispensable organizational tool for personal communication and group collaboration. However, recently, the evolution of the wiki technology has introduced novel forms of open collaboration and flexible communication. More organizations are increasingly adopting and using this technology at the workplace. This paper reports on results from an interpretive case study which explored the evolution in collaborative and communicative practices. It examined the perceptions of members of communities of practice towards the differences between using a wiki and an email for collaboration within their communities. The case was primarily based on 16 interviews at a large multinational organization. The paper concludes with rich insights into five themes which characterize the major differences between wiki and email collaboration. These themes are nature or purpose of use, patterns or forms of collaboration, technological characteristics, representation of content, and habitual behavior.

KEYWORDS
Wiki, Email, Collaboration, Communities of Practice (CoPs), Knowledge Sharing.

1. INTRODUCTION
The advent of the social media has introduced novel ways of collaboration, communication, and knowledge sharing in organizations. Social media is defined as a group of internet-based applications that build on the ideological and technological foundations of Web 2.0. It allows the creation and exchange of user-generated content (Kaplan & Haenlein, 2010). In this respect, Web 2.0, a platform for the evolution of social media, describes technologies like wikis, Blogs, social networks, etc. Many scholars argue that social media is changing the way people interact and work together (Hirschheim & Klein, 2010; Majchrzak, 2009). For instance, Stenmark (2008) explained that social media involves new ideas, services, and attitudes on the web. Other scholars, such as Kaplan & Haenlein (2010), maintained that while Web 2.0 is argued to refer to the old roots of the web, still it involves technical advances which enable novel forms of virtual collaboration and communication that are fundamentally different from earlier technologies.

However, long before the social media, emails existed as major and established communication channels ingrained in organizations as the most widely used communication technology after the telephone (Wagner, 2004). The use of emails has a long history as a communication tool both for personal and group interactions (Muller & Gruen, 2005; Whittaker & Sidner, 1996). An email or electronic mail is a one-to-one or one-to-many tool and is used for asynchronous interactions with no central knowledge repository or knowledge organization facility (Wagner, 2004; Markus, 1994). In this respect, emails together with other types of technologies, such as electronic discussion forums and bulletin boards, are often used by electronic networks of practice to extend their reach of collaboration and sharing on the web (Wasko & Faraj, 2005). Each of these technologies has different characteristics and allows for various forms of collaboration and interaction on the web.

Hence, the paper focuses on understanding perceived differences in using the wiki and the email for enabling collaborative practices among distributed members of CoPs in a large multinational organization. It seeks to find out how members of CoPs use wikis and emails for knowledge collaboration and sharing within an organizational setting. The paper eventually contributes rich insights into the differences between using the wiki and the email for collaboration based on five major themes: nature or purpose of use, patterns or forms of collaboration, technological characteristics, representation of content, and habitual behavior.
2. RELATED LITERATURE

2.1 Web-based Collaboration

Web-based collaboration has several synonyms discussed in the literature. These include electronic collaboration (eCollaboration), virtual collaboration, computer-supported collaboration, etc. In this respect, Kock (2005) defined eCollaboration as collaboration using electronic technologies (e.g. wikis, emails) among different individuals to accomplish a common task. He further identified six key conceptual elements of eCollaboration: the collaborative task, eCollaboration technology, individuals involved in the collaboration task, mental schemes processed by the individuals, the physical environment surrounding the individuals, and the social environment surrounding the individuals. Nowadays, organizations adopt collaborative technologies, such as emails, discussion forms, listervs, etc., in order to enable and support collaboration within their virtual and distributed teams or CoPs (Wasko & Faraj, 2000). More recently, the evolution of social media and Web 2.0 technologies represents the emergence of various collaborative technologies which facilitate flexible collaboration and participation as well as the development of user-generated content on the web (Kaplan & Haenlein, 2010; Stenmark, 2008). Against this background, many scholars have argued that these technologies are changing the way people work and interact together and are introducing new possibilities for organizations to collaborate and share (Hirschheim & Klein, 2010; Majchrzak, 2009; McAfee, 2006).

2.2 Collaboration tools

2.2.1 Wiki

A wiki is often described as a simple tool which allows anyone to freely and openly collaborate in the creation of knowledge (Yates et al., 2010; Stenmark, 2008; Hasan & Pfaff, 2006). It consists of a set of web pages which are dynamically updated by a group of collaborating users who continue to add and edit content into these web pages and determine the relationships among them (Hasan & Pfaff, 2006; Wagner, 2004). Generally, a wiki can be best described as a collaborative authoring tool which allows the creation of multiple documents by a large number of people (Happel & Treitz, 2008; Augar, 2005).

Openness is one of the major aspects of the wiki. It implies that anyone should have access to the wiki and collaborate freely with others to share and edit content (Wagner, 2006; Stenmark, 2005). This ability to freely edit and change wiki documents is often referred to as open editing that has a substantial effect on maintaining a democratic use of the wiki (Rafaeli & Ariel, 2008; Augar, 2005). In this respect, Hasan & Pfaff (2006) & Wagner (2006) described the wiki as an emergent conversational technology that allows for a democratic use of Information Systems in organizations through conversations and particularly for a bazaar-like collaboration where people voluntarily engage together to share and manage their knowledge collaboratively. Another important aspect of the wiki, versioning or version control, allows people to see recent changes and the history of changes on the wiki. This is important for the maintenance of the quality of contributions to the wiki (Korica et al., 2006; Wagner, 2006). Further aspects of the wiki include linking and creating pages, using simple markup language, fluid structure, and incremental development (Wagner, 2006).

In addition, Yates et al. (2010) described a process called shaping which allows people not only to contribute and edit their knowledge collaboratively but also to shape their knowledge by rewriting, reorganizing, and integrating. The process of shaping is considered an important property of the wiki since it allows for its transformation into an evolving knowledge platform as a result of continued open editing and flexible interactions among people. However, this has also caused challenges for organizations with respect to the quality and reliability of contributed knowledge (Danis & Singer, 2008).

2.2.2 Email

The email is considered "the father" of all electronic collaboration technologies and is arguably the most dominant and used technology in organizations after the telephone (Kock, 2005). An email or electronic mail is described as a one-to-one or one-to-many asynchronous communication and conversation tool without a central knowledge repository or knowledge organization facility (Wagner, 2004; Markus, 1994).
Jarvenpaa & Staples (2000) described the email as a computer-based collaborative system that allows information sharing within and across organizations, thus encouraging the sharing of ideas in a free manner as well as in the form of structured repositories. In their early days, emails were conceived as means to replace or extend communication possibilities in organizations. Haythornthwaite (2001). In this respect, Haythornthwaite (2001) believed that an email could shift communications from face-to-face to electronic communications among weakly tied communicators as well as reinforce a strong social network among strongly tied communicators. Others, such as Descantics & Monge (1999), further explained that emails complement general work networks and allow for a more participative and diverse environment as well as less formal relationships and hierarchy. In this respect, knowledge culture and values can have an impact on the use of electronic mail concerning the flattening of communication hierarchies in organizations (Jarvenpaa & Staples, 2000; Descantics & Monge, 1999).

Furthermore, Lee (1994) discussed information and communication richness using emails and their capacity to process rich information. He explained that an email is a lean medium because it lacks the capability for immediate feedback, uses only a single channel, filters out significant cues (e.g. body language), and tends to be impersonal. In the same vein, Dennis & Kinney (1998) discussed the immediacy of feedback and defined it as the extent to which a medium enables users to give rapid feedback on the communications they receive. He divided it into two types: concurrent feedback and sequential feedback. He termed the former as simultaneous feedback provided with the delivery of the message while the latter as the feedback that often takes the form of non-verbal gestures and occurs when the sender pauses and communicates to confirm or to redirect his/her presentation of the message. Further, Sarbaugh-Thompson & Feldman (1998) discussed two effects of the lack of cues in email communication. One was the limited range of communication with emails: negotiations that might be difficult through emails and require a richer medium. Another effect was related to communication equality in the sense that existing social hierarchies do not have a great impact on people’s electronic communication. Similarly, Markus (1994) conducted a study based on the theory of information richness in order to examine the perceptions of senior managers towards the use of electronic mails for their organization communications. He found that managers had found the email as a lean medium rather than a rich one. However, it was found to be also the primary medium for internal work-related communication.

3. METHOD

The current paper was part of a larger case study at a large multinational organization called Consolidated Contractors Company (CCC). CCC is specialized in civil and mechanical construction and ranks 13 by the Engineering News Record (ENR) on the list of international contractors. It has over 170,000 employees distributed among various projects across the globe. The case in this paper was based on a recent initiative to introduce the wiki, thus enabling flexible collaboration and knowledge sharing among dispersed employees at CCC. This initiative was motivated by the complex distribution of a large number of employees and the lack of flexible systems that would allow for dynamic collaboration and sharing among them. In this respect, CCC often used several traditional document management systems to provide a basis for all content at the organization. These systems were insufficient to allow for flexible collaboration and knowledge sharing that would help in leveraging knowledge and experience of distributed employees. Accordingly, the company decided to establish a Knowledge Management (KM) department. This department was charged with the development of a collaborative platform which would allow these employees to collaborate and share knowledge with each other. Equally important, the KM department was also charged with the establishment of what is called CoPs to provide a basis for employees who would share common professional interests and stimulate collaboration among them through the wiki. While the wiki has been the primary focus of our investigation, we also sought to understand how other tools, particularly the email, were used to enable and support collaboration among member of CoPs.

In order to address this issue, an interpretative case study was used as a vehicle for our empirical inquiry. The choice of the interpretive case study was motivated by the need to emphasize human beings’ meanings and interpretations (Walsham, 1995; Walsham, 2006). These are necessary to achieve an understanding of how community members perceived their collaboration and interaction using a wiki or an email.
The interpretative case study has also helped us to obtain data from the participants in their real-life settings (Yin, 2009; Eisenhardt, 1989; Trauth, 2001). In this respect, primary empirical data were obtained through sixteen interviews with junior and senior employees as well as top managers at CCC. These interviewees were self-selected after an email invitation had been sent by the KM Department to a random sample of community members to participate in this investigation. The selection criteria of these participants included age, seniority level, activity within CoPs, technological background, gender, and geographical distribution. As a result, we had five junior employees, three senior employees, and eight managers. Of these, we had four lurkers and twelve active contributors. It is worth mentioning that all manager participants had different roles within their communities. Some were community captains, responsible for driving discussions on the wiki, motivating others to join the community, and suggesting topics for discussion, while others were community managers whose role was to establish the foundation of the community, nominate community captains, etc. Our sample was also geographically diverse covering Australia, Europe, Middle East, and CIS countries.

Pertaining to the actual data collection, the case study protocol included questions derived from the literature of wikis and emails together with other general information about the study such as time, purpose, confidentiality issues, etc. This protocol was used as a tool to guide our conversations with the interviewees. It was also used in an informal rather than rigid way to allow for a fluid stream of questions and the emergence of new aspects that might contribute to further support our investigation (cf. Yin, 2009).

The analysis of data obtained from interviews was based on a hermeneutic approach which emphasizes a holistic understanding of the whole through understanding of the parts of a situation and their interrelationships in respect to the whole (Cole & Avison, 2007; Klein & Myers, 1999). In other words, the data was examined and read through to identify important parts linked to the purpose of the study. Then we used open coding (Rowland, 2003; Trauth & Jessup, 2000) to develop codes representing each part. These codes were further combined using axial coding to develop general themes interrelated to each other. Each interview transcript was subject to both open and axial coding to allow for an iterative understanding of the parts in respect to the whole. Furthermore, cross-transcript analysis was conducted to establish and develop further themes among several transcripts. In addition, the validity of this data was tested by member checks in order to increase the robustness of our data.

4. FINDINGS

While community members at CCC used their email to receive notifications about any newly added content on the wiki, the email was still used for other primary purposes mainly personal communication and group collaboration. At the same time, they also used the wiki to support collaboration and interactions within their communities. As such, the wiki and the email were both used to enable collaboration and interaction among employees at CCC. However, they differed in terms of the way community members use each tool to collaborate and interact with each other as well as their particular affordances. A mechanical construction manager explained these differences as follows:

“...The email... is a quick, versatile means of communication that has replaced the telex, fax... I think this is the number one tool for communication. The wiki is another communication tool but it has certain characteristics which, for the application of KM, is indispensable and cannot be replaced. You cannot replace it with emails; you would never reach the recipients, and the recipient would never have access to information that the wiki could provide if the wiki was not there....”

The head of IT Systems described these differences by providing an example from his daily fieldwork. It shows different approaches of collaboration and interactions using an email or a wiki. He said:

“I receive an email stating that there is a bug in application X. Two months later the same bug is discovered again and a request is sent on how to fix it. So most of the time we receive the same requests, many times, from different locations. If we have this solution on the wiki then any person can go and search for a certain, let’s say, bug or error ... They can search for the solution. If they have any further questions, they can elaborate on the same page and it will be saved for later.”
Further, a group technical manager described generally his perception towards the differences between an email and a wiki. His view of these differences is primarily determined by the kinds of interactions each tool is suitable for. In his words,

“...The email is for day-to-day routine communication needs, its versatility ...in every corner of the globe; you can read an email, so the email is indispensible. But the wiki for specific applications is also indispensible. What the wiki can do, the email cannot do.”

In this respect, we sought to learn more about how and why community members used the wiki to share knowledge and experience with each other. We asked a group technical manager about this and he said:

“...All information is there and to tap that information, I have to use it [the wiki]. It is the platform that carries all the information available. There are no other means.”

We then asked him why he thought there were no other means. He said:

“One could say, for example, we can use normal emails, but again there is a limitation in the size of emails you can transfer and emails are individual pieces of information which you cannot trace back in an easy manner. In contrast, in the wiki you can search, you can find any subject by just putting a word on it, and it will give you all the related articles that have been written on that, and it is an easy, practical tool; it has lots of advantages over any other means.”

At that point, a mechanical construction manager commented on the impact of emails and wikis by saying that:

“... the impact of the wiki, I must say, is not as big as the impact of the email system...Our habits have changed as a result of emails, but our habits have not changed as a result of the wiki.”

He further explained the habitual use of email communications in everyday lives:

“...Everybody communicates with emails. Emails have now been accessible in a practical manner through specialized mobile phones, like BlackBerry and iPhones, which have email facility. So you have the tools that make emails more practical. But that is for specific communication items. The subjects that we handle through the wiki, which is KM, are different. It’s also a communication tool but not all people go to the wiki every day, every morning, as a first job they do. Their first job is to open the wiki; the first job is to open emails.”

This perception emphasizes important habitual practices that determine the increasing use of emails compared to wikis. The ubiquity of emails in everyday life and the accessibility of email applications through regular daily devices, such as mobile phones, are major factors that motivate people to use their email more than the wiki. At the same time, this perception also implies that both wikis and emails are suited for specific and different forms of communications and interactions. For instance, one of the major aspects of the wiki is that it allows for open social interactions among community members providing them with opportunities to meet new people and establish new professional relationships. This might not be supported using private emails where communications and interactions are personal and restricted to a specific number of people.

The head of IT Systems explained social interaction as follows:

“Social interaction, for example, if I am discussing any point, I sometimes know people based on my experience during project visits. But there are other people whom I don’t know so it will give me an opportunity to know more about them and their titles or functions within the project or the company. So it is introducing more people through this media instead of just sitting and knowing the persons around you.”

In a similar sense, a group plant manager said:
“...You can also go to the wiki, visit these communities, look up a certain article, and you see faces or friends. It’s completely different from emails... You are sharing with others...you feel, especially when categorizing these communities into different disciplines, you are part of a group or family. That feeling you don’t have with other means of communication”.

The mechanical construction manager added:

“...I have access to a lot of information, which was previously hard to get, and it might have been difficult to find easily who had had the best information within our company. But now I can easily access this man, and this piece of information [using the wiki]...”

Further, the group plant manager explained that the open and informal nature of a wiki stimulates collaboration and increases its scope compared to the formal nature of an email. He said:

“...To a certain extent it is a less formal means of communication so people would really voluntarily be more open to write things. You know if I want to send an article by email I will be more selective.... People see ... that they are free to put ideas and select things and contribute.”

A senior systems administrator further described the free and open nature of a wiki and its influence on motivating people to collaborate and share their knowledge with others. She said:

“...When you see more people online and more people sharing their opinions, posting things, and so on, you feel more motivated”.

However, a group quality manager explained the problems and barriers which have impeded sharing and collaboration using a wiki. These are related to what we have previously said about the ubiquity and accessibility of emails in everyday life:

“...Emails are available everywhere so a lot of knowledge is being shared through emails and not necessarily through the wiki ... Emails probably are easier and faster so there is a lot of knowledge and exchanges through the normal email route.”

One mechanical manager provided more elaboration on this and explained how an email could be more useful for particular forms of interactions that would differ from interactions supported by the wiki:

“With emails, you can discuss more problems and get direct answers...Because, through emails, you discuss day-to-day problems. Any time you have a problem at site, you send an email or receive comments...but the wiki system, is used as a reference for information, already discussed and put there for a reference.”

A construction manager added briefly:

“...The email, outlook in particular, is faster than the wiki when it comes to getting information.”

As such, an email is more suited to address daily problems and issues that require immediate feedback and quick answers. The wiki, in contrast, is more suited for discussing problems and sharing content that can be used for later purposes. For instance, it can be used to read about specific work methods discussed by the community. In this respect, a control project manager (Australia) explained his perception towards shared knowledge on the wiki as follows:

“The wiki is more detailed ... To me it is like a base of information related to the job.”

He further gave an example to illustrate how shared knowledge on the wiki could be useful to learn from other community members who share and discuss their experiences and knowledge on the wiki. He said:
“...It’s learning ... Maybe I was doing some work which I used to do in a particular way in the last ten years. And now probably there is somebody in South Africa who is doing it in a different way using efficient equipment, and they post it into the system. Of course I am learning.”

In addition, a control project manager (Oman) predicted different directions in which emails and wikis could be used. He argued:

“I think even with more development and improvement of the wiki, email will still be there. But it will not be maybe in the same amount that we have now. Maybe ... for confidential things and private things, maybe you will use emails. For things that can be shared, then you will use the wiki.”

Though the group plant manager agreed with that, he voiced his concerns about confidentiality of sharing knowledge on the wiki and the potential risk of becoming accessible to competitors:

“... There was really a debate about, let’s say, whether we should do that or I mean, let’s say, what sort of knowledge will be shared ... I mean one of the things ... is that our competitors may use this wealth of knowledge which I am against”

5. DISCUSSION AND CONCLUSIONS

In our investigation of how members of CoPs used wikis and emails for knowledge collaboration and sharing, we sought to increase our understanding of several aspects of collaboration that describe the differences in using the wiki and email. We found five major themes that characterized these differences: nature or purpose of use, patterns of collaboration, technological characteristics, representation of content, and habitual practices. Each theme represents particular differences in respect to how community members perceived collaboration with either technology.

The first theme, the nature or purpose of using a collaborative technology, is related to what Kock (2005) described as the collaborative task. Kock (2005) explained that the nature of the collaborative task could have a strong effect on its outcomes when certain electronic collaboration technologies are used. In this respect, both wikis and emails share the purpose of enabling collaboration, communication, and knowledge sharing among people (cf. Yates et al., 2010; Jarvenpaa & Staples, 2000). However, participants in this research revealed several variations in the nature of collaborative tasks that a wiki or an email could support. For instance, an email was described as a tool that was useful to communicate immediate feedback in the sense of sharing and communicating daily project problems with others and eventually receiving quick answers. While this is an asynchronous process of collaboration where feedback often requires some time to be delivered or received, it is still faster than the wiki. Many participants described the wiki as a conversational technology (cf. Hasan & Pfaff, 2006; Wagner, 2004) suitable for discussions and negotiations and that it might be useful for future referencing purposes rather than getting quick feedback or answers. The immediacy of feedback (cf. Dennis & Kinney, 1998) represents a major difference in respect to the nature or purpose of using the wiki or the email. In other words, the nature of collaborative tasks supported by an email are often expected to provide or intend an immediate feedback. In the wiki, the nature of collaborative tasks depends on rich conversations and negotiations among community members and thus feedback is not expected to be immediate but rather gradual and indirect.

