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The Concept of the Firm in the Network Economy: A Perspective Based on the Creation of Shared Understanding

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ZUSAMMENFASSUNG

Die Einführung neuer digitaler Medien und technischer Tools ermöglicht es heute, dass viele Prozesse virtuell durchgeführt werden können. Wenn Mitglieder einer Organisation online gehen, ihre Netzwerke in der Cloud erschaffen und Teams anfangen, sich selbst zu koordinieren, taucht die Frage auf, ob die Firma überhaupt noch einen notwendige Rolle bei der Ressourcenkoordination spielt. Wenn sich alles im Netzwerk abspielt, brauchen wir noch die Firma oder können wir die ganze Koordination im Netzwerk über LinkedIn oder Twitter machen? Diese Dissertation baut auf der Theorie der Schaffung eines gemeinsamen Verstehens auf, um Aufschluss darüber zu geben, ob die Existenz einer Firma im Zeitalter neuer digitaler Medien noch begründet werden kann. Durch die Anwendung qualitativer Methoden bei der Sammlung von Daten von fünf im Netzwerk operierenden Firmen belegt die Studie die Komplexität eines gemeinsamen Verstehens im Netzwerkumfeld. Von den Resultaten ausgehend, sind die Mechanismen für die Schaffung eines gemeinsamen Verstehen identifiziert und in einem umfassenden Modell zusammengefasst worden.

Das Resultat dieser Studie zeigt, dass wir auch im Netzwerkumfeld immer noch eine Firma benötigen. Als erstes ermöglicht die Studie eine Einsicht in die aufkommenden Mechanismen für die Schaffung eines gemeinsamen Verstehens, welche diejenigen Mechanismen bereichern und/oder ersetzen, die eine hierarchische Sicht auf die Organisation benutzen. Zweitens wird ein umfassendes Modell für die Schaffung eines gemeinsamen Verstehens in Firmen im Netzwerkumfeld vorgeschlagen. Ausserdem bestätigt diese Studie, dass Firmen noch über stabile Strukturen für die Erschaffung eines gemeinsamen Verstehens verfügen, welche als eine der wichtigsten Begründungen für das Bestehen der Firma gilt. Zusatzlich kann beobachtet werden, dass, wenn ein gemeinsames Verstehen im Netzwerk aufgebaut werden muss, die Möglichkeiten des Netzwerks ebenfalls verwertet werden müssen. Führungskräfte von Organisationen müssen anerkennen, dass es die Möglichkeit gibt, eine Firma, eine Organisation, eine Strategie zu haben, aber dass es (auch) ein gemeinsames unfassendes Verstehen im Netzwerk gibt, das der Sicht des wissenschaftlichen Managements gegenüber steht, nämlich die der einen Firma, eine Organisation, eine Strategie, ein gemeinsames Verstehen innerhalb einer Firma.

Diese Dissertation leistet auf vielseitige Weise einen Beitrag zur Theorie (entwicklung) Erstens schließt sie die Forschungslücke auf dem Gebiet der Untersuchung des

gemeinsamen Verstehens unter Anwendung einer hierarchischen Sichtweise auf Organisationen. Zu diesem Zweck wurde eine qualitative Forschungsarbeit durch semi-strukturierte Interviews ausgewählt, um Mechanismen und Konditionen für die Schaffung eines gemeinsamen Vestehens genau zu prüfen. Zweitens werden die wichtigsten Mechanismen, die die Schaffung eines gemeinsamen Verstehens in Firmen im Netzwerkumfeld beeinflussen und ermöglichen, analysiert und ein konzeptionelles Modell aller ermittelter Mechanismen vorgeschlagen. Außerdem wird die bestehende Theorie über das gemeinsame Verstehen aus hierarchischer Sicht auf Organisationen betrachtet. Schließlich wird gemeinsames Verstehen als eines der Grundprinzipien der Existenz von Firmen vorgeschlagen.

Praktiker wie zum Beispiel leitende Entscheidungsträger in Unternehmen und Projektmanager profitieren ebenfalls von dieser Forschung. Die Resultate dieser Dissertation geben ihnen eine Checkliste zur Hand, was gemacht werden kann und was vermieden werden sollte, wenn ein gemeinsames Verstehen zwischen allen Mitgliedern einer Organisation in einem Netzwerkumfeld aufgebaut werden soll. Zweitens bietet diese Forschung eine Reihe von Mechanismen, welche von leitenden Entscheidungsträgern und Projektmanagern genutzt werden können, um ein gemeinsames Verstehen unter all ihren Mitgliedern zu schaffen. Schließlich kann die Verbreitung der Erkenntnis, dass gemeinsames Verstehen sowohl innerhalb der Firmengrenzen als auch in professionellen Netzwerken geschaffen wird, leitenden Entscheidungsträgern helfen, die Leistungen ihrer Firmen für ein gemeinsames Verstehen mit den Leistungen von professionellen Netzwerken und anderen Firmen zu verknüpfen.

ABSTRACT

The introduction of new social media and technological tools has allowed a whole range of processes to be carried out virtually. To that end organizational members have gone online, creating their networks in the clouds and teams have begun to coordinate themselves. This raises the question of whether a firm is a necessary element in resource coordination. If everything is in the networks, do we still need the firm, or can we do all coordinating in networks like LinkedIn or Twitter? This dissertation builds on the shared understanding creation framework to shed light on one of the rationales for a firm's existence in the age of new social media. By applying qualitative methods and collecting data from five firms operating in the network environment, the study acknowledges the complexity of shared understanding creation in the network environment. Building on the results, mechanisms for shared understanding creation are identified and summarized into a comprehensive model.

The result of this study is that even in the network environment we still need the firm. First of all, the study provides insights into the emergent mechanisms for shared understanding creation, which enrich and/or substitute mechanisms applicable to a hierarchical view of the organization. Secondly, a comprehensive model for shared understanding creation by firms in the network environment is proposed. Moreover, this research yields that firms are still stable structures for shared understanding creation, which serves as one of the rationales for the firm's existence. In addition, it is observed that if shared understanding needs to be created in the network, then the opportunities offered by the networks have to be exploited as well. Organizational leaders have to recognize that there is a possibility of having one firm, one organization, one strategy but a common shared understanding of the networks opposed to the scientific management view of one firm, one organization, one strategy, one shared understanding inside one firm.

This dissertation contributes to the theory in many ways. First of all, it addresses the research gap of studying shared understanding, by applying the hierarchical view to an organizational setting. To address this gap, a qualitative research done through semi-structured interviews was chosen to closely examine mechanisms and conditions for shared understanding creation. Secondly, key mechanisms that influence and enable shared understanding creation in firms in the network environment are analyzed and a conceptual model of the intersection of all mechanisms identified is proposed.

Furthermore, reflections on existing theory on shared understanding applying hierarchical view on organizational setting are provided. Finally, shared understanding creation is proposed as one of the rationales for why firms exist.

Practitioners such as corporate senior decision makers and project managers also benefit from this research effort. The results of this dissertation provide them with a checklist on what should be done and what should be avoided when creating shared understanding among all organizational members in the network environment. Secondly, this research provides a set of mechanisms, which senior decision makers and project managers can apply to create shared understanding among all their members. Finally, increasing the awareness that shared understanding is created both inside firms' boundaries and in professional networks can help senior decision makers to combine the efforts that their firms make to create shared understanding with the efforts of professional networks and other firms in the industry.

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LIST OF ABBREVIATIONS

NWOW	New Ways of Work
CeTIM	Center for Technology and Innovation Management
RBV	Resource-based view
ANT	Actor-network theory
CEO	Chief Executive Officer
CIO	Chief Information Officer
HR	Human Resource
IT	Information technology
COO	Chief Operating Officer

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1. INTRODUCTION

1.1 MOTIVATION AND PROBLEM STATEMENT

The ways in which work is being done have undergone profound changes. Firms have pried open their legal constraints, have started to create virtual teams that cooperate across time and space, and have gotten involved in productive cooperation with other firms in and outside of their own industries. Organizational members have also gone online creating their networks outside the framework of the firms employing them. In the times of network cooperation, the question has arisen thus, as to whether the firm is still a necessary element at all in resource coordination. Do we still need the firm or can we create networks and coordinate them through Facebook or Twitter? Can an airport be built via LinkedIn or is the stable structure of the firm irreplaceable?

The aim of this thesis is to contribute to the theory of the firm (Penrose, 1959), which tries to answer one of the fundamental questions as to why firms exist. A firm is defined as a business concern, especially one involving a partnership of two or more people as stated in the Oxford English Dictionary (1989). By looking at shared understanding creation in firms in the network environment, I propose that the firm is a place where shared understanding is created. In other words, shared understanding is one of the rationales for why firms exist. Shared understanding is defined *as a set of basic assumptions and values about how members determine relevant information and take actions* (Schein, 1992). Organization is defined as an organized group of people with a particular purpose as Oxford English Dictionary (1989) explains.

Organization theory has for decades been concerned with how to coordinate the activities of the members involved in the organizational processes to assure the understanding of organizational goals among all members (March & Simon, 1958; Stinchcombe, 1960; Thompson, 1967). Starting with the pioneering work of Taylor (1911), organizational theorists have been preoccupied with searching for coordination mechanisms that could help organizational leaders to achieve their corporate goals. Hierarchies of specialized work under managerial supervision and control through bureaucratic standardization have been identified and researched as the most powerful tools for coordination.

Nevertheless, researchers who have been preoccupied with the theory of the firm are finding new challenges and constraints with the traditional theories. Blurring boundaries

of the firm, easiness of information dissemination and as a result, the loss of control, flat hierarchies, new coordination strategies, as well as dynamism coming from the resource side (Katzy, Bondar, & Mason, 2011) are all some indicators of the on-going change.

The concept of New Ways of Work (NWOW) that represents changes in organizational structures and a new attitude to work (Katzy et al., 2011; Malone & Laubacher, 1998) poses minor challenges to key assumptions about knowledge work and organizational structures (Nohria & Berkely, 1994; Robey, Min Khoo, & Powers, 2000). Emerging from the introduction of new social media and information technologies, which opens organizational boundaries and allows information to be put into the cloud, NWOW put the question of organizational restructuring in front of the senior managers who have to lead their organizations in this dynamic environment. Many organizations already form teams regardless of their location, providing them with more opportunities and flexibility (Griffith & Neale, 2001). Others use interactive learning environments to find, use, store and get access to an enormous amount of information available (Smith, 2001). 'Digital natives', or digitally-inclined and adept young people enter organizations and demonstrate different working preferences and styles than their older colleagues (Barzilai-Nahon & Mason, 2010; Katzy et al., 2011). These are people who have literally been online since birth and who prefer to stay plugged in either at work or at home, and who tend thus to treat information as a given rather than as a valuable commodity. Communities of practice, the so-called groups of people who share the same interest or profession (Lave & Wenger, 1991), cross organizational boundaries (Borzillo, Probst, & Raisch, 2008; Katzy, Bondar, & Mason, 2012), suggesting that organizations can lose control over knowledge assets and now have to look for new ways of operating in this knowledge-based environment. Researchers also observe that there are more and more organizations that are becoming virtual entities only, while proving themselves to be well coordinated and successful in the market. This brings academics to wonder what coordination mechanisms are exercised in the networks. It leads in any case to new experiments, observations, case studies, and as a result, new theory building.