The second theme is concerned with patterns or forms of collaboration. This theme is directly related to the third theme: technological characteristics. Emails and wikis enable and support various forms of collaboration and communication depending on their technological characteristics. We found that, for instance, the open and free nature of the wiki (Yates et al., 2010; Happel & Treitz, 2008; Cunningham, 2004) allowed for flexible, informal, transparent, and community approach to collaboration and interaction. For instance, our participants explained that the openness of the wiki facilitated free collaboration and sharing among community members in which any could freely and openly create and shape knowledge (cf. Yates et al., 2010). Most importantly, openness of the wiki (cf. Mansour et al., forthcoming) allows for transparent interactions and open sharing within the community. The ability to openly contribute knowledge that is accessible by anyone creates opportunities for recognizing frequent contributors in particular domains as well
as establishing relationships with them. While an email can strengthen relationships among members with strong ties (Haythornthwaite, 2001), open interactions using a wiki allow members to meet new people and establish a wider social network at work. Further, our participants explained the importance of this kind of open sharing to facilitate transparency of interactions within the community. Such transparency was considered a means to motivate collaboration and interaction since community members tend to be more motivated to share and collaborate when they can see others actively participating in sharing their knowledge with the community. In contrast, the email was described as more personal and confidential where participants tended to be selective when they communicated and shared knowledge with others and thus collaboration was limited to one-to-one or one-to-many communication channels (cf. Wagner, 2004; Sarbaugh-Thompson & Feldman, 1998; Markus, 1994). By and large, different technological characteristics of emails and wikis determine and shape several variations among patterns or forms of collaboration and interaction through these technologies.

Fourth, the representation of content in both wikis and emails is also linked to technological characteristics of these tools. Many participants explained that the way content was represented or communicated had a determining impact on shaping and driving collaboration. In an email, for instance, content is scattered across several email messages. Our participants explained that this unstructured representation of content made it difficult to find necessary information. It also implies that knowledge is not owned by individuals rather than the community. On the contrary, content on a wiki is created and developed by the community. It is also located in one place so that all community members can participate in creating and shaping knowledge collaboratively. In fact, the way by which knowledge is communicated and shared through a wiki or an email determines how knowledge is represented. Email communications are most often individual and thus result in scattered information lacking common repository, integrity, and consistency (cf. Wagner, 2004; Markus, 1994). Wiki-based communications, in contrast, are collaborative involving many people who collaborate with each other to develop shared content.

Finally, our participants considered habitual behavior as one major determining factor on whether to use a wiki or an email to collaborate and share with others. Habitual practices have been observed to represent a difference in why community members would choose to use the wiki or the email. Our participants further explained that ubiquity and accessibility of email applications through daily devices, such as mobile phones, made people more accustomed to using emails for collaboration and communication in their everyday lives. Moreover, since emails are designed to send and receive quick information, people tend to favor them over wikis for day-to-day communications. Accordingly, our participants explained that the fact that emails existed long before wikis was a major factor for developing habitual practices, thus making them tend to use the email more than the wiki in their everyday lives.

REFERENCES


strong ties (Haythornthwaite, 2001), open interactions using a wiki allow members to meet new people and open sharing to facilitate transparency of interactions within the community. Such transparency was

Hasan, H., and Pfaf, C., 2006. Emergent conversational technologies that are democratizing Information Systems in


with the community. In contrast, the email was described as more personal and confidential where

Sarbaugh-Thompson & Feldman, 1998; Markus, 1994). By and large, different technological characteristics

interaction through these technologies.

participants tended to be selective when they communicated and shared knowledge with others and thus

explained that ubiquity and accessibility of email applications through daily devices, such as mobile phones, owned by individuals rather than the community. On the contrary, content on a wiki is created and developed by the community. It is also located in one place so that all community members can participate in creating

Finally, our participants considered habitual behavior as one major determining factor on whether to use

through a wiki or an email determines how knowledge is represented. Email communications are most often

and shaping knowledge collaboratively. In fact, the way by which knowledge is communicated and shared

representation and reality conference

organizations: The case of the corporate wiki.


Mansour, O. et al., forthcoming. Wiki-based community collaboration in organizations. Proceedings of the 8th International Conference on Communities and Technologies, Australia, Brisbane.


The Not-So-Open Wikis: Structures of Collaboration at Work
Conference Paper
The Not-So-Open Wikis: Structures of Collaboration at Work

Osama Mansour

The current chapter discusses issues related to the use of the wiki technology at the workplace for social knowledge collaboration and sharing. This kind of technology is principally flexible and free in the sense of allowing people to create, edit, and shape content collaboratively. However, this chapter argues that the application and use of a wiki within an organizational setting might be influenced by social and structural properties that govern collaboration and sharing. It is based on empirical data obtained through eleven semi-structured interviews with employees working for a large multinational organization. The theory of structuration was used as a theoretical framework to guide the empirical inquiry. Eventually, the chapter concludes with discussing a number of structures associated with evolving norms, interpretations, and resources that govern and shape the use of a wiki as a tool for social and open collaboration.

Background

The evolution of the web has enabled novel forms of collaboration, interaction, and knowledge sharing. Social media represent this evolution that is associated with fundamental changes in the way people work and interact with each other on the web [11]. They refer to Internet-based applications that build on the ideological and technological foundations of web 2.0 [10]. Web 2.0 is the platform for the evolution of social media. It represents an assortment of social and open technologies such as wikis, blogs, and social networks, tools as well as new norms of self-governance and freedom of information ownership [25]. These kinds of technologies allow for dynamic and flexible social interactivity through the co-creation of content, engagement and participation in online communities, and openness and free expression on the web [10, 18, 6]. For instance, a wiki is described as a tool for open and social knowledge collaboration that allows anyone to create and edit content collaboratively. It consists of a set of dynamic web pages that are continuously updated by communities of people [27, 7]. Ward Cunningham, the inventor of wiki, provided a number of principles that characterize the nature of a wiki such as open, simple, incremental, organic, etc. [2]. Openness is one of the most intriguing aspects of wikis. In principle, a wiki is open and allows its users to jointly create, edit, change, and delete content [22]. It also allows for knowledge shaping which is a purposeful activity to transform existing knowledge on the wiki into
The Not-So-Open Wikis: Structures of Collaboration at Work

Osama Mansour

The current chapter discusses issues related to the use of the wiki technology at the workplace for social knowledge collaboration and sharing. This kind of technology is principally flexible and free in the sense of allowing people to create, edit, and shape content collaboratively. However, this chapter argues that the application and use of a wiki within an organizational setting might be influenced by social and structural properties that govern collaboration and sharing. It is based on empirical data obtained through eleven semi-structured interviews with employees working for a large multinational organization. The theory of structuration was used as a theoretical framework to guide the empirical inquiry. Eventually, the chapter concludes with discussing a number of structures associated with evolving norms, interpretations, and resources that govern and shape the use of a wiki as a tool for social and open collaboration.

Background

The evolution of the web has enabled novel forms of collaboration, interaction, and knowledge sharing. Social media represent this evolution that is associated with fundamental changes in the way people work and interact with each other on the web [11]. They refer to Internet-based applications that build on the ideological and technological foundations of web 2.0 [10]. Web 2.0 is the platform for the evolution of social media. It represents an assortment of social and open technologies such as wikis, blogs, and social networks, tools as well as new norms of self-governance and freedom of information ownership [25]. These kinds of technologies allow for dynamic and flexible social interactivity through the co-creation of content, engagement and participation in online communities, and openness and free expression on the web [10, 18, 6]. For instance, a wiki is described as a tool for open and social knowledge collaboration that allows anyone to create and edit content collaboratively. It consists of a set of dynamic web pages that are continuously updated by communities of people [27, 7]. Ward Cunningham, the inventor of wiki, provided a number of principles that characterize the nature of a wiki such as open, simple, incremental, organic, etc. [2]. Openness is one of the most intriguing aspects of wikis. In principle, a wiki is open and allows its users to jointly create, edit, change, and delete content [22]. It also allows for knowledge shaping which is a purposeful activity to transform existing knowledge on the wiki into
more useful knowledge through reorganizing, rewriting, and integrating content [27].

In this respect, given their potential, organizations continue to apply and use wikis at the workplace [27, 16, 25, 7]. As such, wikis are often used by professional communities for knowledge collaboration and sharing [5, 27]. For instance, wikis can be used as conversational knowledge management tools where by which individuals and groups create and share knowledge through collaborative dialogues and conversations [6]. Kosonen & Kianto [12] maintained that due to their easiness and flexibility, wikis enable fluid patterns of collaboration that support the free exchange of knowledge. Accordingly, many scholars argued (e.g. [9, 12, 8]) that the use of wikis is driving more flatter, democratic and horizontal structures in organizations as users become more free and engaged. For instance, Faraj et al. [5] argued that knowledge collaboration, that involves creating, sharing, transferring, and accumulating knowledge, in online communities can occur without the traditional structures often associated with this kind of collaboration such as stable membership, interdependence among group members, etc. They further claimed that the lack of such structures might partly free the collaboration from social conventions, ownership, and hierarchy. We take a dubious stance on such arguments and claims aiming at addressing issues related to the potential development of social structures (cf. [17]) in the course of using social and open technologies for knowledge collaboration and sharing.

In addition, research addressing the use of wikis in organizational settings is increasing (e.g. [16, 27, 3, 26, 9, 8]). However, this research lacks the focus on understanding socio-structural dynamics of using wikis at work and how these dynamics shape social collaboration and sharing. To this end, the current chapter, drawing upon the theory of structuration, focuses on examining social structures that might evolve when using a wiki for open knowledge collaboration and sharing at the workplace. Hence, it seeks to answer the questions of: what kind of structures might evolve in the course of using a wiki for open knowledge collaboration sharing? and how these structures shape the process of social collaboration and sharing?. The rest of the chapter is divided as follows: the next section presents the theoretical framework. Then the third section describes our empirical inquiry. The fourth section shows the findings of the research. The fifth section provides a general discussion of the findings and finally the sixth section includes the conclusions of this chapter.

**Theoretical Framework**

**Structuration Theory**

Structuration theory was developed by the English sociologist Antony Giddens. Giddens described his theory as an “ontology of social life” which can be used as
Structuration theory was developed by the English sociologist Antony Giddens. Giddens’s view of society focused on the dynamic interaction between humans and the structures that shape our actions. In this respect, Jones & Karsten [13] maintained that the theory of structuration deals with social phenomena at a high level of abstraction rather than their particular instantiation in a specific context. Further, Jones et al. [15] explained that Giddens aimed at developing a theory that serves as a middle way between two competing traditions in sociology: naturalistic sociology and the interpretive tradition of phenomenology. Giddens sought to transcend the limitations of these two traditions by rejecting traditional dualistic views that see social phenomena as determined either by objective social structures or by autonomous human agents [13]. Eventually, Giddens proposed the theory of structuration which emphasizes that structure and human agency should be understood as a mutually constitutive duality [13, 15].

Structuration theory is heavily used in many academic disciplines [26, 15]. Wanda Orlikowski has published several works on structuration theory in which she developed new extensions and understandings of the theory (e.g. [19, 20]). One example is her structuration model of technology (see [20]). In this model, Orlikowski draws upon the structuration theory in the sense of maintaining that human actions are enabled and constrained by structures and that these structures are still the result of previous actions. As such, she argued that technology is created and modified by human actions while at the same time technology is used by humans to accomplish specific goals. She referred to this understanding as the duality of technology. In the next section we describe the main components of structuration theory that have been used to frame our theoretical and empirical efforts in this chapter.

**Modalities of Structuration Theory**

Three central modalities or components of structuration theory have been used to help in framing our empirical inquiry. These components include interpretive schemes, norms, and resources [13, 19, 21, 20, 23]. But before we discuss these components it is important to clarify some concepts. Structuration is defined as a social process that involves the reciprocal interaction of human actors and structural features of organizations [15, 20]. Structure, as defined by Giddens, refers to rules and resources organized as properties of systems and exists as structural or institutionalized properties [15, 19, 20, 23]. Given this definition, Giddens’s understanding of structure emphasizes the dynamic process of social interaction rather than static properties or patterns [13]. All three modalities provide the linkage between human action (agency) and institutionalized properties (structure) [14, 21]. Each modality can be understood differently from either an agency or structural perspective.

From an agency perspective, human interaction involves the communication of meaning which is achieved via interpretive schemes. Interpretive schemes from a structural perspective represent structures of signification which are organizational rules that inform and define interaction (e.g. a person wearing a white
coat suggests he is a doctor) [20, 21]. Resources from an agency perspective are related to power relations. Power plays an important role in human interaction as it provides organizational capabilities for human to accomplish certain outcomes. The impact of power from this perspective is understood as transformative capacity that is the power of humans to transform the social and material world [20, 21]. This transformative power is mediated in organizations through two kinds of resources: authoritative that is extending power over people and allocative that is extending power over objects or material phenomenon. From a structural perspective, these resources reflect structures of domination [20]. In respect to norms, from an agency perspective, they refer to organizational conventions and rules governing legitimate or appropriate conduct. From a structural perspective, norms constitute organizational structures of legitimation which are used to maintain organizational order through rituals and tradition.

In addition, Orlikowski & Robey [21] explained that these three modalities determine how the institutional properties of social systems mediate deliberate human action and how human action constitutes social structure. For instance, people in their everyday lives draw upon their knowledge of their prior action or situation in hand, the facilities available to them (e.g. technology), and the norms that inform their ongoing practices. As such, the application and use of these elements in social interaction lead to structuring their current actions [19]. In this view, human agency, that is humans in their ongoing interactions, and structure, that is institutionalized properties of social systems, are treated as mutually interacting duality [14]. Eventually, structure is always seen as enabling as well as constraining.

**The Case and the Method**

The case in this study was conducted at IBM which is a large multinational technology corporation. IBM is specialized in developing computer software and hardware and also offering consulting, hosting, and infrastructure services in areas ranging from mainframe computers to nanotechnology. IBM was founded in 1911 and is considered the largest technology company in the world and often ranked among the largest 30 companies worldwide. The company has more than 425,000 employees in more than 200 countries.

One major part of IBM technology services is IBM Social Business and IBM Collaboration Solutions where the current case took place. This section of IBM was initially called IBM Lotus Notes that mainly focuses on providing enterprise collaboration solutions. Nowadays, this section is called IBM Social Business & Collaboration Solutions that is specialized in providing various social collaboration services for businesses with emphasis on integrating social software capabilities. One main social collaboration technology that is developed by IBM Collaboration Solutions is IBM Connections. This software combines multiple so-
cial collaboration tools including file sharing, status updates, blogs, micro blogs, tagging, wikis, communities, and many other social collaboration tools.

The IBM Connections software was the tool studied in this case with a particular focus on the wiki technology. The aim was to understand the structures surrounding the use of the wiki by employees at the IBM Collaboration Solutions. As such, participants in this study were mostly working at the IBM Collaboration Solutions and using wikis for different collaboration purposes such as documentation, activity management, scheduling, content and file sharing, a point of reference, etc. It is important to mention that people using IBM Connections are free to use any tools available in the system the way they like. So the participants in this research have either been users of wikis created by others or creators of wikis related to their work. The system also allows them to set up a wiki to be either open for anyone or accessible only to specific members.

The semi-structured interview method was the vehicle for collecting data in this study. The choice of the interview method was motivated by the need to understand people's experiences and interpretations of using the Wiki technology. The total number of the interviews was eleven of which three were conduct via Skype online video conferencing, three conducted over the phone, and give were face-to-face (f2f) interviews at different IBM locations in Copenhagen, Denmark. The semi-structured interview method was the vehicle for collecting data in this study. The choice of the interview method was motivated by the need to understand people's experiences and interpretations of using the Wiki technology. The total number of the interviews was eleven of which three were conduct via Skype online video conferencing, three conducted over the phone, and give were face-to-face (f2f) interviews at different IBM locations in Copenhagen, Denmark.

<table>
<thead>
<tr>
<th>Role</th>
<th>Wiki experience</th>
<th>Gender</th>
<th>Nationality</th>
<th>Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Intelligence Leader</td>
<td>3–4 years</td>
<td>Male</td>
<td>UK</td>
<td>Skype</td>
</tr>
<tr>
<td>Engagement Manager</td>
<td>1 year</td>
<td>Female</td>
<td>Denmark</td>
<td>F2F</td>
</tr>
<tr>
<td>Software Developer</td>
<td>5–6 years</td>
<td>Male</td>
<td>Denmark</td>
<td>F2F</td>
</tr>
<tr>
<td>Client Technical Professional</td>
<td>3–4 years</td>
<td>Female</td>
<td>Denmark</td>
<td>F2F</td>
</tr>
<tr>
<td>Marketing Production Manager</td>
<td>5–6 years</td>
<td>Male</td>
<td>USA</td>
<td>Phone</td>
</tr>
<tr>
<td>Information Developer</td>
<td>3 years</td>
<td>Female</td>
<td>USA</td>
<td>Phone</td>
</tr>
<tr>
<td>Technical Sales Professional</td>
<td>3 years</td>
<td>Male</td>
<td>Denmark</td>
<td>F2F</td>
</tr>
<tr>
<td>Social Business Evangelist</td>
<td>3–4 years</td>
<td>Male</td>
<td>USA</td>
<td>F2F</td>
</tr>
<tr>
<td>Information Architecture Lead</td>
<td>4 years</td>
<td>Male</td>
<td>USA</td>
<td>Phone</td>
</tr>
<tr>
<td>Social Computing Evangelist</td>
<td>9 years</td>
<td>Male</td>
<td>Spain</td>
<td>Skype</td>
</tr>
<tr>
<td>Project Manager</td>
<td>3–4 years</td>
<td>Male</td>
<td>UK</td>
<td>Skype</td>
</tr>
</tbody>
</table>

Table 3.1: Characteristics of research participants.

The contact details of these interested people were then shared with the authors by the main contact at the department and an official interview invitation had been sent to all of them by the first author. The email contained information about the focus of the interview and practical issues such as time and date and the communication method. The interviews were planned, conducted, and completed during the months of September and October 2011. The average interviewing was not less than 45 and no more than 60 minutes. An interview protocol was developed to guide the conversation with the participants. This protocol included several questions developed based on the theory of structuration and drawing upon three central modalities of human agency: interpretive schemes, norms, and resources. The discussion of these modalities is presented in the theoretical framework above.
These modalities were used as “sensitising devices to generate some searching questions on the nature, purpose and value of computer-based representations within and between communities of practice in organizations.” ([26], p. 12). While the interview protocol contained a structured list of questions, the conversation was rather fluid and flexible to allow for active engagement with the participants. At the beginning of the interview, each interviewee was informed about the research and the purpose of the interview as well as confidentiality and privacy issues. In this respect, a number of the interviewees requested their names to be hidden. Others preferred that only their first names are to be used or a nickname to replace their real names when quoted. Also, some of them asked to be informed about any quotes before using them in the chapter. As such, these participants were contacted at the time of writing the chapter in order to get their consent for including and publishing their quotes. In the same vein, the validation of empirical data was achieved mainly through member checks. The transcript of each interview was sent to individual participants for verifying their answers.

In addition, the analysis of qualitative data obtained from the interviews was based on a hermeneutical approach [1, 2]. Each interview was fully transcribed into text. It is important to mention that the analysis of the data was started during the transcription phase. This has been done through associating themes to important parts of the text and making highlights for later deeper analysis. The actual analysis of the text was purely hermeneutical in the sense of emphasising the participants’ interpretations and beliefs about their use of the wiki technology. The application of hermeneutics during the analysis was characterized by the iterative processes of reading and rereading the text to see how different parts of the text make sense in respect to the overall textual or qualitative data. Open and axial coding techniques were used to support the development and the association of themes to specific textual data segments [24]. More clearly, open coding was used to create themes and categories that represent central meanings in specific data segments and axial coding was used to connect and associate these themes based on their relevancy and significance to the main purpose of the research. It is important to mention that these themes were developed in light of the research purpose, that is identifying and understanding the evolution of social structures that might govern knowledge collaboration and sharing with wikis, and the theoretical components used to frame our empirical data collection.

The hermeneutical analysis of the data aimed at understanding the essence of the text in order to identify specific structural categories and then connect them with each other. For example, the statement “...the second factor is potentially people might not be willing to submit questions in a more public arena ... I think certainly which myself has experience you know not wanting to put my name out there because I look stupid...” was interpreted to imply an open or network structure. Also, influenced by structuration theory, we’ve able to account for the “belief” or the perception associated in this statement that is the idea that open sharing might possibly cause embarrassment for the contributor in front of a large audience. This process of hermeneutical interpretation and analysis was applied into each data segment iteratively allowing us to identify a number of dominant categories and link them with each other, which are described in the next section.
Findings

The findings from our interviews are presented in this section. During our empirical data collection we have been able to identify and examine a number of structures that evolve in the context of using a wiki for open knowledge collaboration and sharing at the workplace. These kinds of structures are either emergent or reflection of existing structures in the organization. Existing structures refer to established rules and resources at the organization. So during the interviews we asked the participants about, for instance, their roles at the workplace, the tools they use to accomplish certain tasks, etc. in order to understand the influence on the use of the wiki. In contrast, emergent structures, drawing on structuration theory, refer to rules, resources, and interpretive schemes that evolve in the course of knowledge collaboration and sharing using a wiki. Accordingly, the analysis of the empirical data resulted in a number of evolving and emergent structures that describe, for instance, new rules that govern the way people use the wiki at work. This section aims to present and discuss the empirical evidence for these structures that span technological, organizational, social, behavioral and cultural properties. These structures are presented below together with empirical evidence addressing the structural variations in the wiki environment.

Open or Network Structure

The open or network structure is primarily determined by the open nature of wikis. The fact that wikis are editable, open and visible to a large audience creates several implications for the users of wikis. For instance, a learning intelligent leader explained the influence of openness on his perception of using a wiki:

“people might not be willing to submit questions in a more public arena ... Because I don’t know maybe they are worried about looking stupid, I think certainly which myself has experience you know not wanting to put my name out there because I look stupid.”

In the same vein, a software developer described how sharing information in the open space affects the way he engages with others to collaborate for the improvement of content:

“putting the information out in the open i feel responsible for it and if someone makes me aware that it could be improved and changed then i would engage that person and find out what they mean about it. And of course if openness and accessibility mean someone could go and change it and maybe make it less correct or remove important parts of it i would feel bad about it because then i would have to go in and redo it”
This implies that sharing with others openly entails some responsibility to maintain what has been contributed and shared with a public audience. As such, some people might however perceive this kind of open exposure on the wiki to be a demanding behavior. A client technical professional said:

“One of the comments I hear when I talk to colleagues about this is that they say well I don’t want to be a subject matter expert, I don’t want everyone to point to me, I don’t want all this fame and glory because typically it adds to my work-load...The other comment is also well is it not included in my job description”

In the same vein, a technical sales professional explained his view about contributing and sharing knowledge in open wikis:

“If you put it on something that is open for editing then you actually invited me to see if I can improve on it...and when I do something it is only to improve the quality, it is not to be seen or anything on a personal level.”

In a similar sense, the fact that any contributions made on the wiki are open and publicly accessible by others makes contributors more careful about what they contribute. An information architecture lead explained this:

“...this is gonna be in the public record that says Keith added this information and deleted this information on the wiki page and I know that's going to be within IBM for as long as I am here. So I spent extra time to make sure that these are really good changes.”

Further, a social computing evangelist explained the network effect of openness and how it helps people to trust each other as they share what they know openly:

“by being open about what you know, who do you know, and what do you contribute ... you're giving people an opportunity to figure out for themselves whether they can trust you or not.”

Accordingly, this suggests that exposing and sharing what people know in the open space would create a comfortable atmosphere at the workplace which may lead to fostering trust amongst them. An example was given by a technical sales professional and how the openness of the wiki helped him to connect with people:

“I look at who contribute. Who has got a sale that makes sense that I am interested in ... I mean I go in here to get educated”


**Relationships Structure**

Members of groups or project teams tend to determine their contributions into the wiki based on their relationships to each other or affiliation to a group. A learning intelligence leader, explained how his relationship with the team would make him eager to contribute to the wiki:

“Within the environment of my own team I know that I am informed, I know that I have certain subject matter expertise. I think of it more as a matter of talking to a colleague over the phone.”

This statement shows the importance of the relationship with the team which gives people the ability to realize and use their expertise, thus make them more capable to contribute and share with others. Another interesting dimension of the relationships structure is the creation of new relationships among people. A technical sales professional reflected upon this experience:

“If one goes in and changes something, I invite them to my network. Because they are most likely made a valuable contribution so I would like to be closer to them. So as you can see (showing his profile on the wiki) I currently have 90 friends and we have commonalities in topics of interests.”

The wiki in this case serves as a networking tool that helps people connect and get introduced to each other. In addition, something that we also we found relevant to these networking opportunities is related to the credibility of content on the wiki. More clearly, the ability to know the background of the contributors not only helps in creating new relationships with them but also in ensuring that their content is credible. A social business evangelist maintained that:

“It is important for us to remember in any of our information discourses even wikis to be able to know the person doing the editing gives you a perspective on credibility.”

**Hierarchical or Experience Structure**

One of the most important structures that evolve in the wiki environment is related to the hierarchical and experience variations. Hierarchy in this sense refers to divisions among employees and their levels of expertise. We found that hierarchical divisions among employees are well manifested in the wiki environment and shape the perception and behavior of wiki users. For instance, a learning intelligence leader and a software developer said respectively:
“I am a quite senior resource within our team I would be very surprised first of all to see other team members editing my manager’s post or even editing my post”

“the knowledge can be difficult for less experienced person to go in and edit something that i would say a subject matter expert has rendered.”

Sometimes, however, people do not give much weight for the hierarchical levels of contributors. Instead, they emphasize the importance of the contributor’s knowledgeability in the subject. A client technical professional explained this:

“I don’t check whether or not the guy who has written the wiki is higher in the hierarchy than I am. I would rather check I mean if he has the right level of knowledge. Because we can see what contributions you have done, what information you already have provided....its more the value, or the picture of their knowledge that is more important than the role they have.”

Further, we asked our participants about the influence of hierarchical and experience levels on editing others’ contributions on the wiki. A marketing production manager said:

“I am 48 years old and I’ve been at the company for 20 something years. You know I am confident in what i know and i am confident in what my colleagues know so people wouldn’t get insulted if someone posted something and I had a better answer or more accurate information to contribute. They wouldn’t get offended just like i would be... i think that’s a maturity thing.”

In the same vein, a technical sales professional said:

“If I, let me formulate, am absolutely sure I know better, then I correct it directly. If i am unsure, will I understand it correctly or will they know more than I do then I would not edit directly. I will comment on it. I will say could you please explain this further.”

This implies that people tend to be cautious about the expert levels of contributors and that would have a determining impact on the way they actually collaborate with others. In other words, the variations of contributors’ expertise limits the free editability of the wiki. An additional dimension of hierarchy that exists in the wiki environment is related to the perceptions of people of whether a wiki is a tool they should use or not. An example provided by the marketing production manager explaining how the use of the wiki by their executive has legitimized the wiki as a tool for collaboration and knowledge sharing:

“we have our vice president do that in wiki so that people will take it seriously because when our audience simply see our leaders and executives using these new forms of communication, that legitimizes it for them all, this is a real thing.”
Social or Behavioral Structure

This kind of structure is related to the social dynamics or social conduct among groups of individuals. These social norms can either be agreed upon by the group or emergent because members are accustomed to do or perceive certain things in certain ways. For instance, one of the software developers explained the routine or norm within his team when it comes to editing something on the wiki:

“Typically in a group ... when there is a subject matter expert, other members would look for this person and expect the changes coming from him.”

He further commented on editing his contributions on the wiki by others as follows:

“I would find that this person is breaking a social habit. Without contacting me first and putting a comment or anything that would be a bit weird.”

As such, the social norms that exist within the group get reflected into the wiki, thus shape the editing behavior of group members. In a similar sense, an information developer described how she perceives editing content made by others:

“I hesitate to just go in and edit people's content without asking them first. I just don't, maybe I feel like it is being a little rude.”

In respect to social norms which are agreed upon by a group using a wiki, an information architecture lead explained an example describing a master-writer collaboration model in which they agree that one person writes content and anyone else can only be a commentator:

“the whole wiki is open to everybody but we just have an agreement okay here is the master writer for this one document and Sally is the master for this one and Bob is the master for this one and everybody else just comment.”

Further, a social business evangelist explained the social or behavioral norms when it comes to editing content on the wiki that is not yet agreed upon by the group:

“It is almost a socially accepted practice that if I asked you your opinion and you give it to me I should respect you. And if your opinion is valid, great. If not, let me tell you why.”

As such, editing or changing content on the wiki is subject to prior discussions about the reasons for making an edit as well as agreeing upon the any potential changes. The social computing evangelist argued that this behavior is a barrier for harnessing the essence of wiki openness:
“Someone would typically bump into a wiki, which will be open to everyone not only read but also edit access and he will go and see a paragraph in a wiki page that is not entirely correct and that needs fixing and they know the fix. So instead of them going ahead and privately click on edit and make the update, they are actually calling the person who created that wiki to make the update for them.”

**Technology Structure**

The technology structure refers to the way the wiki is setup either as a private or public platform. For instance, there are wikis set up for public accessibility, thus people are allowed to add, edit, and change content. In contrast, there are other wikis which are setup for private communities to serve specific people for specific purposes. An engagement manager described this:

“I think the way they are working is a lot of pushing knowledge out. And projects use them for their own business. Like I use them for my RFP, then other people use it for their webinars. So it is more like their knowledge sharing more than it is actually people sharing knowledge.”

A marketing production manager explained to us how the setup of the wiki determines his content-editing behavior:

“if i see that a wiki is setup in a way that anyone can edit, that tells me that the culture and the way that this application is setup, they allow that, they expect it and then I can help them, no one will be offended, no one is going to mind if i did it. But the only thing if I went to a wiki that didn’t allow that and required me to submit a comment or ask, that tells there is some sort of a cultural component in this particular wiki that they expect me to work in another way.”

Further, the technical sales professional discussed the nature of the tools they use at the workplace. He emphasized that the flexibility of the technology enables sharing as follows:

“...because many of our internal tools are built like that. So many of the tools we use encourage us to do this kind of exchanges ...I mean from that aspect we take our product suit and create them to be open and encourage people to share.”

In addition, the technology structure is also related to technical skills needed to use the wiki. The marketing production manager explained that sometimes the lack of such skills would be a barrier for people to use the wiki:

“Interestingly that for some of our users it has become a barrier because wikis are so flexible and because they are so easy to edit... There is a certain part of
people who know a little bit of HTML; people who know a little bit about HTML, they know how to edit it and make it look exactly the way they want. But the majority of people get scared of that.”

**Task Structure**

Task structure describes wikis that are designed for certain purposes (e.g., creating and editing articles in specific subjects) and there are people assigned to achieve these purposes. As such, contributing to the wiki whether through creating and editing articles or structuring and rearranging content becomes the responsibility of particular people. Also, task structure is related to the way wiki users perceive their roles as well as the roles of others in the wiki environment. A client technical professional provided an example of how she experiences this:

> “when I look at this wiki (a product documentation wiki) I can see that it is very few people working on it, and it is the developers more or less who are trying to put marketing terms into things and try to explain for ordinary users. And if you see almost only the same authors then I have this feeling why should I jump in and write, it is not my job really, kind of let them do it. So I could come with a comment and say this is an area where it is lacking information please go and do.”

Another example that describes the task structure is when someone is assigned to work with the wiki. In other words, some person has the job to create and edit content on the wiki. The marketing production manager has such responsibility as he described it:

> “you know i would meet with the executive, we discus what it is (subject to be shared on the wiki), and then I would write for her the article and would go out under her name even though it was written by me.”

In addition, the information architecture lead has further provided an example that describes another form of assigning people to work with the wiki:

> “Sometimes ... we sort of have a person whose a writer, our main writer, so she tends to be the master writer for everything and everybody comments on it ...This is our documentation focus project so the documentation is the most important we deliver so we have somebody whose job is to do that.”

**General Discussion**

The structural variations that exist in the wiki environment suggest that collaboration and sharing with open and social technologies is not a straightforward process. Our quest to understand the development of social structures in the context of using a wiki for open collaboration and knowledge sharing is based on the
premise that social structure is continuously created and recreated through the flow of everyday social practice [13].

As such, based on the three modalities of structuration theory (see [13, 19]) we looked at the perceptions of using a wiki among coworkers, dominant protocols and social conduct, facilities and resources available to them, and power relations among individuals and groups. In this respect, the use of social and open technologies, like a wiki at the workplace, represents a dynamic social production of new structures and reproduction or reflection of existing structures. For instance, the perception that a person is in a subject matter expert position within the team was reflected into the wiki in the sense that people tend to avoid editing his or her contributions on the wiki, thus creating a sense of hierarchy that constrains collaboration and sharing. Also, even when people decide to make comments or changes on the content made by a person higher in rank they tend to consult with him or her in order to avoid any implications caused by hierarchical divisions. As such, the hierarchical structure in this case was transformed into the wiki creating barriers for people to collaborate and share with each other freely.

In other cases, structures are emergent resulting from the dynamic social interactions on the wiki. An interesting example was observed when discussing openness and editing content made by others publicly. A number of participants explained that sharing content on a wiki suggests that this content is subject to changes since their understanding of the concept of a wiki implies that content is open and thus anyone can make edits and changes (cf. [2, 27, 22]. This kind of what we call open or network structure is driven by the open interactions that take place when people share content with each on the wiki. These interactions are visible and anyone can see what others have contributed especially in public wikis that are accessible by a large audience.

In this respect, Jones & Karsten [13] argued that human agents draw on social structures in their actions, and at the same time these actions serve to produce and reproduce social structures. The interpretation of people that content shared on the wiki is open and subject to changes represents a manifestation of this argument. On the one hand, people collaborate and share knowledge with each other at the workplace because either it is part of their job or because they are eager to share their experience and knowledge with others. For both reasons, the drivers are determined by social structures such as a jobs requirement or eagerness to share. In this view, the action to collaborate and share is driven by existing structures which can be seen as an outcome of a social structure reproduction process. On the other, social collaboration and sharing on the wiki involves a production of new social structures. The example about open or network structure shows how people’s interpretation of sharing content on the wiki has created new rules or resources that govern their collaborative and sharing behavior in the open space. Accordingly, the production or emergence of new social structures either enable or constrain action [13, 20]. An example from the empirical data that shows how new structures might enable collaboration and sharing is related to hierarchical or experience structure. The fact that people can see their executives using the wiki has motivated and even legitimized its use at the workplace. This can be understood as
one form of structures of legitimation [21] that can help in maintaining collaboration on the wiki.

In addition, contrary to arguments for the flat, horizontal, and democratic structures suggested by the literature (e.g. [5, 12, 8]), our findings suggest that knowledge collaboration and sharing using open and social technologies such as a wiki is not free of structures. The use of a wiki in an organizational setting is governed by both emergent and reflected social structures. The interplay between existing and emergent structures is central in understanding of the dynamics of social and open collaboration in organizations. These kinds of structures shape the social dynamics of collaboration using a wiki through diverse interpretations, norms, and resources associated with each structure. For instance realizing the importance of affiliation to particular teams and groups makes people more motivated to share openly (relationships structure). Also, the influence of hierarchy in social collaboration (hierarchical or experience structure) becomes a resource of power that influences the way people perceive and use the wiki. Further, the development of a sense of responsibility to maintain contributions on the wiki that is open and public tends to become a norm or a routine task among the contributors (open or network structure). In this respect, while wikis allow for social interactions to be freer and more flexible, these interactions are implicated by the norms, resources, and interpretations associated with social and open collaboration using a wiki. In this view, the interplay between norms, resources, and beliefs available at the workplace and the open space of a wiki drives the development of new rules, norms, and resources that people draw upon in their interactions, thus shape and govern the wiki. In other words, wikis are not so open.

Conclusions

The chapter aimed at examining the development of social structures that might evolve in the course of using a wiki for social collaboration and sharing at the workplace. It concludes with providing a number of social structural including open or network, social or behavioral, relationships, technological, task, and hierarchical or experience structures. The chapter showed that these kinds of structures manifest evolving interpretations, norms, and resources that govern collaboration and sharing using a wiki. Noteworthy, these structures should not only be treated as either enablers or inhibitors of collaboration and sharing using a wiki but also as mediums for the production and reproduction of social structures. Such kinds of structural properties might be volatile in the sense that the open and dynamic nature of wiki collaboration among people may continually drive their evolution. In other words new structural properties may arise or evolving properties might get institutionalized. Hence a promising direction for further research is to examine and understand both the evolution and the institutionalization of these structures and their influence on the design and use of social and open collaborative technologies. Longitudinal studies would be effective tools to achieve such an understanding.
References

Social Conceptualizations of Technology Structuring – A Comparative Analysis of Wikis at Two Global Organizations

Journal Paper
Social Conceptualizations of Technology
Structuring – A Comparative Analysis of Wikis at Two Global Organizations

Abstract
The widespread adoption and use of social media in almost every aspect of our daily lives may outpace existing empirical understandings. In organizations, social media are increasingly used by professional individuals and communities to support dynamic collaboration and knowledge sharing. While there is a growing amount of research on this subject, still little is known on how people use different kinds of social media in practice. That is, there is a need for an empirical understanding that addresses actual use practices of social media within the formal boundaries of organizations. To this end, we report on results from a qualitative comparative study of the use of wikis at two global organizations. Our aim is to develop an empirical understanding of the enactment of structures and the ways by which people structure and organize their wiki use practices by drawing on Orlikowski’s (2000) practice lens. The findings from our analysis suggest a number of enacted structures that reflect diverse wiki use practices. Our main contribution centers on developing three key mechanisms that provide means for understanding the structuring of the use of technology.

Keywords: Wiki, Organization, Structure, Community, Collaboration, Practice

Introduction
The use of social media in organizations is becoming increasingly common. Many scholars have suggested that the social media might reduce managerial control and flatten organizational hierarchies (Bibbo et al., 2010; Macnamara & Zerfass, 2012; Stenmark, 2008), transform and democratize knowledge exchange (Hasan & Pfaff, 2007; Aral et al., 2013; Bibbo et al., 2010), accelerate innovation and product development (Zwass, 2010), and so on. Most interestingly for us, a dominant theme across these studies has been the suggestion that formal organizational structures might be altered by new social media, and notably that the hierarchical structures that determine authority relations, information flows, and mechanisms of control and coordination in organizations (Zammuto et al., 2007) might be transformed. But how social media may enable such transformation is not yet examined (Majchrzak et al., in press) and current literature offers limited insights into organizational use of social media (Jarrahi & Sawyer, 2013).

Other scholars have cautioned that the new social media and existing organizational structures are at least potentially incompatible. Hence, Grudin & Poole (2010) pointed to the tension that might exist in the interplay between wikis and organizations. They discussed the typical hierarchic character of large enterprises and suggested that it is naturally incompatible with the malleable character of a technology promoting open, flexible collaboration. Similar findings are offered by Yeo & Arazy (2012) and Macnamara & Zerfass (2012).

This caution is also evidenced by Huang et al. (2013) who suggested that organizations often tend to make adjustments to the use of social media so that it...
Social Conceptualizations of Technology Structuring – A Comparative Analysis of Wikis at Two Global Organizations

Abstract

The widespread adoption and use of social media in almost every aspect of our daily lives may outpace existing empirical understandings. In organizations, social media are increasingly used by professional individuals and communities to support dynamic collaboration and knowledge sharing. While there is a growing amount of research on this subject, still little is known on how people use different kinds of social media in practice. That is, there is a need for an empirical understanding that addresses actual use practices of social media within the formal boundaries of organizations. To this end, we report on results from a qualitative comparative study of the use of wikis at two global organizations. Our aim is to develop an empirical understanding of the enactment of structures and the ways by which people structure and organize their wiki use practices by drawing on Orlikowski’s (2000) practice lens. The findings from our analysis suggest a number of enacted structures that reflect diverse wiki use practices. Our main contribution centers on developing three key mechanisms that provide means for understanding the structuring of the use of technology.