Not only academics but practitioners also seem to be disturbed by the fast growing usage of social media in their organizations (McDermott & Archibald, 2010; Wenger, 2004). Their experience shows that information does not permit as much power and control as previously, especially over the human resources who build their own

networks independently from the firm. Organizational leaders are also noticing that some of their competitors are establishing virtual teams, allowing their members to work from home and do not keep track of the time they spend in the office (Alavi & Denford, 2011). Senior managers are certainly interested in knowing why organizations operating virtually are still very competitive in the market and, furthermore, how they manage to align organizational goals with the efforts of the organizational members in the network environment.

Both theorists and organizational leaders now acknowledge that organizations are more networked than ever. Of course, this notion of organizations as actor-networks puts certain constraints on the applicability of existing theories of the firm and the usefulness of traditional beliefs which regard organizations as fixed places with physical boundaries (Gergen, 1992; Inns & Jones, 1996). When physical boundaries disappear, it is more difficult for organizational leaders to make sure that the vision, values and strategy are shared among all the members (Michel, 2007). Several authors (Sandelands & Stablein, 1987; Simon, 1981; Weick, 1995) have pointed out that without shared understanding among its members, organizations do not exist. Therefore, some managers are looking at the development of shared understanding in their organizations on different levels. Nevertheless, there are many other organizations that neglect to develop shared understanding of what they stand for (Fahey & Prusak, 1998). Though there are organizations that have achieved internal integration of different units (e.g., purchasing-manufacturing-logistics-marketing) (Fawcett & Magnan, 2002), they are still missing out on the so-called 'collaborative approach' (Khan & Mentzer, 1996) where different initiatives help to create shared understanding of vision, corporate goals and resources. Furthermore, how can they give attention to this if they maintain inflexible assumptions about the efficacy of hierarchy and bureaucratic mechanisms? Two widely publicized failures of shared understanding creation from aviation illustrate this point.

1.1.1 The Boeing Dreamliner

The Boeing Dreamliner is the first passenger airplane made mostly of carbon composites that make it lighter and more fuel-efficient than any other commercial airplane (Isett, 2013). Built mainly of carbon-fiber, the Boeing Dreamliner has pressurization, braking and air-conditioning systems run by electricity from lithium-ion batteries, which allow it to use twenty percent less fuel and make it cheaper to run than

any other commercial aircraft (Surowiecki, 2013). In other words, it is one of the most efficient airplanes in the air. This is only one side of the story however.

The Dreamliner made its first test in Seattle far behind the schedule on December 15, 2009 (Isett, 2013). Prior to this test, engineers had found a structural weakness that involved bending the plane's wings, but Boeing assured that those errors were repaired and the Dreamliner would soon be delivered to the airlines. Nevertheless, Boeing had to halt test flights on the November 11, 2010 and acknowledge that the first 787 long-waited airplanes would not be delivered to the airlines by February 2011 (Isett, 2013). This was the result of a fire on-board that forced an emergency landing during the previous tests.

Finally, the first Dreamliners were delivered to the airlines in September 2011 and the first commercial flights were executed the next month. Unfortunately, a chain of problems followed afterwards, including fuel leaks and a battery fire, causing many concerns about the airplane's reliability (Isett, 2013). Still, aviation experts referred to these problems as minor and claimed that it was customary for new airplanes to have such problems.

Yet aerospace newsgroup Flightglobal stated in its report from the February 5, 2012 that Boeing Co. had initiated the inspection and repair of its Dreamliner after the structural stiffeners were found to be attached improperly to the composite skin in the aft sections of the airplane, which caused the carbon fiber structure of the airplane to delaminate (CompositesWorld, 2012). Boeing said it "… *has found that incorrect shimming was performed on support structure on the aft fuselage of some 787s* " (LeBeau, 2012) and at least three airframes of All Nippon Airways and Qatar Airways were affected (CompositesWorld, 2012). While this issue cannot be considered an immediate safety hazard, it raises many questions about the Dreamliner manufacturing process.

Additional accidents which took place in January 2013, including a battery fire in Boston, have caused the Federal Aviation Administration to order a review of the electrical systems of the airplane (Isett, 2013). A week later regulators around the world

ordered the grounding of Dreamliners until the problems that caused a new battery type to catch fire to two airplanes could be determined.

Golgowski (2013) made reference in his article to ANA spokeswoman Jean Saito, who stated that the Tokyo-based airline had to cancel two of its flights from Frankfurt and Tokyo due to a malfunction of the flaps systems and an error in software that monitors airplane controls.

Surowiecki (2013) pointed out in his article for New Yorker that the Dreamliner was meant to be famous for its revolutionary design, but instead it has become a vivid example of lessons learned in how to build an aircraft. But why did it all happen anyway?

In order to understand why all the drawbacks occurred, it is necessary to first go back to 1997, the time when Boeing merged with McDonnell Douglas. Technically, as Surowiecki (2013) puts it in his article, Boeing bought McDonnell Douglas, but in reality McDonnell Douglas acquired Boeing with Boeing money and the executives of McDonnell Douglas became the main players in the newly created company. The culture of McDonnell Douglas was risk-averse and cost-cutting became the primary impetus. This course had an obvious influence on the historical commitment of Boeing as the company that made big investments into new products. It was a huge effort thus to commit to such a major project as Dreamliner. Still the advocates of Dreamliner came up with the development strategy of outsourcing that was supposed to be cheaper and faster. As Richard Aboulafia, an industry analyst with the Teal Group comments*: "Boeing didn't outsource just the manufacturing of parts; it turned over the design, the engineering, and the manufacture of entire sections of the plane to some fifty "strategic partners."* At the end Boeing itself was making only forty percent of the aircraft (Surowiecki, 2013).

The researchers from the University of California, Los Angeles, Christopher Tang and Joshua Zimmermann have made a study that shows how challenging it was for Boeing to work with so many partners (Surowiecki, 2013). Boeing had much less control to oversee the whole supply chain and therefore the chances that something could go wrong were higher. In the end, the delays were huge and the project costs went into billions over budget. *"We spent a lot more money in trying to recover than we ever would have spent if we'd tried to keep the key technologies closer to home"* confessed

Jim Albaugh, who took on the project of building the Dreamliner in 2009 (Surowiecki, 2013).

All in all, Boeing had to work with many different partners and coordinate their work. Some examples of such coordination involved communicating with different parties, trying to make them share the goals of Boeing, the way Boeing works, its organizational culture, etc. In the end, the biggest hurdle for Boeing proved being unable to create shared understanding among different parties involved in their primary goals. Each partner had its own goals and visions on how to achieve those goals and they were not aligned. Such misunderstanding led to a dramatic disaster that cost Boeing tremendously in both its reputation and finances. The main outcome from this case that has been drawn is that Boeing was able to successfully function in the market as long as it had full control of all its processes. In contrast, when the processes were outsourced and control started to diminish, Boeing failed to create shared understanding on how to achieve goals set and ensure quality standards identified among the many parties involved.

The case of the newly-built Berlin Brandenburg Airport is another good example of how the lack of shared understanding of primary goals among different organizations can lead to a dramatic failure.

1.1.2 Berlin Brandenburg Airport

„*From Berlin's benighted airport to Hamburg's hopeless concert hall, Germans are becoming concerned that their fabled international reputation for efficiency is being harmed by delays dogging major several projects around the country*“ wrote Local (2013) at the beginning of 2013, pointing to another case of trouble with shared understanding.

Originally the Berlin-Brandenburg airport was supposed to be opened in October 2011, but it was postponed due to a variety of construction delays. The next date set to June 2012 was cancelled as well. After an inspection in December 2012 which led to the discovery of massive errors in the construction of the fire protection system of the airport, it

became clear that the opening of the airport was going to be delayed until at least 2014 (Reuters, 2013). Such a delay has made costs rise from 2.8 billion euros to 4.3 billion euros and will probably rise even more (Reuters, 2013).

In 2010 Boston mentioned in his article for the Wall Street Journal that the airport's construction was delayed due to the global financial crisis, bureaucratic mistakes, as well as protests by the citizens living nearby (Boston, 2010). To support his idea, he mentioned several cases, one of which was the bankruptcy of IGK-IGR Ingenieurgesellschaft Kruck mbH. The firm was involved in outfitting the airport's interior. They also demanded the construction of the additional building for security scanners due to the regulations of the European Union prohibiting the carrying-on of beverages on-board airplanes. A correspondent from New York Times in the article also mentioned the following reasons for the delay: delays in equipment for sorting the baggage, the blueprints picturing the main cables of the airport security system had critical errors as well as major snags in the installation and test of the fire-safety equipment (Clark, 2012).

Horst Amann, the new airport's technical chief, pointed out that the fire detection system was the main reason for the delay, adding that he did not deny the possibility of destroying some parts of the newly built airport in order to resolve the problems (Local, 2013). Analysts still question why all the drawbacks of the airport went unacknowledged for so long, especially in Germany, famous for its technical efficiency. So what did exactly go wrong and how did it happen?

The review of many articles has given several clues. The desire of both managers and politicians to have the airport built as fast as possible with low costs and prestige turned out to be both unrealizable and a disaster (Roebel & Wassermann, 2012).

First of all, 10 out of 15 members of the airport's supervisory board were politicians with no expertise in construction who concentrated more on making the airport look nice rather than on ensuring the proper installation of the fire system (Eisele, 2013).

Second, instead of hiring a general contractor to coordinate the whole project, the politicians decided to oversee it themselves (Eisele, 2013). Without proper knowledge in managing big projects, this team was doomed to failure and that was one of the biggest mistakes in the airport construction.

Furthermore, the operating company of the airport decided not to hire a chief financial officer, delegating this task instead to the construction manager who at that time was an executive of HochTief (Roebel & Wassermann, 2012).

In addition, the bureaucracy of a complicated and expensive process of approvals in the building industry has contributed to turning the airport construction into a total nightmare (Eisele, 2013).