Keywords: Wiki, Organization, Structure, Community, Collaboration, Practice

Introduction

The use of social media in organizations is becoming increasingly common. Many scholars have suggested that the social media might reduce managerial control and flatten organizational hierarchies (Bibbo et al., 2010; Macnamara & Zerfass, 2012; Stenmark, 2008), transform and democratize knowledge exchange (Hasan & Pfaff, 2007; Aral et al., 2013; Bibbo et al., 2010), accelerate innovation and product development (Zwass, 2010), and so on. Most interestingly for us, a dominant theme across these studies has been the suggestion that formal organizational structures might be altered by new social media, and notably that the hierarchical structures that determine authority relations, information flows, and mechanisms of control and coordination in organizations (Zammuto et al., 2007) might be transformed. But how social media may enable such transformation is not yet examined (Majchrzak et al., in press) and current literature offers limited insights into organizational use of social media (Jarrahi & Sawyer, 2013).

Other scholars have cautioned that the new social media and existing organizational structures are at least potentially incompatible. Hence, Grudin & Poole (2010) pointed to the tension that might exist in the interplay between wikis and organizations. They discussed the typical hierarchic character of large enterprises and suggested that it is naturally incompatible with the maleable character of a technology promoting open, flexible collaboration. Similar findings are offered by Yeo & Arazy (2012) and Macnamara & Zerfass (2012).

This caution is also evidenced by Huang et al. (2013) who suggested that organizations often tend to make adjustments to the use of social media so that it
satisfies their governing principles. In the specific case of wikis, it has been suggested that they are often not used as initially intended (Martine et al., 2013). Holtzblatt et al. (2010) found that people are largely reluctant to use wikis for sharing information or editing content made by others because of dominant work practices and cultural sensitivities at the workplace. Other related perspectives refer to contradictory influences of social media (e.g., Hildebrand et al. 2013; Majchrzak et al., in press; hidden for blind review; hidden for blind review) implying that their use in organizations is ambivalent.

Nevertheless, it is still unclear how wikis are used in practice and how they may affect or transform organizations (Jarrahi & Sawyer, 2013; Majchrzak et al., in press; Martine et al., 2013; Saldanha & Krishnan, 2012; Stocker et al., 2009). Most social media studies have only focused on a few key themes related to categories of use (Kaplan & Haenlein, 2010) which for the most part are conceptual speculations (Jarrahi & Sawyer, 2013; Treem & Leonardi, 2012), potential of social media for innovation, creativity and democratization (Hasan & Pfaff, 2007; Shirky, 2008), and the potential to create and sustain social network ties (Ellison et al., 2011). We believe that what is largely missing is an understanding of wiki use practices inside formal, established organizations. That is to say, there is a need for an in-depth understanding that primarily focuses on wiki use practices in order to examine how people structure and organize these practices in relation while using a wiki at the workplace.

Our aim in this paper is to provide that empirical understanding. So we seek an answer to the following questions: what kinds of structures are enacted when using a wiki in an organizational setting, and what enables the enactment of these structures? In order to achieve our aim and questions, we performed a qualitative comparative study of two global organizations that employ wikis at the workplace using Orlikowski’s (2000) practice lens for studying technology use. We look specifically at the enactment of structures or, technologies-in-practice, that describe different ways of using technology. The main contribution of the paper is providing means to explain the variations in wiki use practices by describing a number of mechanisms that underlie the enactment of structure.

**Organizational Use of Wikis**

A wiki is often described as a simple technology that allows for organic, incremental, open and collaborative development of content (Cunningham, 2004). It consists of a set of interrelated web pages that are continually and iteratively improved (Happel & Treitz, 2008; Wagner, 2004; Yates et al., 2010).

The functioning of a wiki centers on the idea of communities, that is, wikis are basically designed to promote and support collaboration by any community of individuals (Bibbo et al., 2010). One key affordance of wikis that make this possible is the collaborative publishing of content (Majchrzak et al., 2013). This allows many people to co-write and co-edit wiki content (Hasan & Pfaff, 2007) and also engage in knowledge shaping practices. Shaping is a distinctive affordance of wikis and describes the iterative, cumulative and organic nature of knowledge contributions, supporting the integration, organization and rewriting of content (Majchrzak et al., 2013; Yates et al., 2010).

In this respect, Wagner (2006) argued that wikis allow for conversational knowledge management practices in which teams engage in a ‘bazaar-style’ voluntary
collaboration. Others suggested that wikis allow for transparency and facilitate informed audiences in organizations (Danis & Singer, 2008), support newly-established teams or short-term activities that have no established communication channels (Grudin & Poole, 2010), democratize knowledge contributions and enable community-based governance (Hasan & Pfaff, 2007; Majchrzak, 2009), and reduce control, flatten hierarchies, and leverage contributions from broader communities (Bibbo et al., 2010). Majchrzak et al. (2013) recently demonstrated other effects in relation to the mapping of organizational knowledge.

There are, however, a number of issues concerning the use of wikis in organizations. Holtzblatt et al. (2010) identified a number of factors impeding wiki use in enterprise settings such as reluctance to share (because of sensitive, open information), heavy reliance on tools other than wikis such as emails (because people are not accustomed to using the new wikis), and cultural sensitivities (e.g., sensitivities over editing rights). In a similar vein, Grudin & Poole (2010) discussed three key challenges for the sustainability of enterprise wikis including the alignment between manager and individual contributor expectations, content categorization and flexibility, and positioning a wiki in an existing information ecology and corporate culture. In addition, other scholars were specifically interested in issues related to content validity and accuracy in organizational wikis. Happel & Treitz (2008) discussed ‘wiki proliferation’ to describe problems in wiki content such as old, redundant, and unrelated content which are natural side effects of a growing number of wiki pages.

**Analytical Framework: A Practice Lens for Studying Technology Use**

The practice lens, which we use here as an analytical theoretical framework, was proposed by Orlikowski (2000) to complement and challenge previous structuration models of technology use (e.g., DeSanctis & Poole, 1994; Orlikowski, 1992). Orlikowski (2000), drawing on Giddens (1984), seems to be arguing in her work that a view of technology as stable structure is problematic insofar as it delimits potential uses. Where this might have been a more or less reasonable way to think about technologies with a ‘self evident’ materiality, it becomes more problematic when we consider the materiality of the digital artifact. Existing structuration models of technology use may be less appropriate for addressing the increasing configurability and highly networked capabilities of new technologies (Orlikowski, 2000) including the new social media.

Orlikowski’s practice lens, then, distinguishes between use of technology and its artifactual character. A Technological artifact is some sort of a socially recognizable form such as a machine or a gadget with certain material and cultural properties. The use of technology, or technology-in-practice, “involves a repeatedly experienced, personally ordered and edited version of the technological artifact, being experienced differently by different individuals and differently by the same individuals depending on the time or circumstance.” (p. 408). In this view, Orlikowski treats technology-in-practice as some kind of structure that is routinely enacted as people recurrently engage with technology. See Figure 1 below:
Structure is understood here as a set of rules and resources that mediate human action through three modalities: facilities, norms and interpretative schemes. In their recurrent, situated use of technology people draw on facilities such as certain technological properties (e.g., editing), on social and cultural conventions (e.g., codes of conduct) associated with a particular organizational or institutional context, and on their knowledge, experiences, assumptions and beliefs. As people continue to engage with technology their use becomes structured by the various facilities available to them, existing norms, and evolving interpretations and assumptions. This kind of technology structuring, Orlikowski argues, enables the enactment of a set of rules and resources that then serves to structure future use of technology. So, as long as people continue to use technology they are actually constituting and reconstituting structures of technology use. As such, the practice lens distinguishes itself from previous structuration models of technology by emphasizing the instantiation of structure or technologies-in-practice in recurrent social practice rather than treating structure as embodied and available for appropriation by the users of technology.

Furthermore, Orlikowski’s practice lens has advantages insofar as it implicitly recommends an empirical stance. Orlikowski explained: “the practice lens more easily accommodates people’s situated use of dynamic technologies because it makes no assumptions about the stability, predictability, or relative completeness of the technologies. Instead, the focus is on what structures emerge as people interact recurrently with whatever properties of the technology are at hand.” (p. 407). Hence the practice lens, we believe, provides a useful theoretical and analytical basis to understand and examine wiki use practices which are essentially dynamic, recursive and recurrent.

**Empirical Investigation**

**Empirical Cases: CCC and IBM**

The empirical data collection took place over a period of two years at two global organizations: CCC and IBM. We selected these organizations because of our interest in examining and comparing various wiki use practices in different contexts. As each organization adopts a different approach to using social media, investigating the use
of the wiki in CCC and IBM allowed us to develop an understanding of several
dynamics underlying different uses and consequences.

CCC is a large multinational contracting organization founded in 1952, specializing in
construction and engineering services. It has headquarters in Greece and offices
spread around the globe with more than 170,000 employees spanning 60 nationalities.
The company established a Knowledge Management (KM) department due to
increasing complexity of communication among distributed project teams. This
complexity was driven by the rising number of employees, which quintupled over the
last decade. The initiative to establish the KM department aimed at providing a
platform that helps the company “build a knowledge rich culture” in order to “tap the
expertise and embrace sharing, learning and innovation” at the company. The KM
department decided, after evaluating a number of options, to use a wiki as a
collaborative platform for sharing and collaboration. This wiki, which is called
Fanous, is centrally controlled by the KM department and access to the wiki requires
permission. The wiki is used by several professional communities and each
community has its own ‘wiki space’. There were 11 specialized communities at the
time we started data collection in areas like hydrotesting and precommissioning,
piping, mobilization, etc. The communities have a hierarchical structure comprising
of community leaders, managers, and captains selected based on seniority and expert
levels at the company. Their roles are mainly focused on ensuring that the content
contributed into the wiki is reliable. Each community has regular meetings (e.g.,
every three months) where ‘key’ members meet and discuss various issues related to
the progress of their wiki.

The second part of our investigation took place in IBM. IBM is a Fortune 500
company and with over 400,000 employees in 200 countries. The company has a
department called Social Business and Collaboration Solutions that belongs to the
software group within IBM. It specializes in providing enterprise collaboration
solutions and integrating social software facilities such as wikis, blogs, microblogs,
and many others. One of the major tools produced by this department is IBM
Connections, which was the tool studied in this paper. IBM Connections is a universal
software that combines several social software facilities including wikis, blogs,
microblogs, status updates, file sharing, etc. The wiki facility of Connections was our
main focus. It can be used by anyone at IBM to create a wiki or a blog, communicate
with others through microblogging facilities or status updates and share files publicly
or privately. So wikis are freely configurable with no central control and both
individuals and communities were allowed to setup their own wikis either publicly or
privately for different purposes.

Research Method and Process

The research method used in this paper is qualitative. Fieldwork- a qualitative
approach- is, in general, suited to the acquisition of an in-depth view of rationales for
action and, moreover, allows for the study of the context or situation in which action
takes place, which was important for us to illuminate in the two cases. It is
commonplace as a method for examining case studies (see e.g. Denzin and Lincoln,
1994) in the social sciences and more specifically in IS research (see Walsham, 1993;
Klein & Myers, 1999). It does not necessarily involve any specific method
(observation; interviewing, ‘walk-through’ and so on) but an analytic commitment to
’seeing from the point of view of the actor’. In that sense, it is typically predicated on
an ‘interpretivist’ standpoint.
In the cases we recount, a combination of multiple qualitative data collection methods has been used. As such, the empirical data in this paper was obtained through interviews, field visits, observation and organizational documents. Semi-structured interviews and field visits were the primary vehicles of our investigations (cf. Walsham, 2006) and the basis for our analysis. The interview process in both organizations was guided by the practice lens presented above. The concepts of this framework were used to develop a set of questions to guide our empirical investigation particularly in interviews. In the words of Walsham (2005) concepts were used as “sensitizing devices to generate some searching questions on the nature, purpose, and value of computer-based representations” (p. 12).

The total number of interviews at CCC was 10 of which three were face-to-face, three over the phone and four via Skype. The criteria for selecting the participants was based on seniority level, cultural background, wiki experience, and gender. This was done in order to obtain as diverse perspectives as possible. Several participants were geographically distributed across the globe and using the phone or an online medium was the only possible way to communicate with them. The average interviewing time was about 55 minutes and all interviews were audio recorded. It is important to note that all participants have given us their consent to record their interviews as well as reveal their identities in any published work.

We also had the opportunity to visit CCC twice and attend one of the community meetings. The first visit aimed at interviewing a number of participants and meeting with the management in person. The second visit was for attending a community meeting for observational purposes. The visit helped us to get insight into the discussions that take place among community managers and captains and understand the ways in which they used the wiki ‘in action’. General documents containing information about the wiki were also obtained from the KM department. During the first visit, we were also allowed to observe the wiki, which was only accessible through an internal secure CCC network, to understand its design and structure. Further, a number of screenshots of various wiki pages were taken in order to get some understanding of how people use the wiki to share content, make comments, and categorize topics. These included some log data such as number of viewers and editors for each article including their names, temporal data (e.g., addition and edit times), meta data such as tags describing content categories, and activity streams showing various addition, commenting, editing activities. Other data was obtained from official KM documents such as number of active contributors which was 1000 and number of monthly contributions which was 200. This kind of data was important for us in terms of getting some practical sense of how the wiki is used and also supporting our analysis of the interview data.

At IMB, we spoke with a total of 10 employees from the software group of which 5 were face-to-face, 3 over the phone and 2 via Skype. The criteria to select participants from IBM involved cultural and professional background, gender, and wiki experience. The average interviewing time was about an hour and all interviews were audio recorded. The semi-structured interview was also the main vehicle of our discussions. However, we did not have the chance to examine any documents, attend meetings, or obtain log data at IBM like in CCC.
The total number of interviews at CCC was 10 of which three were face-to-face, three purpose, and value of computer-based representations” (p. 12).

In the words of Walsham (2005) concepts framework were used to develop a set of questions to guide our empirical investigation particularly in interviews. The interview process in both interviews and field visits were the primary vehicles of our investigations (cf. interviews, field visits, observation and organizational documents. Semi-structured has been used. As such, the empirical data in this paper was obtained through semi-structured interviews, or obtain log data at IBM like in CCC.

In the cases we recount, a combination of multiple qualitative data collection methods was used. However, we did not have the chance to examine any documents, attend meetings, or obtain log data at IBM like in CCC. However, we did not have the chance to examine any documents, attend meetings, or obtain log data at IBM like in CCC. We also had the opportunity to visit CCC twice and attend one of the community meetings. The first visit aimed at interviewing a number of participants and meeting with the management in person. The second visit was for attending a community meeting for observational purposes. The visit helped us to get insight into the ways in which they used the wiki ‘in action’. General documents containing discussions that take place among community managers and captains and understand organizational information about the wiki were also obtained from the KM department. During the visit, we had the opportunity to observe the wiki in action. We also communicated with several people about the wiki, including community managers, captains, and wiki editors.

The empirical data analysis, as stated, was guided by a set of concepts drawn from the practice lens. Table 2 provides a summary of these concepts and how we used them in the analysis to draw out empirical observations:

<table>
<thead>
<tr>
<th>Concepts</th>
<th>Sub-concepts</th>
<th>What to look at in the data</th>
<th>Empirical sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure</td>
<td>Rules and resources</td>
<td>descriptions of organizational policies governing the use of technology (rules made by the organization), people’s own practices (rules made by people), power dynamics among employees.</td>
<td>interviews, discussion with managers, meetings, documents.</td>
</tr>
<tr>
<td>Modalities of Structure</td>
<td>Facilities</td>
<td>descriptions of certain capabilities and technological resources that people use to achieve various purposes.</td>
<td>interviews, discussion with managers, meetings</td>
</tr>
<tr>
<td>Norms</td>
<td></td>
<td>descriptions of certain work routines, traditions, procedures, and rituals at the workplace, descriptions of socially-accepted practices and behavior.</td>
<td>interviews, organization official presentations and public documents, discussions with managers, meetings</td>
</tr>
<tr>
<td>Interpretive schemes</td>
<td>assumptions and beliefs, ideas, feelings, expectations and thoughts.</td>
<td>interviews, meetings</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Application of Theoretical Concepts in Data Analysis

Accordingly, we started the analysis with an iterative examination of each individual interview transcript to develop an understanding of practices and the reasons for them. In the first stage, data segments were organized according to their relevance to the theoretical concepts that guided our investigation and analysis. For instance, a data segment such as: “...we have the ability to make certain (wiki) pages visible while not others and so we take a determination of what is going to be sensitive to our organization...” was assigned with the concept of ‘facilities’.

Then, we developed sub-categories that represent the meanings that underpin actions. The previous data segment, for instance, was assigned with the category of ‘self-control’ because it represents the practice of using certain characteristics in the wiki to make pages private or public.
Later, all categories available in each individual transcript were transferred into a table (cf. Miles & Huberman, 1994) and organized based on the three theoretical concepts: facilities, norms and interpretative schemes. This was done in order to combine relevant categories, spanning the theoretical concepts, for the purpose of developing general categories or representative themes. The next step was focused on determining dominant themes throughout the whole data in order to identify enacted structures (or technologies-in-practice). This whole analytical process was applied similarly in analyzing the two sets of data obtained from CCC and IBM.

The final analytical stage was “another stage of interpretation” as portrayed by Cole & Avison (2007). We were intrigued by some observations in the data of certain dynamics underlying the enactment of structure. So we sought further aspects of wiki use practices in CCC and IBM by looking at how structures are enacted. We therefore did a comparison of data centered on eliciting social practices involved in the enactment of structure in each organization. Eventually, three key mechanisms describing certain social practices were discovered to be behind the enactment of structure. These mechanisms showed that structures were enacted in similar ways but resulted in different consequences.

Findings: Enactment of structures at CCC and IBM

In this section we report on the main findings from our analysis of the empirical data. The emphasis here is on identifying structures, or technologies-in-practice, that people enact while using the wiki. They essentially represent various ways of using the wiki in each organization.

Enacted structures at CCC

Controlled wiki use: this was the most dominant enacted structure at CCC. There were multiple reasons behind the enactment of a controlled wiki use structure, which have been experienced differently by both senior and junior employees. One important reason for enacting this kind of structure was the perceived need for control and restriction of access to the wiki by senior employees and managers. Emanuel who works as a group manager at CCC expressed this as follows:

“...there are some projects in which access to Fanous is limited only to a very small number of people...there is no single policy, every project formulates and implements a policy towards using Fanous.”

Many participants expressed similar concerns with selective participation and accessibility to the wiki. They also stressed that project managers tend to be against giving their employees free access to the wiki. The submission of requests form to get access to the wiki was indicative of this. Salma, a senior administrator, commented:

“...you need to send a request and mostly they will approve it. But some people think that is limited for only specific people. And so maybe this perception influenced my opinion.”

Noora, an estimation engineer, further added:

“My problem with Fanous within CCC is that I am only allowed to see certain things...I am limited to mechanical estimation and piping references only...when I needed to do something out of my job, they gave me access for a week.”

Interestingly, these concerns expressed by junior employees such as Noora and Salma...
were perceived differently by managers who believed that the wiki required some degree of control. Naim, a plant group manager with 30 years of experience, said:

“**It (the wiki) is not Facebook where it is completely open ... No. You only invite certain number of company employees to share their knowledge.**”

Hence, the enactment of a controlled wiki use technology-in-practice was driven by a set of beliefs, assumptions, experiences and expectations by both senior and junior employees. The diversity of these beliefs, expectations and experiences reflects tensions among employees from different levels in the organizational hierarchy, and also drives structuring of the use of the wiki in terms of controlled accessibility and selective participation. While recurrently using the wiki this kind of structuring enabled the enactment of a set of rules and resources that led to a controlled use of the wiki. In addition, it is important to note that the enactment of this kind of structure can be seen as reinforcing dominant structural properties at CCC by preserving existing practices (cf. Orlikowski, 2000), which are rooted in the hierarchical structure of CCC.