All in all, the construction of the Berlin Airport, similarly to that of the Boeing Dreamliner, illustrates the case of different parties coming together with different views on priorities and requirements in construction and design, as well as multiple values. For example, politicians wanted to capitalize on their own reputations, other parties wanted to minimize the costs by not hiring the necessary chief financial officer and contractor to coordinate the whole project, and in the end, construction organizations involved wanted to finish the project fast and cost-efficiently. Therefore, in spite of considerable effort, the Berlin Brandenburg Airport signifies a good example of the lack of shared understanding of goals in the network environment where there is no single party that would have full control over the resources and only creation of shared understanding of goals could improve coordination and goal accomplishment. Given that, it is important that all partners involved focus in the same direction, know what is required from each of them in particular, and are clear about how and work toward achieving the overarching goal.

The Berlin Brandenburg Airport and Boeing Dreamliner are only two of many countless examples of lack of shared understanding among different parties in the network environment. Airbus's $2.5 billion loss in 2006 due to the errors in cable wiring (Newton, 2006; Rothman, 2006), Stuttgart's central railway station fiasco due to long planning delays (Eisele, 2013) and the trouble-ridden construction of the Cologne underground, which was interrupted several times by accidents (Eisele, 2013) all signify the practical need to look at the concept of shared understanding in the network organizations.

This thesis serves also as an extension of a dedicated research program at the Knowledge Worker Living Lab_at the Center for Technology and Innovation Management (CeTIM) at University BW Munich and Leiden University, which focuses on the concept of coordination in network environments. Previous works include the routinization in network organizations (Sung, 2008), emerging collaboration routines in

knowledge-based organizations (Sari, Loeh, & Katzy, 2009) and technology adoption in virtual organizations (Skliris, Sari, Dutilleul, & Katzy, 2009). The outcome of this thesis is to further understanding of the network environment in which organizations have to collaborate and work toward the improvement of coordination through shared understanding creation.[1]

1.2 GOAL AND RESEARCH QUESTION

The overall goal of this dissertation is to re-conceptualize shared understanding creation in firms in the network environment and by doing this contribute to the theory of the firm. Therefore, this thesis addresses the following research question:

How do firms create shared understanding in the network environment?

1.3 EXPECTED RESULTS AND CONTRIBUTIONS

As the main scholarly contribution of this thesis I propose that shared understanding is one of the rationales for the firm. In addition to that, this research tries to expand existing limited understanding of shared understanding creation in firms in the network environment. Although there is a lot of research on what shared understanding is, most of it concentrates on shared understanding creation in the Weber (1947) type bureaucratic organizational setting, under the assumptions of agency theory (Fama & Jensen, 1983; Jensen & Meckling, 1976), which has certain limitations in the network environment.

Another theoretical contribution is the proposition of driving mechanisms that enable shared understanding creation in firms in the network environment and their intersection in a conceptual model. This research also reflects on the mechanisms for shared understanding creation discussed in previous studies and their relation to driving mechanisms in firms in the network environment.

[1] Some parts of Section 1.1 Motivation and problem statement have been prior published as part of the papers: 1. Bondar, K., Katzy, B.R. and Mason, R.M. (2012). Shared understanding in networked organizations. Proceedings of the 18th International ICE Conference on Engineering, Technology and Innovation. Munich, Germany, June, 18-20. 2. Bondar, K., Katzy, B.R. and Mason, R.M. (2013). Best service delivery through organizational goals sharing. Proceedings of the 22nd International Conference of the International Association for Management of Technology IAMOT 2013. Porto Alegre, Brazil, April, 14-18 3. Bondar, K. and Katzy, B.R. (2013). An emergent perspective on shared understanding in knowledge-based organizations. Proceedings of the 19th International ICE Conference on Engineering, Technology and Innovation. The Hague, the Netherlands, June, 24-26.

The anticipated managerial contribution is that they propose driving mechanisms for how senior managers can make sure that each organizational member is aware of organizational goals and acts in accordance to them. Concrete examples are derived from five high-tech and consulting firms. This set of mechanisms can help senior managers to balance shared understanding creation inside their firms and in the network.

1.4 RESEARCH EPISTEMOLOGY

In order to examine the relevant research methodology for this thesis, I first have to define the corresponding epistomological position. Epistemology, according to the Encyclopedia of Philosophy (1967), is a branch of philosophy that deals with the nature and scope of knowledge. It is also referred to as „theory of knowledge“ (Calori, 1998). Epistemology questions what knowledge is and how it can be obtained as well as the extent to which any subject can be known.

Modern research is mostly dominated by two philosophical paradigms: positivism and constructivism. Positivistic research states that knowledge is objectively knowable and allows theoretical statements in theories of science (Tacconi, 1998). Positivistic research also aims to produce an undeniable truth as the outcome of the emperical tests. Priori hypotheses are tested using experiments where the environment is carefully controlled (Audi, 2000). The observer in positivistic research does not interact with the subject of the study. Thus it is adequate when the phenomenon being studied is very clear. This paradigm was initially used to refer to physical science in general and physics in particular (Beed, 1991).

In contrast to positivism, constructivism states that knowledge is only subjectively known (Burrel & Morgan, 1979). It also assumes that the observer and the object studied are one entity and that knowledge is gained through grounded theory building (Berger & Luckmann, 1967). Constructivism mostly focuses on qualitative data collection. The constructivism approach is useful in the context of innovation, theory building and development of hypotheses. According to Katzy and Dissel (2004) constructivism is applied when there is no clear boundary between the phenomenon under study and the research object or when an undeniable truth can be expected.

1.5 RESEARCH METHODOLOGY

The research of my thesis is taking a constructivist epistemological stance in order to understand and analyze shared understanding creation in network organizations.

In order to choose and design the research plan that would fit into the research question, first the question of how the reality could be understood should be asked. Due to the fact that shared understanding creation in firms in the network environment is a phenomenon that still has to be explored, the research design is going to be explorative in nature. The researcher is learning from the interviews conducted in multiple settings and works toward the building of a new theory based on interviews and other supporting materials triangulation.

The research design of this thesis incorporates several steps (Figure 1) that lead the researcher to robust conclusions. First, I define the initial constructs based on theoretical and practical relevance and discuss them with senior researchers. These constructs lead to the research question. Then I select the relevant theory and choose qualitative research in order to meet the research objectives. Next, I develop the data collection method and select the empirical sample. Afterwards, I perform the data collection and develop different constructs. Finally, I do a cross-interview analysis, which leads to the extraction and refinement of the emergent patterns.

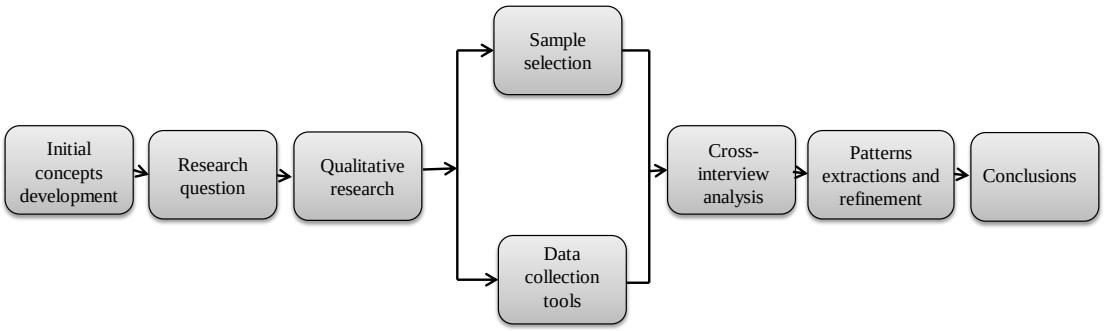

Figure 1. Research method

1.6 DISSERTATION STRUCTURE

In the introduction chapter I provide a motivation for the research, research objectives, question and main contributions of this PhD thesis. I also include research methodology construction in this chapter.

Chapter 2 consists of the literature review of the theory of the firm field. First I provide the literature review of the theory of the firm and a variety of answers as to why firms exist. This is followed by the discussion of the main opportunities and challenges presented to the theory of the firm by the network environment and so-called 'digital natives' (young people whose activity online is second-nature), which presents us with

the question of whether we still need the firm or whether a network is enough. In other words, I ask the question of what rationale there is for the firm.

In Chapter 3 I provide a description of the conducted pre-study, wherein senior managers were asked about their attitudes to the question why firms exist. The outcome of the pre-study is that shared understanding is proposed as one of the rationales for the firm in the network economy.

In Chapter 4, I give an overview of the shared understanding field. At the same time I provide different reasons for shared understanding revision from a theoretical perspective. This is followed by an extensive review of a variety of mechanisms to create shared understanding that I summarize into a model, which is going to then be observed in firms in the network environment. Based on the outcomes of theoretical reflections, I propose to adopt an explorative approach to understand and gain more insights on how shared understanding is created in firms in the network environment.

I describe the empirical part of the dissertation in Chapter 5. In this chapter I provide main characteristics of the qualitative approach used, describe ways that shared understanding can be studied, and finally what kind of data was collected and how it was analyzed. Then I show the results of interviews and other supporting materials from five firms in Chapter 6 of this thesis.

In Chapter 7 I provide analysis and discussion of the interview results in order to understand what shared understanding in firms in the network environment is and identify driving mechanisms and conditions for its creation. I then contrast the findings with the theoretical discussion of Chapter 4.

In the last chapter of the dissertation I reflect upon the initial research questions together with academic and practical contributions of the thesis. I present limitations as well as a road map for future research afterwards.

Figure 2 illustrates all the steps described.

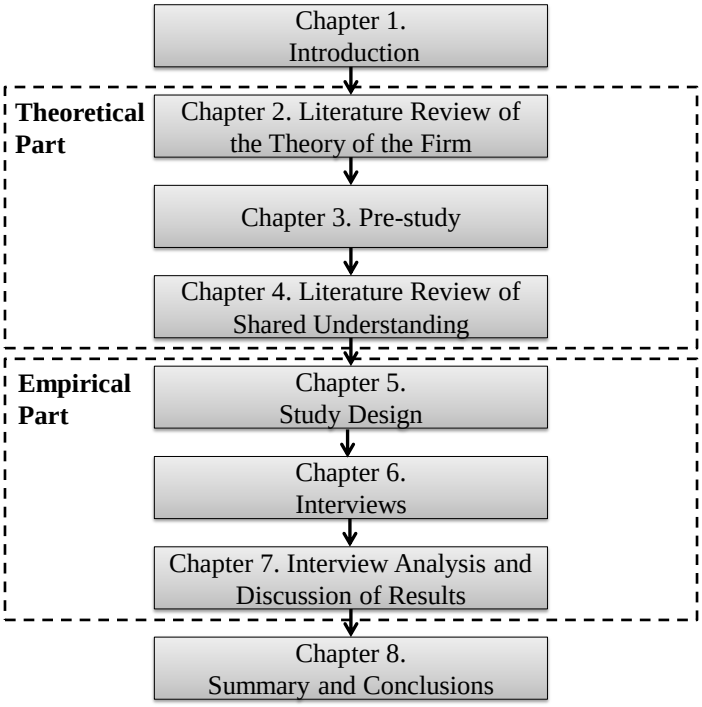

Figure 2. Dissertation outline

2. LITERATURE REVIEW OF THE THEORY OF THE FIRM

2.1 INTRODUCTION

In the introduction section I would like to give some reasoning for looking at different theories relevant to my research, their relationship to each other, as well as how they contribute to the research question posed in my thesis.

Theory of the firm aims to answer one of the fundamental questions in the economic theory that is why firms exist. Several answers have been given by researchers: to control resources (agency theory), to coordinate resources (coordination theory), to create resource monopoly (resource-based view). At the same time, with the development of the actor-network theory the construct of the firm has begun to fall to the wayside.

Moreover, with the rise of the network economy, I come to the conclusion that most of the answers to the question as to why firms exist, have undergone significant changes. The challenges presented by the network environment, by technology and by digital natives, pose the question of whether we still need the firm. What rationale there is for the firm in the network economy is my question of interest.

All in all, I explore different theories in order to see what I can learn from them and then I go back to the theory of the firm and what the rationale there is for the firm in the network environment.

2.2 THEORY OF THE FIRM

According to the Oxford English Dictionary (1989), the firm is defined as a business concern especially one involving a partnership of two or more people. One of the most important questions in the economic theory asked by many researchers as well as practitioners is why firms exist. Different answers have been given to this question. Penrose (1959), for example, proposes that firms exist in order to make profit. In line with this answer Cyert and March (1963) as well as Horowitz (1970) state that firms exist in order to maximize net revenues. In other words, all the firms are aiming for two things: profit and growth (Penrose, 1959) and the main aim of any entrepreneur is long-term survival.

The firm is viewed as a collection of resources that is used in accordance with administrative decisions (Penrose, 1959). Therefore, the general purpose of the firm is

to use both internal and external resources properly to produce and sell a variety of goods for profit maximization. For this reason the theory of the firm tries to explain how resources are allocated by the price system (Cyert & March, 1963). Hierarchical structures provide full control over resources. Having full control over the resources entails better coordination and allocation of them. This leads to a competitive advantage and thus brings profit maximization (Cyert & March, 1963).

According to Cyert and March (1963), the firm concentrates on three factors: the determination of output and price, the allocation of internal resources (their efficient usage) and innovation. The more resources it possesses, the more information it gets and it can reduce uncertainty and expand (Penrose, 1959).

As information is not given, but must be obtained, Horowitz (1970) poses the question if it is possible to get all the information needed to maximize profit and if the costs spent on obtaining this information are justifiable. He concludes that this is not possible, and therefore it is more important to concentrate on the proper coordination of the resources rather than on trying to obtain all the information. When the changes are made to coordinate processes, relevant characteristics of the firm theoretically change (Kaldor in Penrose, 1959), and the role of a manager as a coordinator who sets the 'tone' for the whole firm becomes vital. Effective management requires a lot of knowledge in the behavior of customers, suppliers, competitors, government regulations, labor units, etc. (Cyert & March, 1963). At the same time, it requires adaptation to the influences of the external environment and adjustment to the short- and long-term conditions reflected in the day-to-day and long-term decisions and policies. Over time, the firm adapts its behavior, and changes goals and priorities based on the experience gained (Cyert & March, 1963). For this reason, the search in the firm is always problem-oriented and becomes visible when some of its goals fail or are predicted to fail in the near future.

Still, the working environment that is challenged by New Ways of Work may require a different allocation of resources that is not yet depicted in the theory and will be discussed later in this thesis. Examining the opportunities and challenges brought to coordination theory by the network environment may shed more light on how firms can function successfully and make profit in the market in New Ways of Work. It can also help to understand whether the firm is needed for resource coordination or whether all coordination can be done through the network. Do we still need stable firm structures or can everything be coordinated via Facebook? In order to answer this question first it is

necessary to have a closer look at different answers proposed by the researchers as to why firms exist.[2]

2.2.1 Resource control

Control over resources is proposed as one of the answers as to why firms exist.

Control has been an important topic of organizational theory since the work of Taylor (1911), who argues that a scientific approach to coordination reduces waste of effort that is not aligned toward a common purpose. In his time large firms emerged that had a single organization within defined boundaries. Supervision and pay incentives within the hierarchy were the natural and economic ways of control over organizational members. Later, agency theory (Alchian & Demsetz, 1972) acknowledged the fact that organizational members maintain their own interests and that control of the hierarchy is limited.

Developed in the information economics literature, agency theory (Fama & Jensen, 1983; Jensen & Meckling, 1976) deals with the specific type of the organizational problem, agency (Eisenhardt, 1988). In principle, agency theory describes the relationships between one party called principal and another party called agent, where the latter has been delegated to perform the work. The relationships between a principal and an agent are described using the metaphor of a contract (Keeley, 1980).

Eisenhardt (1989b) acknowledges that both principals and agents have different goals and attitudes towards risk. To avoid the opportunistic behavior of the agents therefore, principals use different kinds of incentives, e. g., long-term compensation which is complementary to the basic salary (Donaldson & Davis, 1991) as well as information systems, which provide access to the information needed. As a result, agency theory emphasizes the treatment of information as a purchasable commodity (Eisenhardt, 1989b) that has its price and gives intended power and control over resources.

To ensure the avoidance of the agents‘ opportunistic behavior, both researchers and practitioners began to search for control mechanisms necessary to make organizational goals fit with the efforts of the individuals involved (Kirsch, 1996). They came up with two broad categories of control described in organizational literature: formal and

[2] Section 2.2 Theory of the firm has been prior published as part of the paper: Bondar, K. and Katzy, B.R. (2013). An emergent perspective on shared understanding in knowledge-based organizations. Proceedings of the 19th International ICE Conference on Engineering, Technology and Innovation. The Hague, the Netherlands, June, 24-26.

informal (Jaworski, 1988; Ouchi, 1979). Formal control mechanisms include control of behavior and outcome control (Ouchi, 1979; Thompson, 1967). They are viewed as a performance evaluation strategy, where the performed behavior or the produced outcome can be measured, evaluated and rewarded afterwards (Eisenhardt, 1985). The same idea is also supported by agency theorists who identify behavior-oriented contracts (e.g., salary, hierarchical governance) and outcome-oriented contracts (e.g., commissions, stock options, etc.) (Eisenhardt, 1989b).

Informal control mechanisms are also divided into two sections: clan control (Ouchi, 1979) and self-control, and are based on social or people-oriented strategies (Eisenhardt, 1985; Jaworski, 1988). Clan control, on the one hand, is exercised through any group of individuals who have shared values, believes, and approaches to solving different problems within the clan. Some examples of clans include labor unions or the representatives with the same expertise. Self-control, on the other hand, is performed when individuals monitor their own actions. They independently set their own goals, control the work being done and reward themselves afterwards based on the produced results. The idea of self-control is also in line with the definition of self-management proposed by Manz, Mossholder, & Luthans (1987). The main difference between the two types of informal control is the following. In clan control, setting the goals, checking the outcome, and rewarding or imposing sanctions afterwards is monitored by the group or clan, whereas in self-control, this is a function of each individual. [3]

2.2.2 Resource coordination

Resource coordination comes as a next answer as to why firms exist. Theory of the firm as stated above proposes that the firm has to concentrate on an allocation of internal resources and their efficient usage in order to make profit and successfully function in the market. This is achieved through proper resource coordination. In order for the firm to perform, certain coordinating mechanisms need to be in place. I define coordination according to Malone & Crowston (1994), as the process of managing dependencies among activities. Such coordination implies identification of common dependencies and their mechanisms across a range of organizational settings. The development of

[3] Section 2.2.1 Resource control has been prior published as part of the paper: Bondar, K., Katzy, B.R. and Mason, R.M. (2012). Agency and control in New Ways of Work. Proceedings of the 21st International Conference of the International Association for Management of Technology IAMOT 2012. Hsinchu, Taiwan, March, 18-22.

coordination mechanisms involves a variety of factors including communication, collective sense-making, shared understanding, and decision making (Britton, Wright, & Ball, 2000; Crowston & Kammerer, 1998). For example, if a certain task involving a certain expertise needs to be accomplished, a so-called task-actor dependency, then it is necessary to identify an actor that possesses such expertise and assign a task to him/her.
As organizational members start building their own networks when interacting across organizational boundaries, coordination across and between boundaries comes as an important measure for achieving corporate goals and market success. When talking about a network, I identify it as a boundary spanning a process (Zabusky & Barley, 1996), wherein differences and dependencies arise and lead to the search for new ways of managing boundaries (Carlile, 2002). I suppose that differences in boundary spanning, on one hand, come from a variety of expertise and backgrounds which different groups or individuals possess. Dependences, on the other hand, are a result of positions that individuals hold. They can either be explained by power relations (Emerson, 1962) or interdependencies of different actors or elements (Thompson, 1967). All in all, the more differences and dependences emerge, the more challenging it becomes to manage the boundaries. Several researchers (Ancona, 1993; Ancona & Caldwell, 1992; Gladstein, 1984) have also noted the necessity for managing 'boundary-spanning' relationships in order to maintain team and organizational effectiveness. Under such conditions, coordination proves to be an essential step.[4]

2.2.3 Resource monopoly

In recent years Resource-based view (RBV) has become an influential framework for understanding why firms exist. Rooted in the work of Penrose (1959), the RBV conceptualizes the firm as a heterogeneous entity consisting of a bundle of idiosyncratic resources. Wernerfelt (1984) defines resources as "tangible and intangible assets, which are tied semi-permanently to the firm" (p. 172). Barney (1991) for his part, proposes that resources are "all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by the firm" (p.101). According to Rumelt (1984) and Wernerfelt (1984) the firm's profitability is directly related to the nature of

[4] Section 2.2.2 Resource coordination has been revised as part of the paper: Bondar, K., Katzy, B.R. and Mason, R.M. (2012). Agency and control in New Ways of Work. Proceedings of the 21st International Conference of the International Association for Management of Technology IAMOT 2012. Hsinchu, Taiwan, March, 18-22.

resources, their internal development and a variety of methods of resource employment. The firm can thus develop resource-position barriers or isolating mechanisms that secure economic rents. Dierickx & Cool (1989) have proposed a more dynamic perspective stating that it is not the resource flow but rather the accumulated stock of resources that matters and only those resources that are inimitable, non-tradable and non-substitutable are important for competitive advantage. By linking the nature of resources to firm's competitive advantage, the RBV proposes that resources can generate Ricardian rents or quasi-rents (Conner, 1991; Peteraf, 1993). In order to explain this phenomenon, Barney (1991) has offered a framework identifying main characteristics of resources needed for gaining competitive advantage. They are value, rarity, imperfect imitability and imperfect substitutability.