**Hierarchical collaboration:** one of the main drivers for enacting this structure at CCC was the deployment of an approval and review system that allows senior and expert employees to review content contributed into the wiki by others. Abd, a mechanical manager, said:

**“We have four captains to approve the (work) procedures.”**

The captains in each community could examine and review shared content on the wiki and decide whether it should be published or not. The assignment of these captains to approve shared content was one way, suggested by the KM department and okayed by the communities, to ensure that content is reviewed by senior people for quality, relevance, and accuracy.

During our analysis we observed a tendency at CCC to value the knowledge of senior and ‘expert’ employees more highly. Participants who work at CCC in higher managerial positions emphasized that experience should be valued when contributing into the wiki and validating shared content. They therefore saw themselves to be in charge of this task given their long experiences in their respective fields. For instance, Abd, as a senior employee, explained how sharing his own experience was important to junior employees:

“**...you know it is now part of our thinking, part of our behavior that we have to contribute so that the new generation can benefit from our experience and they can build on that, not start from the beginning.**”

Also while visiting CCC and during the discussions we had with KM managers a similar view concerning the use of the wiki and evaluation of content was expressed. That is, hierarchical structures already present in the company created policies over wiki use that re-enforced rather than challenged hierarchy. The introduction of a review system privileged the assumptions of managers via their status as ‘captains’ who were also gatekeepers of content. This line of thinking was also prevalent, to some extent, among more junior employees. Watheq, for instance, who works at CCC as a civil engineer said:

“**...honestly making any changes, especially from a subordinate to his supervisor, will not look in his eyes or in some other peers' eyes positively.**”

In the same vein Nabeel, a human resources specialist, explained another dimension
of hierarchical wiki collaboration:

“You wouldn’t be flexible enough to put anything you want onto the wiki so that everybody could see. And again you don’t want to put something that your boss would not accept.”

These views also recognize the hierarchal nature of knowledge structures, but imply different reasons for acceptance. For senior employees, experience equates to expert knowledge whereas for more junior employees, the value of experience is expressed less often than the importance of status or rank. The hierarchical collaboration structure was thus another manifestation of assumptions and beliefs about hierarchic divisions, attitudes towards expertise and knowledge, and norms and rules of control.

**Motivation-to-use:** in much the same way, we found that motivations for using, or not using, the wiki were quite varied, and again correlated with organizational position. In some circumstances, there were strong motives for not using the technology. This technology-in-practice can be discussed at two levels. For seniors, the use of the wiki was an opportunity to make their knowledge and expertise accessible to other people in the company. Abd, for instance, explained this in respect of utilizing the openness of the wiki:

“This can encourage us to contribute more...you know once you have contributed, you have also commitment. Once you make commitment you have to contribute.”

As for junior employees, their personal beliefs and attitudes towards the level of their knowledge and expertise were fundamental in shaping their use of the wiki. We observed a less tendency by junior employees to share knowledge and participate rather less. Noora said:

“...remember that my experience is limited. I’ve been here for a year and a bit and I only knew Fanous for about a year. If I have been here maybe for longer of course it would be more worthwhile to contribute for them and for myself.”

For Noora sharing and contributing into the wiki is determined by her level of expertise and this was the case for most of the junior employees who spoke with us about their experiences in using the wiki. However, while the level of expertise was a kind of limitation to Noora and other junior employees, we found other issues that enabled the enactment of the motivation-to-use structure. Nisreen, an office engineer, has given an example that describes other personal values and attitudes for not using the wiki:

“I like to read, I am really reading a lot..., but I don't have this personality to talk, to participate or to write... I think it is something in my character. I am not sure why.”

Further, we observed an overlap between the structures of hierarchical collaboration and motivation-to-use while talking to junior employees. The dynamics of hierarchical and professional relations were central to shaping the use of the wiki by junior employees. Watheq replied when we asked him about his willingness to edit or comment on a public contribution made by his manager on the wiki as follows:

“It is not the public nature (of the wiki). Because ... the importance of the issue is the person himself not the audience. The person that might get offended especially given the relationship of a supervisor and a subordinate. That might be critical.”

Salma had a different view about relationship dynamics and her motivation for using the wiki:
“maybe you can write a comment and your supervisor might not fully agree with it but you will write it because at that moment ... it doesn't have the formal feeling that you are posting something on lets say the bulletin or something more formal.”

While CCC culture is dominated by hierarchic divisions, junior employees sometimes saw the opportunity to use the wiki to express and share their own opinions. Finally, in their recurrent use of the wiki, senior and junior employees drew on their own experiences and knowledge, CCC’s hierarchical environment, wiki facilities, and professional relationships among them to structure and shape their use of the wiki.

**Enacted Structures at IBM**

Collaborative culture: the most dominant and representative structure at IBM was the collaborative culture. It was observed that the enactment of a collaborative culture was shaped by diverse factors spanning professional and cultural factors, technological facilities, behavioral practices, and organization structuring. One major aspect that users of the wiki drew on to enact this structure is the availability of diverse collaborative tools at the workplace. Our IBM participants explained during interviews that they are accustomed to using multiple tools that support them in collaborating and sharing with each other at work. Bo who works at IBM as a technical sales professional commented on this:

“...many of our internal tools are built like that, many of the tools we use encourage us to do these kinds of exchanges.”

Mark, a learning intelligence leader, explained IBM’s attitude towards collaboration:

“We have a lot of information sharing tools and we have been proponents for things like wikis and other ways of informal sharing in a structured and unstructured manner for a large number of years now.”

Further, the practice of using the wiki was shaped by this attitude in terms of allowing people to manage and control the wiki by themselves. So the wiki was self-controlled, either by individuals or communities, and anyone can freely use it for whatever purposes. Mona, a client technical professional, said:

“our system contains different capabilities and all of them kind of make you as a person more visible, you can be seen...And the good part you can really control it on your own.”

Luis who works as IBM worldwide business evangelist explained how the company reaches out to its employees. He said:

“The fact that we do idea jams where we ask everybody for opinions on things and we value their ideas equally, that’s part of the IBM culture ... if we look at IBM, what we stand by, the individual is an important person and the individual is to be respected.”

Another intriguing aspect of individual behavior and attitude was related to how people really used wikis for collaboration. We asked our IBM participants about using one challenging facility of wikis- editing content. While some were conservative about editing as “changing content”, the majority were receptive to the idea of collaborative editing because they believed that getting different perspectives can contribute into enhancing content. Anna who is an information developer replied when we asked her about editing contributions by other colleagues:
“I never had a situation where I edited content from another information developer and got a negative experience. So it’s been a good experience because you’re improving the content, you’re making improvement and I think they always appreciate that.”

We found that wiki users negotiated their agreements and disagreements to streamline collaboration through informal agreements such as suggesting a form of organization or agreeing on a set of guidelines to structure collaboration. Keith, a user experience specialist and Morten, a software developer, gave us two examples describing how their teams structured the use of the wiki:

“the whole wiki is open for everybody but we just have an agreement okay here is the master writer for this and Sally is the master writer for this one and Bob is the master writer for this one and everybody else just comments.” – Keith

“we created a wiki where we agreed about the guideline and then we just worked from there and everybody who have some knowledge about some particular topic could enter that information.” – Morten

People drew on the facilities available to them in the wiki, the collaborative atmosphere at the workplace and the self-organization of contributions to enact a set of rules and resources, which resulted in a collaboration culture that structured the use of the wiki.

**Job specialization:** job specialization was found to be one important aspect of structuring the use of the wiki at IBM. It was important in terms of shaping the kinds of contributions that wiki users can make as well as motivating them to contribute. Depending on their specializations at work, users might be only making comments or editing content or doing both. In some other cases they found themselves reluctant to contribute because they saw that people with specific backgrounds were the only ones contributing into the wiki and therefore they tended to read passively. In fact, our participants from IBM had a tendency to check who the contributor was before they made any contribution. Participants often checked the previous contributions of their colleagues, the types of content they contributed and so on. Bo said:

“I start by looking, do they know anything in this area, have they made any contributions, do they have a job where I expect them to know something about it.”

Anna gave an example about how the role and specialization of the contributor may affect her own contribution:

“...when I am collaborating with a software developer I tend to comment. But when I am collaborating with other information developers I tend to edit.”

Further, we have also observed that wiki users tended to care more about the specialization and background knowledge of a contributor more than his or her position in the organizational hierarchy. Mona commented on this:

“I don’t check whether or not the guy who has written the wiki is higher in the hierarchy than I am. I would rather check I mean if he has the right level of knowledge. If he is a boss or not a boss I wouldn’t care to that.”

Hence IBM wiki users drew on their own job specializations and background knowledge of others to shape and structure their contributions into the wiki.
Theoretical Elaboration: Social Conceptualizations of Technology Structuring

This section extends our understanding of structuring the use of the wiki and aims to shed light on how structures associated with technology use are constituted. Our comparative analysis suggests three key mechanisms that enable technology structuring: (1) policy-making procedures, (2) exploiting professional roles and social relationships, and (3) maintaining collaborative culture and behavior. These mechanisms reflect aspects of shared social practices or processes which enable the structuring of wiki use.

Policy-making Procedures

Policy-making was observed to be one of the most important mechanisms that enables and influences the structuring of technology use. Our empirical analysis of data from IBM and CCC suggests that in each context there are various forms of policy-making, which eventually had different consequences for structuring the use of the wiki. Since people draw on organizational rules, cultural conventions, norms, and so on (Orlikowski, 2000; Walsham, 2002), which essentially reflect policies governing social practice, we found that the way these are developed had an impact on structuring the use of technology in both organizations. In other words, how these rules, conventions and norms are instantiated influences how people routinely experience them.

At CCC, norms and rules were often developed through either explicit imposition or implicit influence by people higher in rank in the organizational hierarchy. The decision to deploy a review system to verify content shared on the wiki is just one example that shows a top-down tendency to introduce policies at CCC. In their recurrent use of the wiki junior employees unsurprisingly recognized that they were accountable to these managerial decisions and hence accountable for their actions in respect of them. These, then, were constituted as rules and norms which structured their use of the wiki as well as shaped their perceptions of the meaning and purpose of the wiki itself.

Similarly the way policies were made at IBM also affected the structuring of wiki use but with different consequences. As shown in the findings above, people at IBM tended to informally negotiate policies governing the use of the wiki through social agreements and guidelines. These informal policy-making procedures affected the structuring of wiki use by enabling the development of rules and norms that wiki users drew on to enact specific types of structure such as collaborative culture.

Policy-making is thus seen here as a mechanism that is rooted in the local context of the organization, as it reflects unique contextual practices through which rules and norms are developed, and which in turn shape the structuring of technology use.

Exploiting Professional Roles and Social Relationships

Professional roles and social relationships provide facilities and resources through which people structured their use of the wiki. The importance of professional roles and social relationships was salient in both IBM and CCC. In both contexts, the use of the wiki involved collaborative practices, such as co-writing articles, editing content and commenting, that required multiple wiki users to get engaged in recurrent collaborative practices. These users tended to define their interactions and exchanges
through their professional roles.

Nevertheless, we observed distinctive understandings of professional roles in the context of using the wiki at our organizations. That is, the influence of professional roles on shaping power relations and use of resources (e.g., editing wiki content) was interpreted differently in IBM and CCC. While CCC wiki users tended to place much emphasis on the professional roles of contributors especially in relation to their positions (power) in the organizational hierarchy, wiki users at IBM were less concerned about the hierarchical roles of contributors. In IBM, wiki users were more concerned with interpreting and deconstructing professional roles through a variety of means including prior knowledge, digital traces (e.g., previous contributions via the social media) and current behaviors as indicators of adequate knowledge and expertise.

These understandings of professional roles also shaped how wiki users in each organization approached the use of the resources available in the wiki such as editing and commenting. In CCC, junior employees tended to avoid editing content contributed by senior employees and chose to make comments instead. In IBM, employees used various resources including editing and commenting without any major concerns about hierarchal divisions. Their main concern was only limited to knowing whether a contributor has proper knowledge or not in his or her position.

Further, informal social relationships were also central to the enactment of wiki use structures. This influence was exhibited by another feature of the communicative process, and one which is seldom remarked upon when digital facilities are discussed, and that is that people use more than one channel to communicate and their choice of channel may depend on what it is that they wish to communicate and with whom. Because of the sensitivity of social relations at the workplace, some people often emailed or even phoned content contributors to inquire about changes they made or discuss possible changes to be made. Others tended to leave comments after editing the content in order to explain themselves. This kind of behavior was aimed at maintaining social relationships among content contributors in order to preserve polite professional relationships, avoid conflicts and streamline collaboration and sharing. Willingness to use the wiki, we think, is mediated by assumptions about, or habitual use of, other channels of communication (e.g., emails, telephone calls, face-to-face interaction) which seemed to carry different implications in relation to informal/formal contact.

To sum up, this mechanism describes distinctive patterns of orientation to unique professional roles and social relations, which in turn, shaped power relations, use of resources and social interactions. In this manner, exploiting professional roles and social relations enabled the development of a set of norms, rules, experiences and attitudes that people drew on to structure their use of the wiki in terms of their professional roles and relationships to each other.

**Configuring Collaborative Culture and Behavior**

The use of a malleable technology like a wiki for recurrent practices (e.g., co-editing content) is influenced by the configuration of the collaborative culture in its different patterns and artifacts. We observed that distinctive cultural patterns and artifacts in both CCC and IBM affected the way people perceived rules and norms and experienced the use of resources associated with using a wiki for collaboration and knowledge sharing.
One important observation from IBM, for instance, was the use of multiple collaborative tools. The wiki was only one of the many tools (e.g., blogs, micro blogs, instant messaging, etc.) which enable and support collaboration. All of our participants referred to the diversity of these collaborative resources to emphasize the culture of collaboration at the workplace. In other words, the established culture of collaboration in their daily work practices presupposed some kind of readiness to use new collaborative technologies such as a wiki.

Interestingly, this cultural readiness affected how people understand the rules that govern the use of the wiki. So, for instance, creating and using wikis is open to everyone inside of the company. Also, there is no central control of the use of wikis and people can in fact setup wikis for multiple purposes such as personal, project, and community wikis. In respect of norms, IBM employs many evangelists, who have been described by some of our participants as ‘heroes’, whose jobs is to encourage and promote the use of wikis and other kinds of social media tools at the company. We observed that these evangelists affected the way people perceived collaboration through, for instance, presentations outlining the potential benefits of using social media, and thus shaped their values and attitudes towards sharing, collaboration and participation using wikis.

In CCC, the configuration of the collaborative culture was different. People were accustomed to using emails to share information with each other. There was only one single wiki facility that was divided into spaces used by different communities. Many of our participants from CCC referred to the wiki as a library or information repository rather than a platform for dynamic collaboration and sharing. They also tended to compare it with email by stressing its advantage in storing and accessing information. This strengthened the view of a wiki as a “static” library by a number of senior and junior employees. Further, behavioral norms related to the use of the wiki were rooted in dominant cultural conventions at the workplace. Senior employees, for instance, enjoyed more freedom in using the wiki in terms of accessibility and contribution compared to junior ones.

Concluding Discussion

The main aim of this paper was to understand the enactment of structures and how professional communities structure and organize their wiki use practices at the workplace. In order to do so, an empirical analysis of these practices was performed in two different organizations. This analysis resulted in a number of enacted structures, or technologies-in-practice, that reflects a myriad of uses and consequences of the wiki in each organization. Each of these structures represents different ways by which people use the wiki for different purposes. Most importantly, three key mechanisms were discovered that show how people variously enact these structures as well as point to different uses and consequences in organizations.

Despite the fact that the use and impact of the wiki in CCC and IBM were different, they can be understood along the mechanisms we have discovered. Each of the three mechanisms provides a means to understand how these differences may occur by describing certain social processes and practices through which people develop meanings, assumptions, beliefs and expectations that enable the development of a set of rules and resources that structures their use of the wiki (cf. Orlikowski, 2000). These mechanisms are enacted in routine and recurrent practice, and their enactment is a negotiated outcome among wiki users. As people use the wiki, they continue to
enact various mechanisms to structure and organize their use practices. So the current mechanisms may only be illustrative, rather than exhaustive, aiming at conceptualizing key ways for structuring the use of technology.

In practice, people do not use wikis in a vacuum. Once these technologies are available at the workplace people tend to develop various understandings that influence and shape the ways by which they use them. It could be argued that the general understanding of social media as a new class of technologies (Treem & Leonardi, 2012) makes people, especially in a professional environment, more concerned about the purpose of using these technologies and their implications for dominant work practices, professional roles and relationships and other organizational and cultural factors. While wikis and other social media may have the potential to offer new behaviors and affordances in organizations (Aral et al., 2013; hidden for blind review; Treem & Leonardi, 2012), as can be seen in IBM, we argue that realizing this potential depends on how people structure their wiki use practices.

While the three mechanisms are drawn from both organizations, the ways by which wiki users employ them are different, resulting in distinct uses and consequences in each organization. People in each organization possess different meanings, beliefs, values, experiences, assumptions and skills that shape the enactment of structures along the three mechanisms we outline. Policy-making procedures represent how people in each organization enact policies to structure their wiki use practices. This implies some kind of structuring the use of the wiki in terms of developing governing principles, rules or regulations that influence the use of the wiki as well as the exploitation of the resources or facilities available in it. In CCC, governing policies or rules were imposed by the KM department and senior managers and enabled the enactment of control and hierarchical structures. In contrast, no such structures exist in IBM. Policies governing the use of the wiki were enacted by people in IBM through informal negotiations and agreements that enabled some kind of ‘community governance’ and the enactment of a collaborative culture.

The second mechanism, that is, exploiting professional roles and social relationships mechanism also represents different ways of structuring the use of the wiki. People use the wiki relative to their own professional roles, roles of other colleagues and their relationships to each other. In doing so, they develop certain expectations, assumptions and beliefs about these roles and relationships that influence the structuring of wiki use. Similar to the previous mechanism, this is different in the two organizations. In CCC, people were very concerned about their relationships with their managers and other senior colleagues. Their cautious behavior then led them to structure their use of the wiki in ways that limit their abilities to exploit the wiki. In IBM, people were less concerned about hierarchical divisions and more concerned about levels of knowledge and expertise. So this mechanism shows how people in each organization structured and organized their use practices in terms of different attitudes to roles and relationships. Professional roles and relationships clearly play a fundamental role in governing any potential for dynamic knowledge exchanges between individuals and communities resulting in contradictory influences that might be both enabling or hindering (Holtzblatt et al., 2010; Majchrzak et al., in press; hidden for blind review; hidden for blind review).

The third mechanism relates to culture. This demonstrates how the configuration of a collaborative culture and behavior in the organization results in different consequences for structuring the use of the wiki. Each organization exhibits
distinctive cultural patterns that had a significant influence on employees’ beliefs, assumptions and expectations of using the wiki. For instance, the availability of multiple social collaboration tools as well as social media evangelists who promote their use inside the company was central in shaping how people structured their use of the wiki. In contrast, CCC has a culture that embraces ‘bureaucracy’ and control which shaped structuring the use of the wiki in different ways.

The mechanisms we describe in this paper explain the distinctive ways in which people structure and organize their use of wikis and make adjustments (Huang et al., 2013) to their ‘social, dynamic, and interactive potential’ (Saldanha & Krishnan, 2012). We suggest that these mechanisms provide a framework for understanding not only the impact of wikis but also for highlighting how wikis may not be used as intended and may not necessarily bring about fundamental changes. Therefore we would recommend further studies that examine unintended uses and consequences of social media especially with emphasis on the dynamic interplay between existing organizational forms and new, potential forms of organizing enabled by the use of new social media. Such studies may address the limitations of our current study by adopting a different ‘fresh’ theoretical perspective as well examining other kinds of social media technologies.