The RBV does not only consider firm's resources but also firm's ability to coordinate, deploy and change the resource base. This ability is referred to as firm's dynamic capabilities (Eisenhardt & Martin, 2000; Teece, Pisano, & Shuen, 1997; Zollo & Winter, 2002). Dynamic capabilities are defined as the "ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece et al., 1997), p. 516. Dynamic capabilities are intertwined with other organizational routines and aim to be continually adapted and reconfigured while considering existing opportunities as well as the initial resource base (Strehle, Katzy, & Davila, 2010).

2.3 SOCIAL SYSTEMS AND NETWORKS

2.3.1 Network view of organizational forms

According to the Oxford English Dictionary (1989) organization is defined as an organized group of people with a particular purpose. A terminology shift from firm to organization is seen. Where the purpose is predominantly economic profit maximization, the term firm is more appropriate. Changing to the term organization indicates that social issues of people collaborating in a group have gained in importance. There is no sharp line of distinction between a firm and an organization. This has already been seen in the discussion of dynamic capabilities, an economic strategic term, which however explicitly refers to the impact of collaboration routines on economic success.

The organizational form, according to Fulk & DeSanctis (1999), is viewed as "the structural features or patterns that are shared among many organizations". Classical

organizational forms include markets verses hierarchies that are viewed in terms of efficiency (Williamson, 1975). They are also known as transaction cost economics. Markets are more preferable when transactions are non-repetitive, straightforward and do not require money, time or energy. On contrary, hierarchies are preferred when transactions are repetitive, uncertain and require money, time or energy. The markets verses hierarchies view puts economic exchanges along a continuum from market to hierarchy (Williamson, 1981). At the same time Powell (1990) argues that this approach is too mechanistic and is not able to capture "complex realities" of economic exchanges. He also stresses that the market verses hierarchy view ignores reciprocity and collaboration in economic exchanges.

Instead, the network organizational form is proposed as an alternative to markets or hierarchies (Miles & Snow, 1992; Powell, 1990). The network view was developed and became widespread in the 1970s by Harrison White and his affiliates, mathematically inclined sociologists, to produce a richer network view for studying social structures that could be applicable to different areas (Nohria, 1992). Today the network view is no longer restricted to a group of sociologists, but can be found in other disciplines as well. The network organizational form assumes that economic actions are embedded in social relations (Granovetter, 1985). DeSanctis & Poole (1997) state that the network organizational form emphasizes the dynamism and cooperative nature of relationships across boundaries and is applicable both within and across organizational boundaries. Nohria (1992) explains that all organizations are social networks and therefore have to be addressed and analyzed as such. According to Laumann, Galaskiewicz & Mardsen (1978), p. 458 a social network is defined as "a set of nodes linked by a set of social relationships of a specified type". At the same time it is important to note that all organizations are embedded in social structures. A network thus is not a distinct form of organizing, but a defining attribute of any organization.

Different names are given to network organizations such as virtual organizations (Markus, Manville, & Agres, 2000), horizontal organization (Castells, 1996), post-bureaucratic (Heydebrand, 1989), hybrid organizations (Powell, 1987), dynamic (Miles & Snow, 1986) or post-industrial networks (Huber, 1984). Examples of network organizations include professional services (Eccles & Crane, 1988), entrepreneurial firms (Nohria, 1992), the biotechnology industry (Powell & Brantley, 1992) or strategic alliances (e.g., joint ventures, (Gulati, 1998)).

The notion of an organization as a network of relations can be applicable to any level of analysis ranging from a small group, organizational subunit to the organization of a world-wide system (Nohria, 1992). The structure of any organization should also be seen in terms of a variety of relations and their combinations. In keeping with this argument, the environment in which an organization is operating, is viewed as an "inter-organizational field" (DiMaggio & Powell, 1983), p.148), which unites all organizations together. In other words, an organization's environment is seen as a network of other organizations (Nohria, 1992) and analyzed as a pattern of relations among different organizations.

All in all, the main characteristics of an organization from a network perspective include (1) communication that goes in both directions; (2) horizontal reporting relations; (3) emphasis on relations rather than transactions; (4) cooperative relations involving different parties and extending beyond organizational boundaries (Miles & Snow, 1986).

In summary, three key coordination mechanisms can be defined as follows. Price serves as a primary coordinating mechanism in the market, authority does it in hierarchy, and trust generated in the community is what does the coordinating in the network.

In fact, the concept of a network organization is not new. Burns & Stalker (1961) stated that in unstable environments, an organization of complex network ties is more effective that any bureaucratic structure. What comes new here is that technology and young people, digital natives, create new environmental conditions, in which organizations have to operate. It is therefore now important to look at the foundations of the Actor-network theory and the new environment created by digital natives and technology to see what is actually changing.

2.3.2 Actor-network theory – missing construct of the firm

Since organizational members have started having more than one exclusive link to their hierarchical superior, simple hierarchical organograms have begun to fail to depict organizational reality. A graphical description of the multiple vertical and horizontal linkages rather resembles a web or network with each member as an actor that is engaged in several concurrent relationships. Actor-network theory (ANT) (Callon, 1986; Law, 1992) proposes a theoretical shift from any form of centrality to actors who are initially autonomous, whose role is defined by the network they are engaged with (Somerville, 1999). Actor-network theory perceives actors as active entities where

everyone has a certain degree of influence on the others (Somerville, 1999). In this view, macro-actors may not be more powerful than micro-actors (Wise, 1997), which is consistent with observations in innovation research in which macro-actors, e.g. corporations or institutions, are strongly influenced by micro-actors like individual organizational members such as promoters or technology. ANT sheds light on an actor because of its particular role in the network, but not because of its size. Even more general, ANT does not only include human actors but artifacts alike, machines or technology, which can have the role of actors in the network (Stanforth, 2006). ANT is concerned with studying the mechanisms constituting the networks made up of human and non-human actors (Tatnall & Gilding, 1999), thus exploring the ways in which the networks are composed, maintained and become stable over time. It also investigates how actors influence other actors and change their behavior, vision and motivation (Latour, 1996).

Law (1992) explains that organizations, agents, technological artifacts and society are all interrelated actors in diversified networks, from which I conclude that the research focus from the ANT perspective should concentrate not on a specific actor or artifact, but on a complex phenomenon of their interactions. Latour (1987) similarly wrote that technology and science have to be observed in action and that researchers have to place more attention on studying the dynamics of their interactions rather than the stability of their relationships.

Combining diversified actors in a network calls for a process of stabilization of their relations, or coordination. As a result, coordinating the expectations of heterogeneous groups in the network was one of the new ideas brought about by ANT into the academic field (Callon, 1986). ANT indicates that coordination of the interests of different actors in the network involves the translation of those interests into a common one (Callon, 1986). In other words, the process of translation shows how different parties are interconnected in the network toward a shared goal. As a consequence, it has become worthwhile to study how different actors are interacting (Akrich & Latour, 1992).

Latour (1987) highlights that ANT is aiming to trace a new association, meaning that all the social (e.g., existing and new networks, coalitions, communication patterns, etc.) and non-social (e.g., decision-making processes, work plans, computer networks, etc.) interactions have to be explained, and not assumed (Bryson, Crosby, & Bryson, 2009).

What looks complex in comparison to a traditional organizational chart is meant to add necessary precision to the understanding of associations that include more than a single link between two nodes in a network. Newly built links consist of shared understandings, agreements, responses, or commitments.[5]

2.4 CHALLENGES FROM THE NETWORK ECONOMY

2.4.1 Challenge from digital natives

Apart from the networks, new organizational members have also created the new working environment that questions why firms exist.

Young people who have never seen or cannot even imagine their lives without the usage of modern technological tools and the exciting other-worldly existence in cyberspace have been proudly named 'digital natives' (Prensky, 2001) or the 'net generation' (Tapscott, 1998). This new phenomenal group born between 1978 and 1994 (Tapscott, 2009) takes technology 'for granted' (Tapscott, 1998) and comprises a league of sophisticated consumers, for whom internet, mobile phones, iPods, laptops and video cameras are nothing more than the tools of everyday life. Howe and Strauss (2000) have called this generation the 'millennials' in order to distinguish it from the previous ones and have attributed it such characteristics as team-orientation, optimism and talent in technology usage. Other researchers (Frand, 2000; Long, 2005; Prensky, 2001; Tapscott, 1999) have also observed that digital natives are active experiential learners who enjoy multitasking and constant networking. For them the new digital language is the mother tongue (Long, 2005), so that the 'digital immigrants' (Prensky, 2001) will have to learn to enjoy the benefits of the 21st digital century. As Prensky (2001) emphasizes, digital immigrants usually do not have as much appreciation for the new skills brought by the digital natives, but will need to gain them in order to engage the young people of today – those young people whose social lives cannot be separated from instant messaging, e-mailing and social networking via the world-wide web (Dworschak, 2010).

Digital natives have grown up, have entered into organizations and do not always adapt to the working modes exercised by the baby boomers (Barzilai-Nahon & Mason, 2010).

[5] Section 2.3.2 Actor-network theory – missing construct of the firm has been revised as part of the paper: Bondar, K., Katzy, B.R. and Mason, R.M. (2012). Shared understanding in networked organizations. Proceedings of the 18th International ICE Conference on Engineering, Technology and Innovation. Munich, Germany, June, 18-20.

They are no longer satisfied with routine jobs, have no loyalty to expect loyalty in return, and see hierarchy as an old-fashioned model used before the digital age. This enormous army of professionals has established new types of knowledge workers, e. g. nomadic workers who are flexible, mobile and can work from anywhere or problem-solvers who contribute special expertise to organizations, and, therefore, demand new management styles and organizational forms. As Gratton (2010) has wisely noted, in 10 years' time, the astronomical online sphere of interactions engaging more than 9 billion people could shift the balance of power from within organizations towards the new rich micro-entrepreneurial ecosystems dominating their value chains.

The new skills and practices brought on by digital natives into the world of the 21st century have had a great influence on all spheres of life. That this influence would extend to the working environment is a logical consequence. As Prensky (2004) and Long (2005) stress, new behavior skills and new technology used by digital natives often bring about significant change to the organizations that employ them. Gratton (2010) predicts that the change is heading towards the workplace. At the same time, the lasting change which has been brought about by the economic meltdown has already taken hold.

The only question is how we respond to it and whether the current working environment is properly equipped to meet the needs of these new employees (Bennett, Maton, & Kervin, 2008).

The introduction of technology into the work place has not simply improved productivity, but it has also brought with it the question of how to reorganize the current organizational structure in order to meet the expectations of the technologically savvy generation (Prensky, 2004) whose learning preferences and styles differ dramatically from the ones of their predecessors (Bennett et al., 2008). It is simple to argue that smart executives have to start thinking properly about offering something new and more valuable than an eight-hour job to the new generation of young organizational members. The new world of work is already there. Hence, some executives realizing the fact that the working environment is receiving more and more 'millennials' have already started to deal with those issues (Barzilai-Nahon & Mason, 2010) and introduce new practices (unified communication, virtual teams and projects) aimed at satisfying the needs of these newcomers. The only solution for today's organizational leaders is to start speaking the natives' language and to adhere to a completely new technologically-

driven professional development agenda which demands organizational restructuring as well as an 'entirely new worker identity' (McWilliam, 2002) p. 292).

2.4.2 Challenge for resource control and coordination

Moving from a traditional hierarchical view to a network view has brought new opportunities and challenges to the existing mechanisms of control and coordination. This, for its part, has made both researchers and practitioners wonder how coordination mechanisms should look in order to be able to align the efforts of organizational members with organizational goals and whether the firm is actually needed for resource coordination.

It is true that control of behavior has started to diminish and the prevailing coordinating mechanisms have started to use trust, result-orientation, participation and emerging technologies as pillars to rely upon. Looking at coordination mechanisms through the lens of actor-network theory helps to understand why mechanisms discussed below (trust and result-orientation, participatory decision-making, career opportunities and technology for coordination) have emerged.

2.4.2.1 Trust and result-orientation

Building relations based on trust serves as an influential governance mechanism to encourage organizational members to make human capital investments in the organizations they work for (Wang, He, & Mahoney, 2009). Previous research has found that building trustworthiness through different organizational practices helps position the firm as a caring employer (Barney & Hansen, 1994; Zaheer, McEvily, & Perrone, 1998), which wins over the commitment of organizational members to their organizations in exchange for trust (Blau, 1964; Mowday, Porter, & Steers, 1982). Sundaramurthy & Lewis (2003) stress that collaborative approaches in the organization-member relationship encourage organizational members to become collectively oriented and intrinsically motivated, encouraging behavior consistent with organizational goals. Similarly, Therkelsen & Fiebich (2003) and Vandenberghe et al. (2007) conclude that the extent to which organizational members are valued and trusted in an organization has a direct effect on the commitment they have to it.

Not only trust but the perception of the openness that the supervisor shows to the subordinates evidences the degree of commitment organizational members would be eager to give to their organizations (Therkelsen & Fiebich, 2003). Johlke & Duhan

(2000) have actually concluded that the job satisfaction of the subordinates can be increased by the frequency of the communication with the supervisor.

2.4.2.2 Participatory decision-making

Actor-network theory suggests that there is no hierarchy (Callon & Latour, 1981) where networks are characterized as arrangements of space with no defined center and thus no hierarchical relations. Interpreting Callon's (1986) notion of translation, it is possible to come to the conclusion that power is viewed as a continually-negotiated relationship. This is vividly illustrated by Wise (1997) providing an example of IBM being a macro-actor that at the same time does not have more power than micro-actors for the reason that it has to act through its delegates. Those in power are not the ones who hold it. Instead it is the ones who practically define or redefine concepts and visions that can hold everything and everyone together (Stanforth, 2006). Thus, power is represented by the consequence of enrolling, convincing, maintaining, and other network-building activities.

Recognizing this new attribution of power in the network, some organizations have already started to exercise power-sharing activities in terms of involving organizational members in decision-making processes. Therkelsen & Fiebich (2003) emphasize that involving organizational members is a good business practice that helps to increase organizational members‘ hedonic intrinsic form of motivation (Gottschalg & Zollo, 2007). In fact, Lind, Kanfer, & Early (1990) have found that having an opportunity for organizational members to express their voice tends to increase their perception as being fairly treated as well as having input or even control in a decision. Monge & Miller (1988) have confirmed that participation has a positive effect on the level of commitment and job involvement. Finally, the meta-analysis of Anderson, Tolson, Fields, & Thacker (1990) has shown the positive correlation between organizational members' job satisfaction and a participative work environment.

2.4.2.3 Career opportunities

Several studies (Gibbons, 1998; Holmstrom & Milgrom, 1991, 1994; Kerr, 1975) have concluded that extrinsic motivation is directly influenced by the incentive systems provided by organizations that clearly specify rewards for behavior conducted. Correspondingly, Ghosal & Moran (1996) stress that tight control mechanisms together with high-powered rewards can lead to a higher degree of organizational members‘ opportunistic behavior. Therkelsen & Fiebich (Therkelsen & Fiebich, 2003) in their

study show an example of Loyalty Path Associates, LLC, which identifies four areas for increasing the loyalty of organizational members to their organization. Apart from engaging organizational members in understanding corporate goals and creating a positive working environment, suggestions include helping organizational members to set and achieve measurable goals as well as to increase the degree of both formal and informal feedback.

As a result, job design, system of rewards, and socialization regimes (Kerr & Jackofsky, 1989) have become interrelated mechanisms that can be used for aligning corporate and individual objectives (Barzilai-Nahon & Mason, 2010; Mason, 2010)

2.4.2.4 Technology for coordination

ANT suggests that in order to streamline the interests of different actors in the network, it is necessary to translate those interests into a common one in adopting and using technology. As organizational processes become more and more embedded in a variety of information systems (Ba, Stallaert, & Whinston, 2001), it is important to use those systems for knowledge sharing and coordination inside the organization.

Achieving effective knowledge sharing inside organizations has been a research focus of organizational literature for over 20 years. For example, Byrd (1992) pointed out difficulties occurring in knowledge acquisition while implementing knowledge-based systems. This can be due to the differences in the information distribution among users and the divergence of individual interests from the corporate objectives (Ba et al., 2001). For this reason, it is important to communicate obvious benefits of the technology usage to organizational members as well as to provide incentives particularly for those knowledge-contributors to use those systems (Davenport & Prusak, 1998). When properly used, such systems help organizations achieve better knowledge management and reduce coordination efforts. Such organizations as Cort Business Services, for example, use social media for workflow applications (Annabi & McGann, 2013) while Talus uses it for project collaboration and relationship building (O'Neill, 2010).[6]

[6] Section 2.4.2 Challenge for resource control and coordination has been prior published as part of the paper: Bondar, K., Katzy, B.R. and Mason, R.M. (2012). Agency and control in New Ways of Work. Proceedings of the 21st International Conference of the International Association for Management of Technology IAMOT 2012. Hsinchu, Taiwan, March, 18-22.

2.4.3 Rationale for the firm in the network economy

Summarizing the ideas stated above, it becomes clear that resource control is diminishing, coordination in the network is becoming an onerous task and actor-network theory is lost in the construct of the firm. Why do we still need firms then? *What is the rationale for the firm in the network economy?*

3. PRE-STUDY

In a pre-stud in cooperation with the Swiss Productivity Foundation, senior executives were interviewed on their perception of the future role of the firm, on New Ways of Work and on the integration of digital natives into their firms. Members of the senior workforce perceive a fundamental difference between the newcomers and those who have been socialized in traditional working environments. Executives find that they are expected to lead emerging 'new' firms and are wondering what this means for the future of their firms.

This is especially true for Switzerland, which has the highest global IT investment per person stated by European Innovation Scoreboard (2009) and represents a more advanced knowledge and service economy than most other countries according to OECD (2010). In order to explore the perceived change and to try and find out what rationale there is for the firm in the network environment, 24 senior executives, Chief Executive Officers (CEO), Chief Information Officers (CIO) and Human Resource (HR) directors of 18 Swiss firms were interviewed. The sample included such sectors as government, telecommunications, education, healthcare, banking, consultancy, and tourism (Appendix 1). The perceptions of the emerging changes were investigated by confronting senior managers with a hypothetical NWOW work scenario, in which a CIO whose project managers are reporting on the behavioral norms and work habits of the younger employees is considering his next steps (Barzilai-Nahon & Mason, 2010).

Somewhat surprisingly, respondents' spontaneous reactions almost unanimously show that the discussion has left the information technology departments, development labs, and operational units, and has reached the board level:

… It's exactly what is happening to us…

… For me, it makes absolute sense. I think the scenario is quite real made…

…The scenario is pretty contemporary … you show in the scenario something that many companies, particularly global ones, experience

… Yes, I have recognized some of the new working patterns described in this document. I can also transfer or apply them to our circumstances here …

Responses reveal that both innovative technologies and changed individual behavior were rather familiar and acknowledged facts to the respondents. The executives interviewed clearly had moved on in their thinking that these behaviors and norms were not limited to operational tensions requiring routine management action; those

interviewed at the strategic management level at this point are concerned with the impact on the organization and business. They noted:

… The way of working and how younger people and dedicated people work and prefer to work has had an impact on the physical work environment …

… We not only need to adapt to the young audience because of our employees, we also need to adapt because of our customers...so if you want to target young people we need to use the tools they use…we have to use also Facebook and all these in our daily work …

In other words, the issues associated with the new technologies and demographics are no longer seen as an HR department's or line managers' responsibility, but as strategic issues – New Ways of Work require the attention of senior managers.

As NWOW are still emerging and their final structures remain to be defined, leadership and organizations are not confined to adapting to dominant industry structures, but can shape future structures through their own actions. In the short term, firms can become attractive employers through active engagement in NWOW.

What was noted as well is that senior managers recognize that firms are becoming more networked than before and organizational leaders are having to deal with this new challenge:

… The use of all of these new forms is important and I should say people establish their own networks out of the company, within the company, but this is not basically organized. That is done in individual ways. I mean people have this urge and this need to network and to stay on top of the development in their fields…

As a result senior leaders acknowledge the importance of shared understanding creation among all organizational members whose efforts have to be aligned with organizational objectives. At the same time, shared understanding creation requires new mechanisms to appeal to the demands of the new generation of the knowledge workers:

… It needs a different leadership style. It needs a culture of trust and you must lead goal-oriented. ... ultimately the results are important, and not on the input or control, or how it was done, but the result must be there…

…It is simply the cooperation which became much more intense, and I think it is related to the possibilities which emerged; communication channels but also these collaboration tools. It's just everything on the net, you work collectively, the knowledge is gained from different groups...