References


Bibbo, D., Sprehe, E., Michelich, K., & Eun Lee, Y. (2010). Employing Wikis as a Collaborative Information Repository in a Media And Entertainment Company: The NBC Universal Case. in Proceedings Of The Thirty First First International Conference On Information Systems, St. Louis, USA.


Social Media and Organizing – An Empirical Analysis of the Role of Wiki Affordances in Organizing Practices

Conference Paper
SOCIAL MEDIA AND ORGANIZING – AN EMPIRICAL ANALYSIS OF THE ROLE OF WIKI AFFORDANCES IN ORGANIZING PRACTICES

Osama Mansour
Linnaeus University
Växjö, Sweden
osama.mansour@lnu.se

Linda Askenäs
Linnaeus University
Växjö, Sweden
linda.askenas@lnu.se

Ahmad Ghazawneh
IT University of Copenhagen
Copenhagen, Denmark
agha@itu.dk

Abstract
The evolution of social media has introduced novel possibilities for work and interaction in organizations. The wiki technology is one important kind of social media technologies that is increasingly used to facilitate the creation and sharing of organizational knowledge within communities. Given the increasing use of social media in organizations and the lack of knowledge on their consequences for organizing, we use an affordance lens to explore the enactment of organizational wiki. Using qualitative data obtained through interviews, field visits, and documents from two multinational organizations –CCC and IBM– we first identified eight affordances that describe various wiki possibilities and practices. We then identified four properties of these affordances including multiplicity, referential, situatedness, and communal. These properties represent the main contribution of the paper in that they extend the notion of affordance by theorizing new concepts that describe relational dynamics, situated and contextual conditions, and social factors involved in enacting, perceiving, and exploiting affordances.

Keywords:
Wikis, Affordances, Organization, Social Media
Social Media and Organizing – An Empirical Analysis of the Role of Wiki Affordances in Organizing Practices

Completed Research Paper

Osama Mansour
Linnaeus University
Växjö, Sweden
osama.mansour@lnu.se

Linda Askenäs
Linnaeus University
Växjö, Sweden
linda.askenas@lnu.se

Ahmad Ghazawneh
IT University of Copenhagen
Copenhagen, Denmark
agha@itu.dk

Abstract

The evolution of social media has introduced novel possibilities for work and interaction in organizations. The wiki technology is one important kind of social media technologies that is increasingly used to facilitate the creation and sharing of organizational knowledge within communities. Given the increasing use of social media in organizations and the lack of knowledge on their consequences for organizing, we use an affordance lens to explore the enactment of organizational wiki. Using qualitative data obtained through interviews, field visits, and documents from two multinational organizations –CCC and IBM– we first identified eight affordances that describe various wiki possibilities and practices. We then identified four properties of these affordances including multiplicity, referential, situatedness, and communal. These properties represent the main contribution of the paper in that they extend the notion of affordance by theorizing new concepts that describe relational dynamics, situated and contextual conditions, and social factors involved in enacting, perceiving, and exploiting affordances.

Keywords: Wikis, Affordances, Organization, Social Media
Introduction

The social media phenomenon is often perceived as a transformative evolution of the web. It represents what might be seen as a shift from the traditional, static web (Web 1.0) into a more dynamic, flexible and participatory web (Web 2.0) (Stenmark, 2008). Social media are described as internet-based applications that build on the ideological and technological foundations of Web 2.0 and allow for the creation and exchange of user generated content (Kaplan & Haenlein, 2010).

Many scholars have been intrigued with the consequences and possibilities that social media technologies such as wikis, blogs, microblogs, social networks, and others might bring into organizations (e.g., Bibbo et al., 2010; Stenmark, 2008; Majchrzak et al., 2006; Treem & Leonardi, 2012; Hasan & Pfaff, 2007; Yeo & Arazy, 2012, Majchrzak, 2009; Holtzblatt et al., 2010). Often, these scholars tend to suggest that social media have the potential to enable novel possibilities for work and interaction at the workplace. Treem & Leonardi (2012), for instance, noted that scholars often treat social media as a new class of technologies that may alter organizational processes in fundamental ways.

The wiki technology, which is of interest in this paper, is one important kind of social media technologies that is increasingly adopted by organizations. It is often used to enable novel possibilities for the dynamic creation and co-creation of organizational knowledge within communities (Bibbo et al., 2010; Yates et al., 2010). In a comment about a theory of wikis, Majchrzak (2009) discussed how wikis might afford new possibilities in organizations such as democratizing knowledge flows, new emergent roles in moving conversations forward and enabling community-based policing, etc. Other scholars (e.g., Yates et al., 2010; Hasan & Pfaff, 2007; Bibbo et al., 2010) have examined further possibilities of wikis such as knowledge shaping which allows for dynamic forms of rewriting and reorganizing content, democratizing organizational knowledge, fostering collaborative culture, and community ownership of knowledge.

With the evolution of social media and their increasing use in organizations (Yates et al., 2010; Treem & Leonardi, 2012; Majchrzak et al., forthcoming), the potential for emergent forms of work and interactions or new forms of organizing is continually created (Zammuto et al., 2007). Some scholars, therefore, have recently attempted to develop theorization that addresses the relationship between social media and organizations using an affordance lens. The notion of affordance describes the linkage between the capabilities afforded by the materiality of technological artifacts and actor’s intentions and goals. Several scholars suggested that an affordance lens is useful to understand the role of technology in organizational dynamics (Faraj & Azad, 2012; Treem & Leonardi, 2012; Robey et al., 2012). Treem & Leonardi (2012), for instance, used an affordance lens to explore the emergence of social media affordances in organizations. They suggested four generic affordances including visibility, editability, persistence, and association. In a similar vein, Majchrzak et al. (forthcoming) used an affordance lens in their analysis of the role of social media in online knowledge sharing. This lens, they explained, helped them to develop a set of affordances that provide theorization about potential shifts in knowledge sharing processes. In this respect, social media affordances describe the features of technology and how they become mutually constituted in the organizational context in which it is embedded (Treem & Leonardi, 2012).

In this study, we also use an affordance lens to explore the enactment of affordances specific to organizational wikis. Wikis are increasingly used in organizations (Bibbo et al., 2010; Yates et al., 2010; Martine et al., 2013). However, little is known about their application and use in organizations, especially in corporate settings (Kosonen & Kianto, 2009; Majchrzak et al., forthcoming; Martine et al., 2013; Danis & Singer, 2008; Bibbo et al., 2010). Danis & Singer (2008), for instance, questioned whether the philosophy of wiki openness can work for enterprise settings and purposes. Martine et al. (2003) raised concerns regarding the use of wikis as intended in organizations. Also, they explained that existing studies do not contribute enough understandings of why wikis succeed or fail, how they work, and what possibilities they may afford in organizations. Most importantly, Treem & Leonardi (2012) pointed to the lack of theory development about the consequences of social media for organizing in current literature.

By using an affordance lens, we aim to develop a theoretical understanding that would contribute with novel insights into organizational wiki affordances. That is, we seek to develop an understanding of the dynamics that underlie the enactment of these affordances by looking at the ways through which people attempt to exploit the possibilities afforded by them. The motive to seek such an understanding is influenced by recent developments in the Information Systems field that focus on the entanglement,
imbrication or melding of the material and the social in practice (e.g., Leonardi & Barley, 2008; Orlikowski, 2007; Leonardi & Barley, 2010; Orlikowski & Scott, 2008; Orlikowski 2010; Leonardi, 2012; Kallinikos et al., 2012; Leonardi, 2011). Theories of affordances (Leonardi, 2011; Leonardi & Barley, 2011) as well as sociomateriality (Orlikowski, 2007; Leonardi, 2012) are two examples which are currently being in focus as ways to capture the relationship between social and material agencies. Hence, in this paper, the affordance lens is used to help us achieve our aim by emphasizing such relationship as a dynamic interaction between wiki properties and social practices that enables the enactment of wiki affordances. So, the main research question in this paper is: how can we understand the affordances of wikis in organizational settings? To achieve our aim and address this question, we offer a qualitative empirical analysis of wiki use at two large, multinational organizations: CCC and IBM. The main contribution from this analysis is centered on theorizing new concepts that extend the notion of affordance in terms of offering means to describe relational dynamics, situated and contextual conditions, and social factors involved in enacting, perceiving, and exploiting affordances.

The remainder of the paper is organized as follows: in the next section we offer a review of key theoretical considerations related to technology and organizing as well as the affordance lens. Then, we provide a presentation of various empirical issues that outlines the research settings and the data collection and analysis. After that, we present our empirical findings of organizational wiki affordances. We later elaborate and extend our findings by discussing the constitution of these affordances and present four key properties of wiki affordances. Finally, we report on the conclusions and contribution of our study.

**Theoretical Considerations**

As we seek to understand the enactment of wiki affordances and the consequences for organizing, this section is dedicated to discussing key theoretical considerations that provide a basis for our paper. We begin by reviewing general ideas from technology and organizing with emphasis on the relationship between social and material agencies. Then, we present the affordance lens including a discussion of the different perspectives on the concept of affordance.

**Technology and Organizing**

Recent literature addressing the relationship between technology and organizing, or material and social agencies, suggests an emphasis on the mutuality of this relationship (Leonardi & Barley, 2008; Orlikowski, 2010; Leonardi, 2012; Leonardi, 2011; Kallinikos et al., 2012; Orlikowski, 2007; Orlikowski & Scott, 2008). The aim is to revive materiality and its role which often fades into the background in studies of technology and organization (Orlikowski & Scott, 2008; Leonardi & Barley, 2010, 2008; Orlikowski, 2007). Leonardi & Barley (2010) discussed that for such aim to be realized emphasis should be placed on understanding how material properties of technology enable and/or constrain technology use. The premise here is that all social action is possible because of some materiality (Leonardi, 2012). This is especially true with respect to increasing adoption and use of technologies in contemporary organizations where organizational practices are seen as multiple, emergent and dynamic sociomaterial configurations (Orlikowski & Scott, 2008). It is important to note that there are two competing views concerning the relationship between the material and the social. An agential realism view that suggests that there is no ontological distinction between them, hence sociomateriality, and a critical realism view that suggests that the material and the social are essentially separate and they can only appear to be inseparable through human activity occurring overtime. See Leonardi (2013) and Mutch (2013) for a detailed discussion.

Sociomateriality is one important lens to understanding the inherent inseparability of the material and the social as an entangled relationship in which they are mutually constituted in practice (Orlikowski, 2007; Orlikowski & Scott, 2008). In this view, Orlikowski (2007) suggested that “all practices are always and everywhere sociomaterial, and that this sociomateriality is constitutive, shaping the contours and possibilities of everyday organizing.” (p. 1444). Others such as Leonardi (2012) explained sociomateriality as the “enactment of a particular set of activities that meld institutions, norms, discourses, and all other phenomenon we typically call social” (p. 38). In this respect, he stressed that materiality has important consequences for organizing in that it has the power to enable and constrain social actions. Scott & Orlikowski (2012) also argued that social practices are essentially bounded by the material means through which they are performed. Central to these ideas is the unpredictability or indetermination of the effects
of technology in organizing processes. It is suggested that unpredictable forms of organizing emerge as a result of the combination of IT and organizations features and practices (Zammuto et al., 2007).

An important lens that captures such combinations is the affordance lens (Treem & Leonardi, 2012; Zammuto et al., 2007; Robey et al., 2012; Faraj & Azad, 2012). Zammuto et al. (2007), for instance, discussed affordances for organizing as a generic bridging concept that emerges from the intersection of IT systems and organization systems. They explained that affordances for organizing represent technology-organizing possibilities that “depend not only on the functionality characterizing the information technology, but also on the expertise, organizational processes and procedures, controls, boundary-spanning approaches, and other social capacities present in the organization” (p. 752). While the concept of affordance maybe similar to that of sociomateriality, there is still a major distinction between the two. Sociomateriality is an extremely theoretical notion that provides an abstract understanding of the relationship between the material and the social (Leonardi, 2013). In contrast, the concept of affordance may provide a ‘factual’ understanding of this relationship.

The Affordance Lens

Leonardi (2011) presented the affordance lens in an attempt to find vocabulary useful for theorizing the imbrication of material and human agencies. A technology affordance is defined as “the mutuality of actor intentions and technology capabilities that provide the potential for a particular action” (Faraj & Azad, 2012). The first ideas of affordances were developed by James Gibson (1986), a perceptual psychologist, in an effort to explain how animals perceive their environment. Gibson discussed that an object like a rock can be used differently by different animals because each may perceive the possibilities that a rock can offer in different ways (Treem & Leonardi, 2010; Leonardi, 2011). In this way, Gibson argued that people interact with objects only after they perceive and realize what an object is good for and what it can afford them. Gibson’s argument implies that the properties of an artifact exist independently and that people infuse them with meaning relative to their own perception and behavior. In other words, people do not perceive what an object is but what kind of uses it affords them (Treem & Leonardi, 2012).

Leonardi (2011) applied Gibson’s ideas of affordances in the context of technology and organizations, mainly the imbrication of material and social agencies. He discussed that technologies have material properties that afford different possibilities for action depending on the contexts in which they are used. Because of that, he further discussed, affordances are seen to be unique to the particular ways in which an actor perceives the material properties of an artifact. He also noted that while technological properties might be common to people when they encounter them, affordances are not because these depend, as stated, on what possibilities people perceive in them in different contexts and situations.

In order to address broader applications of affordances in the discussions of technology Leonardi (2011) discussed two ways of understanding affordances by Norman (1990) and Hutchby (2001). Norman (1990) suggested that affordances are intrinsic properties of artifacts and that a good design means that the affordances of a designed artifact can give strong clues for what its materiality can be used for. One central premise in Norman’s understanding of affordances, unlike Gibson, is that affordances do not change across contexts, but they are always there waiting to be perceived. Another discussion of affordances in relation to technology was offered by Hutchby (2001). Hutchby suggested an understanding of affordances that differs from Gibson and Norman in that he sought a middle ground between their conceptualizations of affordances by emphasizing their relational character (Leonardi, 2011). A relational view of affordances suggests that affordances are not exclusive properties of people or artifacts but they are constituted in relationships between people and the materiality of the things they interact with (Leonardi, 2011). Similar to Gibson Hutchby also suggested that affordances change across contexts because people come to materiality with diverse goals, so they perceive technology as affording distinct possibilities for action. Leonardi (2011) explained in this respect “…as people attempt to reconcile their own goals with the materiality of a technology, they actively construct perceptual affordances and constraints. Depending on whether they perceive that a technology affords or constrains their goals, they make choices about how they will imbricate human and material agencies.” (p. 154).

In addition, with respect to social media, there is a growing number of studies (e.g., Treem & Leonardi, 2012; Majchrzak et al., forthcoming) that use an affordance lens in order to understand what possibilities for action social media may afford instead of focusing on what their features can or cannot do. That is to
say that using an affordance lens may help researchers to extend their scope in order to understand the role of materiality, or material characteristics of technology, in organizational life (Faraj & Azad, 2012; Treem & Leonardi, 2012). In this respect, Majchrzak et al. (forthcoming) commented on the use of the affordance lens in understanding the influence of social media affordances on online knowledge sharing as follows: “The affordance lens forces the researcher to consider the symbiotic relationship between the action to be taken in the context and the capability of the technology. By treating the entanglement between the human action and the technological capability as a unit of analysis, the affordance perspective provides a language for beginning to examine social media and its role in affecting the process of online knowledge sharing.” (p. 2). Finally, it is important to note that possibilities for action offered by affordances do not always mean enablers. This is because people might perceive that a technology offers no affordances for action and it will then constrain them from achieving their goals (Leonardi, 2013). Majchrzak et al. (forthcoming), for instance, showed that there are contradictory influences of social media affordances on knowledge sharing. They discussed that each affordance involves tensions that point to a paradox of social media in-use, and that affordances are simultaneously hindering and helping.

**Empirical Issues**

The aim from this section is to present the empirical cases as well as the data collection and analysis. We first start by introducing the cases of CCC and IBM and how each organization uses the wiki at the workplace. Then, we describe the data collection process including a description of the methods and the participants. After that, we discuss the data analysis through outlining three different analytical steps.

**Research Settings: the Wikis at CCC and IBM**

Our empirical investigation took place at two large multinational organizations: CCC and IBM. The first research setting is CCC which is short for Consolidated Contractors Company. CCC is one of the largest construction companies in the world with more than 170000 employees spread over 120 countries. It uses a central wiki run by the Knowledge Management (KM) department since 2007. The wiki is primarily used by communities of practice, as they call them at CCC, as a collaborative platform where community members collaborate together and share professional content mainly obtained in real-life projects. There are eleven communities that use the wiki covering various technical areas and subjects such as piping, hydrotesting, safety, etc. The wiki is fully controlled by the KM department. People who wish to use the wiki need to submit a formal request demanding membership in one or more communities. It is divided into several spaces and each community has its own space where members can collaborate and share content relevant to their areas of concern. The members of these communities are given roles and rights that determine the possibilities they might have in using the wiki. So in each community there are a number of community leaders, captains, subject matter experts and many other regular members. Usually community leaders and captains are senior people with many years of experience at the company. These often lead the community by suggesting topics, inviting new members, etc. Regular members are employees who have an interest in specific areas addressed by certain communities and they often use the wiki to learn new knowledge. The wiki is only accessible through an internal secure network at CCC.

The other research setting is IBM. It is one of the largest companies in the world and has over 400000 employees worldwide. The company is primarily specialized in producing software and hardware technologies as well as offering consulting, hosting, and infrastructure services on a global level. In respect of using wikis IBM has a very different setup of wikis compared to CCC. Wikis in IBM are part of a universal system called IBM Connections. This system includes various social media tools and many other tools that support collaboration and interaction among people. The use of wikis at IBM can be described by fluidity and flexibility in the sense that people can freely use the wiki tool in IBM Connection to create wikis and use them for various purposes. So a global project team may want to create a wiki to share project-related information and collaborate with each other through creating and sharing content on the wiki. In fact the data collected in the current study from IBM suggests that one of the main purposes to use wikis is to develop documentation for software products. So software engineers, information developers, and many others collaborate to develop documentation on wikis. In addition to using wikis for such purposes, people at IBM also use them to create various communities where people share and discuss common interests. So, depending on the purpose, people have the possibility to set up wikis to be
public and accessible by a large audience or private and only accessible by a limited number of people like in project wikis.

**Data Collection: A Qualitative Investigation**

The empirical data collection was primarily qualitative. The main vehicle for collecting qualitative empirical data at both CCC and IBM was the semi-structured interview method. It is often considered as a powerful research tool and most useful method to obtain qualitative empirical data (Kvale, 2006). The strength of the interview method lies in its potential to engage research participants in a direct conversation with the researcher in their life settings (e.g., a workplace). It is therefore a useful method to seek and generate “contextual, nuanced and authentic accounts of participants’ outer and inner worlds” (Schultze & Avital, 2011, p. 35). In this way, obtaining qualitative data using the interview method has helped us to develop a solid empirical foundation to address our aim in this paper by: first emphasizing the participants’ natural work settings, second providing closer insights into participants’ actual technology use practices, and third offering the potential to account and capture deeper aspects of the studied phenomenon that help in developing theorization that goes beyond the data.

The total number of interviews was 20. An interview protocol was used to guide the interview process and ensure consistent responses across interviewees (Schultze & Avital, 2011). This protocol included a set of questions about wiki use practices, organizational norms and routines, and technology features and facilities. However, the interview process was fluid in the sense that new questions maybe asked depending on the flow of the discussion. We conducted 10 interviews in each company in the period between May and October 2011. The participants from CCC were selected in cooperation with the KM department with emphasis on the diversity of their roles, seniority levels and experience in using the wiki. Four of these participants were seniors with experiences ranging between 20 to 30 years at the company. All of them had senior roles within their communities such as captains, leaders, etc. The other six participants were juniors with experiences ranging between 2 to 10 years. The majority were regular community members with limited roles and rights to read and make comments on wiki content. All of our CCC participants had an experience in using the wiki since its deployment. Six of the interviews were conducted via Skype due to geographical constraints and the other four were conducted face-to-face at CCC headquarters in Athens. The average interviewing time was about 50 minutes. All interviews were recorded using an audio recording device, transcribed and then sent to the participants for validation.