Senior managers emphasize that even though the young generation may have the same values amongst each other, they are not aligned with organizational goals and objectives. Members of the senior workforce reflect on how to create shared understanding of organizational goals among digital natives using the mechanisms appealing to them. The interviewed CEOs reveal that control does not give an intended power any longer. At the same time hierarchical structures seem to be outmoded. Other CEOs have even started to question what their roles in organizations are when teams have taken on roles self-coordinating and autonomous.

The findings of the pre-study indicate that firms are less able to control their resources, yet have to concentrate on creating shared understanding of organizational goals among human resources to achieve their alignment and to increase performance. At the same time, mechanisms of shared understanding creation need to be revised and adjusted based on the needs and demands of the new generation of knowledge-workers. Senior managers agree that the new working environment has brought new challenges to firms' survival. Therefore firms that are able to be more appealing to the new workforce will prevail.

All in all, based on the results of the pre-study I propose shared understanding as one of the rationales for why we still need firms in the network environment. At the same time mechanisms for its creation have to be revisited and adjusted based on opportunities and challenges posed by New Ways of Work.[7]

[7] Chapter 3 Pre-Study has been revised as part of the paper: Bondar, K., Katzy, B.R. and Mason, R.M. (2011). New Worlds of Work - competitive implications. Proceedings of the 20th International Conference of the International Association for Management of Technology IAMOT 2011. Miami Beach, USA, April, 10-14.

4. LITERATURE REVIEW ON SHARED UNDERSTANDING

4.1 INTRODUCTION

Creation of shared understanding is proposed as one of the rationales for firms' existence. Looking at the foundations of shared understanding, it becomes clear that the traditional assumption of shared understanding is that it can only occur inside firms' boundaries by exercising a variety of control mechanisms suggested by agency theory. When the boundaries of the firms open and control diminishes, the question comes up whether there can be shared understanding in the network environment. Actor-network theory questions dimensions of shared understanding and calls for the re-conceptualization of shared understanding in networks without providing a construct for boundaries such as an organization or a firm.

The loss of control over knowledge assets, coupled with the challenges presented by actor-network theory signified that shared understanding needs to be revised. Young people, the so-called digital natives (Prensky, 2001) come into organizations nowadays and exhibit new working preferences than the generation before. They propose the whole organizational restructuring before the senior managers who have to make sure that their efforts and organizational goals are shared.

In addition, new technological tools, which according to some senior managers create shared understanding by default, bring both opportunities and challenges to shared understanding creation. Several authors emphasize that technology and new social media (1) provide widespread and flexible information flows (Sutton, Palen, & Shklovski, 2008), (2) enable virtual information sharing (Yates & Paquette, 2010), and (3) help to utilize organizational network effects (Annabi & McGann, 2013), and thus have clear potential to help organizations improve shared understanding. Organizations such as IBM and Ford serve as prime examples of the strategic importance of new social media (Annabi & McGann, 2013). Still, technology and new social media are tools that require careful planning and execution in order to harness their full potential (Zhao & Bishop, 2011) in addition to other mechanisms aimed at creating shared understanding. Furthermore, it is necessary for organizations to make use of it, but at the same time not not rely on technology solely to bring shared understanding to their organizations (Annabi & McGann, 2013). A variety of mechanisms to create shared

understanding taken from academic literature comprises a set that is translated into a model. Still this model has to be find applicability to firms in the network environment.

4.2 SHARED UNDERSTANDING – ONE OF THE RATIONALES FOR THE FIRM

According to Coff (1997), p. 374 "human resources are often hard to imitate due to scarcity, specialization, and tacit knowledge" in comparison to Barney's (1991) tangible assets, which can be imitable and therefore can hardly be a source of competitive advantage. At the same time, the influence of human resources on performance goes beyond their role as a repository of routines and knowledge (Cohen & Bacdayan, 1994; Nelson & Winter, 1982) and has to include the alignment of individual and organizational objectives and goals (Wright, McMahan, & McWilliams, 1994; Wright & Snell, 1991). Alignment is defined *as the degree to which organizational members behave in line with organizational goals* (Gottschalg & Zollo, 2007). Yet, agency theory (Alchian & Demsetz, 1972; Fama & Jensen, 1983) states that individual goals are not always aligned to organizational objectives. Therefore, organizational and individual goal alignment has to be achieved through a variety of mechanisms. Organizational mechanisms proposed in literature include but are not limited to reward systems (Holmstrom & Milgrom, 1994; Jensen & Meckling, 1976; Kerr, 1975), socialization regimes (Kerr & Jackofsky, 1989; Van Maanen & Schein, 1979) and changes in the design of individual tasks (Hackman & Oldham, 1976; Hackman & Gersick, 1990). Feldman & Refaeli (2002), for example, similarly state that first shared understanding of goals has to be created amongst individuals, which can help to coordinate individual actions and achieve alignment. When alignment is achieved, it is likely to influence performance. For example, several researchers (Barney & Hansen, 1994; Castanias & Helfat, 2001; Coff, 1999; Makadok, 2003; Rumelt, 1984) have attempted to show how interest misalignment can prevent the firm from creating sustainable performance. Gottschalg & Zollo (2007) also note that to the extent to which organizational members behave in line with organizational objectives, the potential derived from their skills and knowledge translates into actual performance.

As stated above, shared understanding of organizational goals first has to be achieved among all organizational members. Only when shared understanding is achieved, can it then lead to the alignment of organizational goals. In addition, only once organizational

goals are aligned does the performance increase. Shared understanding, alignment and performance are thus interconnected in the following way (Figure 3):

Figure 3. Link among shared understanding, alignment and performance

4.3 DEFINING SHARED UNDERSTANDING

Both organizational researchers and practitioners agree that successful coordination comes only when shared understanding is achieved among all organizational members (Weber & Camerer, 2003). To ensure that an organization creates an environment that not only holds its primary vision and values, but also fosters an environment which gives each member a sense of meaning and which brings together individual understanding and corporate values (Argyris & Schon, 1996; Cheney, 1983; Cheney & Tompkins, 1987). It is vitally important for senior managers to make sure that corporate vision, strategy and values are shared amongst all organizational members and are also consistent throughout all departments (Michel, 2007).[8]

Researchers recognize that organizational members create shared meaning (Gergen, Schrader, & Gergen, 2008) and use their own respective varied lenses to build on their perspectives. For this reason, it is essential also to examine vision and value creation over time.

The ability of an organization to successfully coordinate its resources has been discussed in a variety of disciplines including but not limited to organizational behavior, organizational psychology, organizational theory, management, entrepreneurship, etc. Management literature, for example, has given different names to this ability. Fayol (1917), for example, has named it ‚principles of management' while Drucker (1954) calls it ‚management by objectives'. Fayol's (1917) principles of management include five important functions of management: to forecast and plan, to organize, to command,

[8] The first paragraph of Section 4.3 Defining shared understanding has been prior published as part of the paper: Bondar, K. and Katzy, B.R. (2013). An emergent perspective on shared understanding in knowledge-based organizations. Proceedings of the 19th International ICE Conference on Engineering, Technology and Innovation. The Hague, the Netherlands, June, 24-26.

to coordinate, and finally to control. While for Drucker (1954) – ‚management by objectives‘ means the process of defining organizational objectives in order for senior managers and organizational members to agree upon these objectives as well as undertand what needs to be done to achieve them. Some of the key features of management by objectives includes motivation, better coordination and communication, clarity of goals, commitment of organziational members, as well as assurance that organizational objectives are linked to the objectives of the members. Schein (1992), on the other hand, labels this phenomenon a creation of shared understanding. Though the names differ, the meaning remains the same, that is the capability of an organization to align its goals and the efforts of its members.

At the linguistic level ‘shared understanding’ deals with having the same understanding of a sentence or the word in a sentence, at the same time at the cognitive level ‘shared understanding’s same meaning applies to a problem, its solution and sometimes even the domain as discussed in the semantic approach to knowledge boundaries by Carlile (2002).

Klimoski & Mohammed (1994) conclude that when shared understanding is created among team members, trust is more likely to be generated and performance improves. Feldman & Rafaeli (2002) similarly confirm that shared understanding helps organizations keep a certain pattern of behavior, which strengthens the coordination of individuals and provides more opportunities for smooth adaptation to the changes in internal and external environments.

Several authors (Sandelands & Stablein, 1987; Weick, 1995) state that without shared understanding among all organizational members, organizations do not exist. This is because shared understanding permits the creation of a certain pattern of behavior that both coordinates the individuals’ actions and provides opportunities for adaption to changes in external and internal environments (Feldman & Rafaeli, 2002). The implication is to search for different ways that shared understanding can be created and sustained.

Although a handful of studies have been written about shared understanding (March & Olsen, 1989; Quinn, 1991; Schein, 1992), there is no consensus about what shared understanding entails. According to Ziff (1972) “to understand understanding is a task to be attempted and not to be achieved today, or even tomorrow”.

Existent research has been done on looking at shared understanding from the knowledge management perspective, which has been primarily concerned with the management of organizational knowledge so that its creation and sharing becomes an organizational capability (Nonaka & Takeuchi, 1995). Equally, Smart et al. (2009) define shared understanding as an ability that is mutual among multiple agents or what is called mutual knowledge (Clark & Brennan, 1991). Cohen, Mohrman & Mohrman Jr. (1999) consider shared understanding as a group mental model, the establishment of which requires the development of group goals, roles, priorities and the ways in which the work has to be accomplished. A group mental model is a term that refers to mental representation of knowledge shared by team members (Cannon-Bowers, Salas, & Converse, 1993; Klimoski & Mohammed, 1994). The main idea that lies behind shared mental models is that team effectiveness can improve if team members have a proper shared understanding of the tasks to be accomplished, team structure, available equipment and an environment in which the team thrives (Mohammed, Klimoski, & Rentsch, 2000). Beach (1997) similarly notes that the shared mental model is a mental construct that consists of constituents and the relationships among them. The constituents are tied to current and past events, while the relationships are defined by interactions among the constituents. According to Mathieu et al. (2000) two individuals who often work together could have similar mental models and be in agreement about how things need to be done. Still, at some point one of the individuals could act unexpectedly in the view of another individual (his/her mental model). The mismatch in such expectations could lead to the development that one or both individuals adjust their mental models accordingly. Such mismatches are in fact very beneficial as they allow several participants to probe the differences in their models and achieve a better shared understanding (better shared mental model) of the situation.