The participants from IBM represented a diverse group of software developers, information developers, social media evangelists, sales professionals, and project managers. Their work experiences at IBM range between 2 years up to 20 years. The range of their experiences in using wikis was between 1 to 10 years. Most of them used wikis for both professional and non-professional purposes such as developing software documentation, planning and coordination, sharing visions and opinions, etc. Few of our IBM participants were in fact charged with writing wiki content and their main role was to work with wikis, for instance, to write content on behalf of their managers. Five interviews were conducted face-to-face at IBM offices in Copenhagen, two over the phone and three via Skype. The average interviewing time was between 45 minutes to one hour. All interviews were recorded, transcribed and then sent for validation.

**Data analysis: A Hermeneutical Analysis**

Our empirical data analysis is influenced by a relational approach of affordances in that it emphasizes the imbrication between human and material agencies (cf. Leonard, 2013) as a way to understand potential consequences of social media use in organizations (cf. Treem & Leonard, 2012). Such approach can therefore help us in addressing this relationship by looking at what the combinations of material and organization features allow people to do and what possibilities might be created that affect organization form and function (Zammuto et al., 2007; Leonard, 2011; Treem & Leonard, 2012).

The empirical data analysis in this paper is essentially hermeneutic with the hermeneutic circle as an underlying analytical framework that guided our analytical investigation of the data (Cole & Avison, 2007; Klein & Myers, 1999). The hermeneutic circle focuses on a spiral understanding of the data by looking into the meanings of the parts and then establishing relationships with the whole in an integrative manner in order to develop an understanding of the studied phenomenon. Each circle involves three key analytical
steps including understanding, explanation and interpretation that help in operationalizing the analytical investigation of the empirical data (Cole & Avison, 2007). These three steps represent the backbone of our data analysis in terms of allowing us to move iteratively through the data so that we are able to develop connections between the parts and the whole. The following discussion outlines all three steps that describe the ‘circular’ analysis of the two sets of data:

First understanding the empirical data was focused on making sense of our participants’ meanings and practices from an affordance lens. It was the first step that aimed at analyzing the interaction between material and social agencies in relation to using a wiki at the workplace. This was therefore an effort to make an initial overall analysis and develop an understanding of the data that accounts for such interaction by looking at both material features of the technology as well as the ways by which people perceive and use these features. This initial analysis also involved observing various cultural and organizational differences between CCC and IBM that helped us in understanding how each organization applies and uses the wiki. CCC, for instance, was observed to be a more conservative, traditional, and less eager to use technology. While IBM was a tech-savvy organization that has fluid and open structure.

We used the four organizational affordances of social media, suggested by Treem & Leonardi (2012), so that we can illuminate and see how these affordances maybe relevant to the wiki in the data. Table 1 below shows the four affordances –editability, visibility, association, and persistence— together with key characteristics pertaining to each individual affordance. These characteristics involve features of technology as well as information/actions that make for an individual affordance. In this respect, we looked at how various features of the wiki were perceived relative to people’s intentions and goals in different situations. For instance, the editability affordance was identified by seeking empirical instances that describe how people in both companies exploited and perceived the possibility to edit each other’s text. Identifying the affordances was achieved through collaboration among the authors of this paper. The two sets of data were examined separately by the three authors. Each of the authors developed a table (cf. Miles & Huberman, 1994) to organize all identified affordances together with several empirical instances that support each affordance. The identification and labeling of each individual affordance was done based on corresponding characteristics and actions/behaviors found in the empirical instances. The tables were manually compared and then combined together in order to select dominant affordances. We could found all four affordances to be relevant to the wiki. But at the same we became aware that the four affordances did not illuminate the whole picture since our interpretation of the data revealed instances that point to situations where other affordances are enacted. Therefore, the outcome from this first analytical step was centered on finding empirical proof of the four affordances shown in Table 1 and also seeing that there are other affordances hidden in the data.

<table>
<thead>
<tr>
<th>Affordances</th>
<th>Features</th>
<th>Actions/Behaviors</th>
</tr>
</thead>
</table>
| Editability | - Asynchronous text-based entries.  
- Previous history of edits.  
- Revisions permissible. | - Regulating personal expressions.  
- Targeting content.  
- Improving information quality. |
| Visibility | - Display of content contributions.  
- List of edits of entries.  
- Notification of content changes. | - Work Behavior.  
- Metaknowledge.  
- Organizational activity streams. |
| Persistence | - Recorded history of discussions  
- Entries indexed by search engines | - Sustaining knowledge over time  
- Creating robust forms of communications  
- Growing content |
| Association | - List of editors for each entry  
- List of rights and contributions in profiles | - Supporting social connection  
- Access to relevant information  
- Enabling emergent connection |

Second explanation is the step which was mainly focused on digging deeper in the data in order to highlight additional affordances observed in the first step and also develop an understanding of their dynamics. Here, the purpose, as Cole & Avison (2007) described it, is to do reflection and reconstruction.
in the sense that a “shared meaning is interpreted anew” (p. 825). So, after identifying empirical instances and locating the four basic affordances, we conducted a reinterpretation of the data. As stated earlier, identifying the affordances in the first step was an initial interpretation which helped us to produce an understanding of basic wiki affordances. Then, in this step, which sustains our circle of understanding, the reinterpretation of the data was done through reexamining each empirical instance, already identified in the tables developed in the previous step, and developing a better understanding of newly observed affordances. This reinterpretation of the data was a key step in our analytical investigation for two main reasons. The first reason was ensuring that the empirical instances provide sufficient empirical evidence that supports an understanding of wiki affordances and their characteristics. The second reason was developing labels that could explain the additional affordances observed in the previous step. Our reinterpretation of the data, which was basically driven by further reading of the interview transcripts and discussions among us, helped us to identify other affordances by accounting to new situations and characteristics related to wiki use. We identified several affordances and labeled them as follows: Viewability, Commenting, Validation, Accessibility. These new affordances are discussed in details in the findings section. The main outcome of this analytical step was therefore focused on developing a new meaning or understanding of the data which resulted in an additional set of wiki affordances.

Third is as Cole & Avison (2007) described it “another stage of interpretation” (p. 826). It should be noted that hermeneutical analysis of empirical data requires such an emphasis on interpretation and reinterpretation, since hermeneutics is a theory of interpretation and explicating the meaning of text (Bleicher, 1980). So the three analytical steps presented here are primarily interpretive mechanisms for our circular analysis and understanding of the data. The aim from this step was to develop an informed, more sophisticated interpretation of the data compared to our previous interpretation in the first two steps. Such informed and sophisticated interpretation was mainly achieved by continued examination of the data and active discussions among the authors. The process was fluid in the sense of looking at various aspects of affordances bearing in mind the ways by which affordances were enacted in the course of using a wiki in the two studied empirical settings. In fact, this step helped us to some extent to move beyond the data in terms of taking into account deeper dynamics involved in the enactment of affordances such as how they relate to each other, the context of their enactment, and how they really affect the use of technology in practice. More clearly, in the previous two steps we were focused on interpreting the data in order to identify wiki affordances. But, while iteratively doing so, we were able to develop deeper levels of understanding that helped us to “illuminate and articulate what generally goes unnoticed because it is ubiquitous, common-place, and everyday” (Cole & Avison, 2007, p. 821). That is to say, in this step we were concerned with uncovering what lies behind the enactment of affordances and how people perceive and exploit them. Hence, the eventual outcome from this step was centered on identifying a number of key properties of affordances that describe basic underlying organizing processes and dynamics involved in the enactment and exploitation of affordances. These properties allowed us to reconceptualize our understanding of the concept of affordance.

Empirical Findings: Organizational Wikis Affordances

The empirical findings from our data analysis are presented here in this section. Eight key organizational wiki affordances are outlined supported by interview quotes. The first four affordances represent the initial affordances, drawn from Treem & Leonardi (2012), used in the data analysis. The other four are identified during the analysis and include commenting, accessibility, viewability, and validation.

Visibility

Visibility, as discussed by Treem & Leonardi (2012), affords people the possibility to make their behaviors, knowledge, preferences and network connections that were once invisible or very hard to see visible to other people in the organization. It also implies that people can easily and effortlessly see information about anyone else. In the context of our study wikis have been observed to afford visibility or openness. As one of the key affordances of wikis visibility is perceived to afford several possibilities within an organization. Exploiting the visible space of a wiki to reach out a wider audience was one key possibility. A Plant Manager at CCC emphasized on this:
It is a facility which really helps people display opinions, experiences and knowledge more friendly than let’s say you are going to formal more binding emails let’s say.

Another view on visibility was given by a Sales Enablement Professional from IBM who noted:

Because the wiki part we use you know it has page history, revision history and so on, it is very easy to go and see who changed what paragraph on what date.

However the fact that a wiki maybe visible to a large audience and that what people do on a wiki is visible to anyone with access may engender possibilities for limited contributions (e.g., allowing commenting not editing), hence driving constraining possibilities. A Learning Intelligence Leader at IBM explained how this applies in the context where they use wikis:

We have the ability to make certain pages visible while not others and so we take a determination of what is going to be sensitive to our organization and things like this.

Further the visible nature of wiki content makes some people concerned about how they may look in the eyes of others (e.g., stupid, expert, responsible, etc.) and how they perceive themselves as content contributors, especially in a visible wiki space. In practice people tend to be careful, for instance, about the quality of content they contribute into the wiki. They also tend to be cautious about peoples’ expectations from them when they make contributions into the wiki (e.g., commitment to continue to contribute). A Learning Intelligence Leader at IBM illustrated his concerns regarding visibility by stating that:

Not wanting to put my name out there because I look stupid... I think you know again how open is it that people gonna say well that guy he obviously doesn’t know what he is talking about.

An Information Developer at IBM had a different view on this:

It is not so much that I think that I am worried that other people would see what I’ve edited, I just don’t wanna make a mistake.

A Mechanical Manager at CCC explained his about the commitment to sustain contributions into the wiki:

[openness] can encourage us to contribute more ... At the same time it is you know once you have contributed, we have also commitment. Once you make commitment you have to contribute, you have to put your comments.

One of the Client Technical Professionals at IBM also reflected on commitment issues and suggested that visibility may imply more workload:

One of the comments I hear when I talk to colleagues about this is that they say well I don’t want to be a subject matter expert, I don’t want everyone to point to me, I don’t want all this fame and glory because typically it adds to my workload.

Other additional aspects of visibility relate to how content is displayed and made visible on the wiki and the possibility to see who the contributors are. A User Experience Specialist at IBM commented:

if they’re using the wiki technology to say this is more documentation ... then yes I would go in and edit it, because they’re not writing it as their own personal document, they are writing as a shared document.

Finally a Client Technical Professional at IBM explained her view about seeing the contributors:

When I look at this wiki I can see that it is very few people working on it, and it is the developers more or less who are trying to put marketing terms into things and try to explain for ordinary users. And if you see almost only the same authors then I have this feeling why should I jump in and write, it is not my job really, kind of let them do it.

**Editability**

Treem & Leonardi (2012) described editability as the possibility to spend a good deal of time and effort crafting and recrafting a communicative act before it is viewed by others. In this way it allowed people to revise and modify content to tailor their ideas in a specific context. We asked our participants about their perceptions of these possibilities afforded by editability in the two organizations and observed that
editability affords both enabling and constraining possibilities. Editability as an enabler for the collaborative production of knowledge implies possibilities that facilitate and enhance knowledge sharing by allowing multiple people to collaborate together in the production and co-production of content. An Office Engineer at CCC commented on this:

*It is not difficult to add and write, to use the software. It is something like using word, excel, something very easy. You can read and write very easily, and you can edit what you write.*

A Social Media Evangelist at IBM also emphasized the quality of wiki editability:

*The fact that the wiki is a container of fluid information is value. Wikis also usually carry the connotation that this is something that we continue to improve.*

In contrast editability as a barrier has a number of dimensions. Editability is sometimes seen as a barrier depending on the roles and seniority levels of content contributors. So, for instance, some people hesitate editing content made by their managers on the wiki. In some other cases people hesitate editing content contributed by people considered experts in specific areas. Editability might also be a barrier for people who may believe that editing content on a wiki requires a substantial level of expertise that would allow them to be able to contribute by editing others’ contributions. This was explained by an Information Developer at IBM who described her hesitation to edit managers’ contributions:

> with managers I hesitate editing their content because I don’t think that it is my place and my role to do that.

Also a Learning Intelligence Leader at IBM reflected on the same issue but had a different view on it:

*If I were to make an edit for more senior’s article or strangers’ articles I would need to have a 110% confidence that what I am doing is accurate and correct.*

Other dimensions of editability as a barrier is when people hesitate editing content made by others because they want to be polite and avoid being potentially perceived as rude by content contributors. In various situations people find ways to deal with such issues in order for them to contribute politely. The Information Developer further explained her hesitation behavior:

*I hesitate to just go in and edit people’s content without asking them first. I just don’t, maybe I feel like it is being a little rude.*

An IBM Social Media Evangelist also added on this by describing how people attempt to deal with issues related to editability:

*They are actually calling the person who created that wiki to ask them to make the update for them because they don’t feel they the authority to ask for those changes. There is still this mentality that is very much driven by if you don’t have the permission don’t do it.*

An additional dimension related to editability was described by a Technical Sales Professional at IBM:

*Normally we correct as a courtesy. I also make sure to alert the authors that I have changed this.*

**Persistence**

The affordance of persistence refers to communication or content that remains accessible in the same form as the original display after the actor has finished her presentation (Treem & Leonardi, 2012). In this way, as a wiki affordance, persistence affords the possibility for content shared on a wiki to remain available to a large audience. This was emphasized by a Sales Enablement Professional at IBM:

*for me as an author and as a sort of content creator because it is so flexible it is very appealing to me. Because if I put something there, it lives almost forever, very different than an email.*

It was also emphasized by a User Experience Specialist from IBM who said:

*I know that’s going to be within IBM for as long as I am here.*

Surely this has an important relationship with the affordance of visibility. Persistent content should necessarily be visible so that people can make use of it and in being so it gives people a new way of finding knowledge compared to other ways such as searching email inboxes. An IBM Information Developer...
explained her view by stating that:

so many people have added their own content and collaborated and it is a dynamically set of content that is always available.

A Plant Group Manager at CCC added a different perspective on persistence by relating to content available in emails, he said:

you will find lots of subjects, issues or materials available for people to go back for rather than going through your inboxes from last year or something.

Generally there were two main concerns related to the persistence of content on a wiki. The first is related to the validity of content. Since content is developed in an accumulative manner there is a possibility that it gets too messy and difficult to manage. The second concern is related to peoples’ contributive behavior. The fact that people can realize that their content might exist for longer periods of time and is always available for people make them either hesitant to contribute or more conservative about their content contributions. These two concerns were illustrated by an Information Developer from IBM as follows:

I don’t know what still applies, some of it [wiki content] makes sense, some of it was contributed by people who left the company, and it is quite a mess.

Association

Associations are established connections between individuals, between individuals and content, or between an actor and a presentation (Treem & Leonardi, 2012). As an affordance associations afford the possibility for people to get to know each other within professional groups and communities inside an organization. It allows people to locate experts and makes it possible for junior employees to interact with other senior employees in their organizations in various ways through the wiki. Possibilities afforded by association may have two key consequences in relation to the ways people perceive the use of the wiki. First possibilities afforded by association might be limited because of hierarchical and professional relationships among wiki users. People often tend to avoid making any kinds of contributions into content made by seniors or people in managerial positions. This kind of association describes an association between individuals and content. So even if they are eager to contribute into such content they still weigh their contributions so that, for instance, they make comments instead of editing or choose to just view and read content. In some other cases people may choose to consult with senior contributors by calling them before making any contributions. A Civil Engineer at CCC explained his view on content-individual association especially in the case of editing content made by a senior employee at the company and how this might implicate relationships among people, he said:

the importance of this issue is the person himself not the audience. The person that might get offended especially with the relationship between a supervisor and a subordinate, it might be critical.

The second consequence of association is related to the effects on how wiki users create and edit content. For instance because content is sometimes visible people often tend to spend more time crafting their contributions because of their perceived relation to this content in front of other people. They also tend to be cautious when others attempt to edit their content because they believe that it is their own content and that they should be aware about any potential changes made by others. A Software Developer at IBM said:

Caring about the correctness makes me perhaps a bit protective about it.

Another IBM Software Developer further added:□by doing that [editing] this person makes some sort of contact with me. Maybe not directly he

makes me aware that he exists and he shows me what he is able to do.

Commenting

Commenting is an important wiki affordance. It is an affordance that describes peoples’ intentional tendency to contribute into the wiki by making comments rather than editing content, organizing content, integrating content, reading content, etc. It is often enacted in specific situations that compel people to
exploit the possibility of making comments in order to be able to participate and contribute into the wiki. The commenting affordance is enacted in situations like when people disagree about content, do not understand the content, think it could be presented in a different way, see that it belongs to specific individuals or communities. Basically the enactment of the commenting affordance describes how people maneuver around possibilities afforded by the wiki so that they achieve their aims from using it. A CCC Senior Administrator explained that she uses the possibility to make comments to understand content on the wiki:

*I add comments and I try to understand the content... We definitely comment more than we edit.*

An IBM Learning Intelligence Leader described a different perspective on commenting by showing he exploits the possibility to make comments in contexts where he might not have enough expertise:

*Outside of the team ... I might have the confidence to post a comment, this is my opinion xyz, but I don’t think I would have the confidence to go and edit somebody else’s work.*

Another different perspective was added by a User Experience Specialist from IBM which shows how his group decides about dividing the roles among them in terms of assigning writers, commentators, etc.:

*The whole wiki is open to everybody but we just have an agreement okay here is the master writer for this one document and sally is the master for this one and Bob is the master for this one and everybody else just comment.*

Commenting affords people possibilities for avoiding conflicts driven by personal opinions when there is disagreement about content, when people are concerned about their own limitations in the sense that if you edit you have to be right but if you comment then the author have to make content better and also when people want to avoid taking responsibility over content. A Civil Engineer at CCC reflected on this:

*[Making comments rather than edits because] the person might get offended, he didn’t write the article unless he has certain background and experience and he’s ready to defend it so lets give him the opportunity.*

*If I am unsure, will I understand it [content] correctly or will they know more than I do then I would not edit directly I will comment on it.*

In addition possibilities pertaining to the commenting affordance are also important to tackle professional issues. Some people may favor commenting on content contributed by their colleagues rather than editing so that they are not confused with confidence issues about certain subjects and also ensure that they don’t offend anyone and be nice to others. An IBM Technical Sales Professional illustrated his view on this:

*I don’t personally use the wiki very much for overall discussions, create articles, and such. What I do is that I read articles and comment on them because I am not part of the actual editors for that worldwide public wiki. I can be one of the commentators on that.*

**Accessibility**

In each of the studied organization accessibility was perceived differently and affected how the wiki is used in various ways. As an affordance accessibility does not only mean the ability to access content but it also determines ways of using the wiki and also affects how people may think about the possibilities afforded by a wiki.

Depending on the formal structure and culture of each organization, accessibility determined how people use the wiki. For instance, the dominance of hierarchical relations in CCC resulted in restrictions to use the wiki in terms of allowing certain number of people to edit content while others have only the possibility to make comments or even read. There were also concerns raised by the management at CCC about how open and accessible the wiki can be. Because there was only one central wiki used by various communities only community members were allowed to participate in knowledge sharing and collaboration. These kinds of restrictions on accessibility maybe seen as barriers to exploit the visible and flexible nature of a wiki. Some people at CCC thought that they should not use the wiki because they believed:
An IBM Learning Intelligence Leader described a different perspective on commenting by showing he
Accessibility
the wiki in terms of allowing certain number of people to edit content while others have only the
use the wiki. For instance, the dominance of hierarchical relations in CCC resulted in restrictions to use
afforded by a wiki.
In each of the studied organization accessibility was perceived differently and affected how the wiki is
maneuver around possibilities afforded by the wiki so that they achieve their aims from using it. A CCC
individuals or communities. Basically the enactment of the commenting affordance describes how people
understand the content, think it could be presented in a different way, see that it belongs to specific
The commenting affordance is enacted in situations like when people disagree about content, do not
exploit the possibility of making comments in order to be able to participate and contribute into the wiki.
Another different perspective was added by a User Experience Specialist from IBM which shows how his
exploits the possibility to make comments in contexts where he might not have enough expertise:
Accessibility maybe seen as barriers to exploit the visible and
communities only community members were allowed to participate in knowledge sharing and
Viewing behavior is also related to affordances of accessibility and editability. People tend to choose viewing content when it is made by their managers, for instance, rather than editing and/or commenting for various reasons (see Editability). They also view content in 'forcible' ways when they don't have the right to comment or edit content (see Accessibility). Sometimes also people believe that content is not up-to-date and there is no reason for them to contribute into that. An additional dimension might be related to Visibility in the sense that when people see certain individuals frequently working on content they tend to view and follow this content rather than engage in dynamic ways of creating content. An Estimation

It (the wiki) is not Facebook where it is completely open ... No. You only invite certain number of
company employees to share their knowledge. –Plant Group Manager, CCC.
My problem with Fanous within CCC is that I am only allowed to see certain things...I am limited to mechanical estimation and piping references only...when I needed to do something out of my job they gave me access for a week. –Estimation Engineer, CCC.

In IBM accessibility was more flexible compared to CCC. People had the chance to set up their own wikis and determine the level of accessibility in these wikis. But accessibility was a bit different here in the sense that sometimes people in IBM may ‘self-organize’ and agree on certain accessibility rights that can allow or restrict them from using the wiki in certain ways. For instance a group may agree to have one or several key content creators who can create and edit content and others can only comment. A User Experience Specialist at IBM explained his experience within his project:

An example, in one project I might be the master writer for one piece and everybody else would be the commentator and then somebody else would be the master writer for a different pieces and i would be commenting on that.

An IBM Software Developer provided a an additional view of how he perceives accessibility to content that he shares with others in the sense that they have to inform him about any possible changes so that he gives them some kind of access by engaging them to improve content, he said:

Putting the information out in the open I feel responsible for it and if someone makes me aware that it could be improved then I would engage that person and find out what he means about it.

Viewability
The affordance of Viewability maybe understood in different ways. It essentially emerges in relation to the various ways and purposes that people use the wiki for as well as other wiki affordances. It can be described as the ability to share, view and make things visible without necessarily implying the ability to make edits or comments. There are a number of dimensions for enacting such an affordance. For instance people sometimes use a wiki to publish personal stuff and experiences that may not be subject to editing or commenting in the eyes of others. In this case the contributor uses the wiki to view or share her knowledge and others are only expected to view or read this content even if it was technologically possible to make edits and comments. Another dimension is related to the way content is often shared on a wiki. Sometimes people format their professional content in a way that suggests that it is not possible to edit or modify which discourages others from making any kinds of contributions. One of the Project Managers at IBM described her experience with wikis that are often created in a way that does not invite contributions by others. She said:

Wikis that i have been working with ... are pushing knowledge out, i don't think the format of the frame there is actually inviting people to collaborate.

Also a User Experience Specialist at IBM provided another example that describes how people sometimes use a wiki for personal purposes:

My experience is that some people are using the wiki technology as just a simple way to publish things so instead of using a blog or a word document they're actually using wikis not in the Wikipedia sense that says my goal is to create a page and let everybody else to make it better...

In this vein one of the Software Developers at IBM strongly explained his view about this, he said:

I definitely think it is personal contribution.

Viewing behavior is also related to affordances of accessibility and editability. People tend to choose viewing content when it is made by their managers, for instance, rather than editing and/or commenting for various reasons (see Editability). They also view content in ‘forcible’ ways when they don’t have the right to comment or edit content (see Accessibility). Sometimes also people believe that content is not up-to-date and there is no reason for them to contribute into that. An additional dimension might be related to Visibility in the sense that when people see certain individuals frequently working on content they tend to view and follow this content rather than engage in dynamic ways of creating content. An Estimation
Engineer at CCC commented on this matter by stating that:

*the discussion was old and did not see anyone referring to it. It didn't seem like it was looked at.*

**Validation**

Validation as an affordance describes possibilities related to verifying the truthiness of both content and content contributors. It is often enacted when people try in various ways to validate whether content shared on a wiki is true and whether content contributors possess the right background and level of expertise to make a contribution. This has been observed at both CCC and IBM as we found a tendency by wiki users to share content that is always correct or try to make it so. Some observations from the two organizations include:

*We have many procedures in the precommissioning community so far ... We have four captains to approve these procedures. –Mechanical Manager, CCC.*

*Caring about the correctness makes me perhaps a bit protective about it. –Software Developer, IBM*

People using a wiki exploit the possibilities of this affordance in various ways. For instance verifying content contributed by a specific individual can be done through looking at her profile on the wiki to check for her previous contributions and also examine the level of her expertise and background knowledge in the contributed subject. A Client Technical Professional at IBM expressed his experience:

*I start by looking do they know anything in this area, have they made any contributions, do they have a job role where I can expect them to know something about it.*

Some people also exploit validation possibilities through modifying and reviewing their content so that they ensure it is correct. Most often people do some kind of content validation before they contribute any content into the wiki partly because they want to share what they believe is true and partly because the visibility of content on a wiki makes them concerned about how others may perceive the originality of their contributions. So they often tend to write elegantly, provide references, and most importantly post what looks like a ‘final’ version of the content, which in many cases results in an assumption by others that this content is not subject to editing and updating. Persistence also contributes into such behavior in the sense that people realize that their content will be available for others and they often want to show that their contributions are correct or essentially represent ‘facts’. In addition concerns about the validity or truthiness of content often shape the way people use the wiki. So they tend to be more conservative about their ideas in the sense that they only contribute and share if they believe they have the ‘best’ knowledge which in some ways stifles the dynamic possibilities afforded by a wiki such as editability and eventually results in, for instance, Viewability. An IBM Project Manager explained her concerns about the validity of content contributed into a wiki:

*Where does that come from, and what knowledge is true more than others, and I think that is of course is a challenge in that way.*

A Sales Enablement Professional from IBM further described how they use the wiki to share facts, he said:

*We're not personally invested in the wikis and the kinds of ideas that we share on the wiki, it is never an opinion or it is never a discussion it is always facts.*

**Summary**

The main findings from our data analysis were presented in this section. In addition to showing the four affordances of Treem & Leonard (2012), these findings also suggest that novel affordances -commenting, viewability, accessibility, and validation- are enacted when using a wiki in the workplace. See Table 2 below for a detailed summary of these affordances. The enactment of these affordances show how people’s perceptions of technology features may result in new possibilities for action that imply new behaviors and patterns of use. Each of the new four affordances offers both enabling and constraining possibilities for action in the sense that an affordance may either allow for exploiting certain technology features or constrain their use.
In addition, concerns about the validity or truthiness of content often shape the way people use the wiki. This sense that people realize that their content will be available for others and they often want to show that their contributions are valuable. So they often tend to write elegantly, provide references, and most importantly, ensure the visibility of content on a wiki makes them concerned about how others may perceive the originality of their work. They believe they have the ‘best’ knowledge which in some ways stifles the dynamic possibilities afforded by a wiki such as editability and eventually result in viewability. An IBM Project Manager explained her concerns about the validity of content contributed into a wiki:

"People ensure it is correct. Most often people do some kind of content validation before they contribute any content. Some people also exploit validation possibilities through modifying and reviewing their content so that their contributions are useful. It is important that the wiki has a way for people to know when content is verified. Verification of content is important, as it allows others to know the accuracy of the content." 

A Sales Enablement Professional from IBM further described how they use the wiki to share facts, saying:

"Where does that come from, and what knowledge is true more than others, and I think that is of concern. We're not personally invested in the wikis and the kinds of ideas that we share on the wiki, it is someone else's wiki. So we have many procedures in the precommissioning community so far. We have four captains to make for an affordance. For instance, if we are thinking about how constraining and enabling possibilities of each affordance are implicated in relation to each other, how they are related to possibilities of other affordances and to the context where the wiki is used. We found that these properties play an important role in the enactment of various kinds of affordances by providing means to understand, or at least representing ways of thinking about, the possibilities afforded by the wiki. In this view these properties contribute into understanding organizing that occurs in relationship to the dynamic and diverse ways of using technology. The properties are discussed as follows:

**Discussion: Properties of Affordances**

Understanding wiki affordances in organizations implied an understanding of constraining and enabling possibilities associated with each affordance. This later understanding was indicative of certain dynamics within and across the identified affordances. We refer to these dynamics as properties of affordances and can be seen as underlying organizing processes that affect the ways each affordance is perceived, enacted, and exploited. These properties include multiplicity, situatedness, referential and communal. During our analysis and while trying to understand how affordances are enacted, we uncovered various dynamics related to how constraining and enabling possibilities of each affordance are implicated in relation to each other, how they are related to possibilities of other affordances and to the context where the wiki is used. We found that these properties play an important role in the enactment of various kinds of affordances by providing means to understand, or at least representing ways of thinking about, the possibilities afforded by the wiki. In this view these properties contribute into understanding organizing that occurs in relationship to the dynamic and diverse ways of using technology. The properties are discussed as follows:

**Multiplicity:** multiplicity of an affordance means that an individual affordance may have multiple enabling and constraining possibilities for action. Each affordance may offer various possibilities for people depending on what people use the technology for and what possibilities they see in this technology. So this property basically determines the kinds of possibilities an affordance may have relative to the ways people perceive the use of technology. It is important to note at this point that there is a difference between the multiplicity of an affordance and a multiplicity of affordances. The multiplicity of an affordance refers to multiple possibilities for action. While a multiplicity of affordances refers to multiple affordances enacted in relation to using one certain kind of technology (Leonardi, forthcoming). So the emphasis here is on what kinds of possibilities an affordance may entail in relation to using a specific kind of technology. This understanding of multiplicity is key to understanding organizing because it emphasizes possibilities for action that essentially make for an affordance. For instance, if we are to understand the editability affordance of wikis one may look at what possibilities editability might offer people who use this technology to share knowledge in a collaborative manner. One the one hand, editability affords people the possibility to engage in dynamic knowledge sharing by allowing them to produce and co-produce knowledge collaboratively. On the other, editability affords constraints for action in the sense that people tend to avoid editing content because of various reasons such as their concerns about how they can use the wiki to write and express their views in relation to what others have written.

**Situatedness:** the situatedness of an affordance suggests that people may perceive possibilities...
pertaining to certain affordances differently depending on different situations or contexts where they use
the technology. In line with Leonardi (2011) and his discussion of how affordances might be perceived
differently depending on what possibilities people see in them in different situations, this property
highlights the importance of the situation where technology is used. Wikis at both CCC and IBM are used
in many different ways and for many different purposes which creates a myriad of situations in which
wikis are used. This suggests that enacted affordances will vary across these situations and the
possibilities that people perceive in them change depending on how people use technology in certain
situations. For instance, IBM uses wikis for public communities, private project teams, personal spaces,
and so on. Each of these settings represents a unique situation which shapes how people perceive different
affordances and possibilities of a wiki. The perception of possibilities afforded by editability, for instance,
in public communities is essentially different from the perception of the same possibilities of editability in
private wikis. In public communities people often enact the affordance of editability by exploiting
possibilities such as co-creation of content, rewriting, integration and restructuring of pages (cf. Yates et
al., 2010). In contrast, in private project-related wikis and personal wikis the situation is different and the
kinds of perceived affordances are also different. Possibilities afforded by editability in such situations
may not necessarily support or allow people to edit content in the same way people do in public
communities. Editability, in fact, may afford constraining possibilities that make people hesitant to
engage in co-creation practices with others or even participate in any other ‘peer production’ activities
often enabled by editability. Hence, situated perception of affordances and their possibilities may have
important implications to the way people use technology and organize their practices.

Referential: this property describes referential dynamics between different kinds of affordances. It is a
property that focuses on how people relate affordances to each other and how they make choices about
which affordances to exploit in the course of using the technology. The referential dynamics emerge in
practice while people attempt to exploit certain possibilities of specific affordances but might not be able
to do so. Then, they maneuver around the technology -its material properties and affordances- by relating
to other affordances which they can exploit in order to realize their aims from using the technology. So
basically the referential dynamic here emerges when the possibilities of one affordance can be exploited
but not another. In this way, a referential dynamic describes people’s choices of how to go about using the
technology and determine the ways that can help them achieve their purposes from using the technology.
For instance, when an individual believes that he or she does not have enough knowledge to edit content
on a wiki he or she may tend to make comments, hence exploiting commenting affordance instead of
editability. The choice to make comments instead of text-editing content is made by relating to the
commenting affordance which possibilities can be exploited. This particular property suggests two
important ideas related to technology and organizing. First, choices that people make to use or not use
certain material properties result from a combined understanding of what these material properties may
allow them to do or not do as well as the implications associated with using these properties when people
do use them in practice. The second idea emphasizes that by choosing to exploit certain possibilities
pertaining to a specific affordance rather than another people are in fact organizing their technology use
practices in ways that allow them to decide which material properties might help them to do whatever
they want to do, hence exploit the technology.

Communal: this last property of affordances, the communal property, might be particularly specific to
using social media technologies like wikis because of their collaborative and malleable nature. Building on
Hutchby (2001) and Markus and Silver (2008), Leonardi (2011) discussed the relational character of an
affordance as existing in-between humans’ perceptions of what a technology can or cannot do in relation
to their goals for action. This implies that users of technology may have multiple perceptions and flexibly
enact various affordances while using certain technologies. In this respect, one may reasonably argue that
the collaborative and malleable nature of a social media technology like a wiki may suggest that how an
individual perceives certain affordances of a wiki is necessarily dependent on how other individuals
perceive and enact other affordances and exploit them in practice. Having said that, the communal
property suggests that understanding affordances of malleable technologies may require attention to how
affordances are developed in a communal manner. We have observed that people enact wiki affordances
in what could be seen as a collaboration with each other in the sense that they develop some kind of a joint
understanding of the kinds of possibilities a wiki may afford them. For instance, senior community
members at CCC often perceived various possibilities pertaining to editability such as allowing them to
validate content contributed by other community members. In this case, the validation affordance is jointly enacted by senior members because of their communal perceptions that editability can give them the possibility to validate and verify content contributed by others into the wiki. Similarly, in IBM people often tended to enact the affordance of Viewability in relation to their perceptions that they may need better knowledge and confidence to contribute into content shared by expert people in specific areas. In this case, people often tend to view content on the wiki rather than make direct editing or commenting. Another aspect related to this is the perception that commenting on or editing of content made by others in front of a large audience, when the wiki is publicly accessible, might engender the possibility that others may feel offended or cause embarrassment among colleagues. The development of such joint perceptions of what possibilities a wiki might afford is basically related to the communal or collaborative ways by which these possibilities are exploited by people. In addition, it is important to emphasize that communal dynamics involved in the enactment of affordances are essentially related to the malleable characteristics of a wiki and the participatory and collaborative ways enabled by these characteristics. As such, the dynamic and evolving nature of wiki use practices may have important implications for the kinds of affordances that might be enacted and eventually affect any potential new forms of organizing.

Conclusions

This paper aimed at exploring the enactment of affordances in relation to using a social media technology, a wiki, within organizational settings. In seeking to achieve this aim we have identified a number of enacted organizational wiki affordances that describe various wiki use practices. Most importantly, we have also identified four key properties of these affordances including multiplicity, situatedness, referential, and communal in an attempt to theorize about the dynamics that underlie the enactment of affordances. These properties provide means to understand the enactment of affordances by capturing the dynamics involved in the ways people perceive, enact, and exploit various affordances of a certain technology like the wiki studied in this paper. What is interesting to note at this point is that suggesting these four properties may shed light into new combinations of technological and organizational features that may develop while using technology in an organizational setting. Understanding such combinations is key to understanding unpredictable forms of organizing and technological possibilities that may have an impact on organizations' form and function (Zammuto et al., 2007; Leonardi, 2011). We would therefore conclude this paper by arguing that an understanding of any possible new combinations of organizational and technological features requires attention to the dynamics that evolve in association with the enactment of affordances. The enactment of affordances, as discussed earlier in this paper, is a result of the interaction between material and social agencies. The four properties of may help to examine such interaction, and hence the enactment of affordances or new combinations of organizational and technological features, by offering means to look at what possibilities an affordance might entail, how these possibilities might relate to possibilities of other affordances and the context of technology use in which possibilities are enacted and exploited.

Hence, our contribution in this paper is twofold. First, by identifying a number of organizational wiki affordances, we have contributed with new knowledge about potential new combinations or possibilities afforded by social media technologies and how these may influence organizational practice. Second, with respect to technology and organizing, we have developed and extended the current understanding of the notion of affordance by theorizing new concepts that describe relational dynamics, situated and contextual conditions, and social factors involved in enacting, perceiving, and exploiting affordances. In practice, we believe that this theorizing may help in understanding potential changes in organizations through providing means that explain the kinds of uses and actions certain technologies may afford and how and why people exploit them in a way that affects their work practices.

For further research we would suggest research focusing on examining organizing dynamics in using malleable social media. We believe that this would offer the literature important insights into how the malleable materiality of social media may play out in the enactment of affordances and shape the consequences of using social media in organizations.
References


The Swedish Research School of Management and Information Technology (MIT) is one of 16 national research schools supported by the Swedish Government. MIT is jointly operated by the following institutions: Blekinge Institute of Technology, IT University of Göteborg, Jönköping International Business School, Karlstad University, Linköping University, Linnaeus University Växjö, Lund University, Mälardalen University College, Stockholm University, Umeå University, Örebro University, and Uppsala University, host to the research school. At the Swedish Research School of Management and Information Technology (MIT), research is conducted, and doctoral education provided, in three fields: management information systems, business administration, and informatics.

DISSERTATIONS FROM THE SWEDISH RESEARCH SCHOOL OF MANAGEMENT AND INFORMATION TECHNOLOGY

The Swedish Research School of Management and Information Technology

MIT

The Swedish Research School of Management and Information Technology (MIT) is one of 16 national research schools supported by the Swedish Government. MIT is jointly operated by the following institutions: Blekinge Institute of Technology, IT University of Göteborg, Jönköping International Business School, Karlstad University, Linköping University, Linnaeus University Växjö, Lund University, Mälardalen University College, Stockholm University, Umeå University, Örebro University, and Uppsala University, host to the research school. At the Swedish Research School of Management and Information Technology (MIT), research is conducted, and doctoral education provided, in three fields: management information systems, business administration, and informatics.

DISSERTATIONS FROM THE SWEDISH RESEARCH SCHOOL OF MANAGEMENT AND INFORMATION TECHNOLOGY

Doctoral theses (2003- )


44. Röndell, Jimmie (2012), *From Marketing to, to Marketing with Consumers*, Department of Business Studies, Uppsala University, Doctoral Thesis No. 155.

45. Lippert, Marcus (2013), *Communities in the Digital Age: Towards a Theoretical Model of Communities of Practice and Information Technology*, Department of Business Studies, Uppsala University, Doctoral Thesis No. 156.


53. Persson Ridell, Oscar (2013), Who is the Active Consumer? Insight into Contemporary Innovation and Marketing Practices, Department of Business Studies, Uppsala University, Doctoral Thesis.


Contact person: Professor Pär Ågerfalk, Director of MIT, Uppsala University
par.agerfalk@im.uu.se
Address: The Swedish Research School of Management and Information Technology, Department of Business Studies, Uppsala University, Box 513, 751 20 Uppsala
http://www.forskarsholan-mit.nu/mit/
Below please find a list of recent publications in the series Linnaeus University Dissertations. For a full list and more information: Lnu.se


Linnaeus University Dissertations

Below please find a list of recent publications in the series Linnaeus University Dissertations. For a full list and more information: Lnu.se