Organizational science literature – the stream that I pursue in my research – offers a view on maintaining shared understanding about organizational assumptions, priorities and values. Whelton & Ballard (2002), for example, describe shared understanding as common expectations by group members and the degree to which team members can establish a mutual platform for their tasks. Weber & Camerer (2003) state that shared understanding among members comes through shared experience or a process of socialization. For Michel (2007) shared understanding is the degree to which

organizations use different information and feedback to create shared understanding of the context in which organizational members have to make decisions.

In my research I follow the definition of Schein (1992) and define *shared understanding as a set of basic assumptions and values about how members determine relevant information and take actions*. Other organization science researchers (Adler, Goldaftas, & Levine, 1999; March & Olsen, 1989; Quinn, 1991) also argue that shared understanding has to be viewed in the context of organizational goals accomplishment. In order to create shared understanding group language, priorities, goals, roles and ways work done need to be established. The extent to which differences of organizational members are identified and acknowledged determines the degree of shared understanding (Whelton & Ballard, 2002).[9]

4.4 SHARED UNDERSTANDING DIMENSIONS

Though shared understanding has been labelled differently in the organizational science and management literature (e. g., (Drucker, 1954; Fayol, 1917)), all the authors agree that shared understanding consists of four dimensions: (1) „who we are as an organization", (2) „what our primary purpose is", (3) „how things are done in an organization" and (4) „who is in power to influence the actions of others" (Dickey, Wasko, Chudoba, & Thatcher, 2006). Scott (1995) names these dimensions as (1) organizational identity, (2) goals, (3) norms and (4) power structures.

4.4.1 Organizational identity or "who we are as an organization"

Organizational identity is constructed by organizational members and answers the question „who we are as an organization". Organizational identity helps organizational members to form their individual interpretations and actions based on the information provided (Walsh, 1995). It serves an an important managerial tool, as, it is associated with the ways in which organizational members define their actions and develop strategies. For example, in the study of call centers conducted by Dickey at al. (in Dickey et al. (2006)) it was shown that managers have to put a lot of effort in shaping the understanding of the organizational members of the firm's identity before allowing them to interact with customers through online chats. This was done with the aim of

[9] Section 4.3 Defining shared understanding has been revised as part of the paper: Bondar, K., Katzy, B.R. and Mason, R.M. (2013). Best service delivery through organizational goals sharing. Proceedings of the 22nd International Conference of the International Association for Management of Technology IAMOT 2013. Porto Alegre, Brazil, April, 14-18.

ensuring that organizational members were able to properly communicate the organizational perspective to customers.

Organizational identity is directly linked to the organizational culture of a certain organization. Many scientists, e.g. Davis (1984), Hofstede, Neuijen, Ohayv and Sanders (1990), Peters and Waterman (1984) and Schall (1983), agree that 'sharedness' is a key word in the term of organizational culture, for example, shared assumptions, shared values, shared perceptions. Thus I can conclude that shared understanding, especially its first dimension that is organizational identity, is a part of organizational culture which has to be as well examined.

4.4.1.1 Organizational culture

Organizations are very much cultural entities (Cook & Yanow, 1993). What's more, independently from organizational activities, organizational culture has a great influence on different practices (McDermott & O'Dell, 2001). Culture shapes the behavior of its members (De Long & Fahey, 2000), stipulating different means of social interaction among them (Gold, Malhotra, & Segars, 2001; Trice & Beyer, 1993).

Organizations develop their own culture through joint experiences and over long periods of time. The concept of organizational culture is very useful in terms of the coordination of organizational members, as, activities can be coordinated tacitly without achieving an agreement explicitly about every minute thing (Weber & Camerer, 2003).

The notion of organizational culture has been a polemical concept that does not have a single definition (Ott, 1989). It is usually thought of as a generally shared social understanding comprising mutual assumptions and views on the environment among various organizational members (Rousseau, 1990; Schein, 1983; Wilkins & Ouchi, 1983). Though there is no consensus on what organizational culture is, most of the authors agree that it is built historically and socially, and it is difficult to change (Bloor & Dawson, 1994).

One view of the culture is the integration perspective. Schein (1992) follows this approach and defines *culture as a "pattern of basic assumptions" (p. 9) that a group possesses and that determines how it perceives the environment and reacts to it*. Culture is therefore reflected in different norms, values and organizational practices where values are represented by norms that shape specific practices (De Long & Fahey, 2000). From Schein's (1992) definition, it follows that culture is formed over time based on an organizational interpretation of what has been successful in the past. At the same time

cultural assumptions intersect with organizational values and beliefs and have a strong influence on the actions of each member (Heracleous, 2001). Likewise popular literature portrays a system of shared values as a core of organizational culture (Peters & Waterman, 1984). Hofstede et al. (1990) for example have shown in their research that organizational culture consists of both shared practices and shared perceptions rather than being only based on individual values (Morgan, Frost, & Pondy, 1983; Smircich & Calas, 1987).

Following Schein's (1992) perspective, I view organizational culture as consisting of three interrelated levels (Figure 4) in which some aspects are more visible, while others lie below one's conscious awareness.

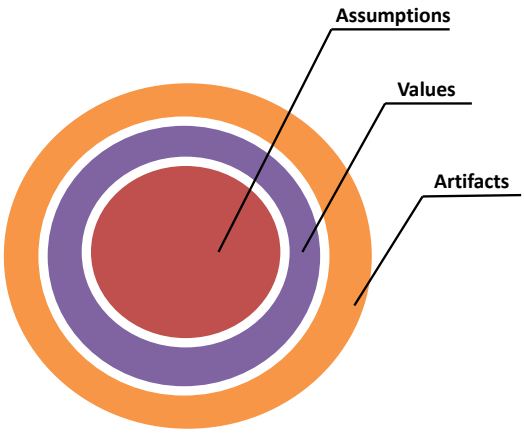

Figure 4. Organizational culture or "Who we are"

The deepest level of organizational culture is comprised of awareness like basic assumptions. They are taken for granted and show personal beliefs about reality. The next level consists of values that include shared standards, principles and goals. The final level is made of artifacts – visible and tangible elements of organizational culture.

For example, the basic assumption could be that organizational members should enjoy being at work. This can be translated into such shared values as a good working environment, long lasting relations and fun work. The artifacts of such values could be an open-door policy, free lunches, places to have a rest or brainstorm, posters next to the coffee machine where organizational members could put their ideas for improvement or informal socializing outside the workplace.

Similarly to Schein (1992) four main themes of organizational culture identified by Maull, Brown and Cliffe in 2001 are discussed in the article of Sun (2008). They are

culture as a learned identity, culture as a belief system, culture as a strategy and culture as mental programming.[10]

4.4.2 Goals or "what our primary purpose is"

A clear definition of what needs to be achieved by organizational members comprises the second dimension of shared understanding (Hinds & Weisband, 2003). Organizational goals give both motivation and a clear structure for achieving work tasks (Locke & Lathman, 1990). For example, Hinds & Weisband (2003) note that the chances of success are higher in the distributed software development teams when the members know exactly what the customer needs and when the deadline is. Such clear goal definition helps them to better focus their efforts and produce the desired systems results on time.

4.4.3 Norms or "how things are done in an organization"

Coleman (1990) defines norms as standards of a certain conduct that regulate and guide the life of a group and are developed over time through repeated interactions. Norms are important for organizations to function successfully, as, they provide a set of rules for proper coordination together along with the expectations on how to interact. Reisman (1990) emphasizes that norms serve as coordination mechanisms for organizations to make sure that organizational members construct meanings of socially accepted behavior and act accordingly.

4.4.4 Power structures or "who is in power to influence the actions of others"

Several authors (Mintzberg, 1983; Pfeffer, 1981) define power as the capacity of an individual or a group of individuals to have influence over the results or the achievement of desired goals. According to Dickey at al. (2006) power structures reflect formal legitimate hierarchical structures, on the one hand, or informal leaders with personal influence that are formed through interactions over time, on the other hand. Power also influences the way individuals perceive and interpret information. It helps them to identify which tasks need more attention and careful consideration over the others. Elron & Vigoda (2003) state that the most acceptable uses of power are based on

[10] Section 4.4.1.1 Organizational culture has been prior published as part of the paper: Bondar, K., Katzy, B.R. and Mason, R.M. (2013). Best service delivery through organizational goals sharing. Proceedings of the 22nd International Conference of the International Association for Management of Technology IAMOT 2013. Porto Alegre, Brazil, April, 14-18.

consultation and rationality, while threats and sanctions as well as information blocking are rarely used.[11]

4.5 A SINGLE ORGANIZATION WITH A SINGLE SHARED UNDERSTANDING

From a hierarchical stance on organizations using principles of scientific management (Taylor, 1911), shared understanding as a coordination mechanism relies on the main assumption of agency: a single organization – with a single strategy – with a single shared understanding. When having a single organization, it is much easier to control shared understanding creation by putting control mechanisms in place. At the same time, going from agency into the network, it is observed that there are different organizations there exercising different strategies. Yet all of them have to achieve a single shared understanding which cannot be controlled through bureaucratic mechanisms. Hence, it is first necessary to have a look at the main assumptions of agency theory to see what may change for shared understanding creation in the network.

4.6 CHALLENGES FOR SHARED UNDERSTANDING

The network environment, in which organizations have to successfully operate, brings different challenges to shared understanding and its dimensions. In the network, many parties come together harboring different expectations, beliefs, backgrounds, knowledge, etc., yet they must create shared understanding amongst each other in order to successfully cooperate. Each organization has its own organizational identity, priorities, processes for accomplishing goals, as well as organizational structures. At the same time, all the parties have to achieve shared understanding of their main goals and the means of accomplishing them. Taking into account that different organizations with different strategies have to achieve a single shared understanding, the applicability of current shared understanding dimensions should be discussed. Additionally, shared understanding discussed in the academic literature has viewed organizations which are created from a hierarchical standpoint. In the hierarchical stance on organizations, management and execution are separated according to the principles of scientific management (Taylor, 1911), and authority serves as one of the main coordinating

[11] Section 4.4 Shared understanding dimensions has been prior published as part of the paper: Bondar, K. and Katzy, B.R. (2013). An emergent perspective on shared understanding in knowledge-based organizations. Proceedings of the 19th International ICE Conference on Engineering, Technology and Innovation. The Hague, the Netherlands, June, 24-26.

mechanisms, and control over information inserts a conscious power structure and creates shared understanding. Viewing organizations as networks where management and execution cannot be separated brings several challenges to the dimensions of shared understanding.

The creation of shared understanding in the network becomes an even more difficult task with young people who exhibit different working preferences compared to the previous generation. In NWOW, the environment which young organizational members demand features personal and professional development independent of financial rewards. Young people are also becoming mobile, moving from one organization to another, taking created shared understanding with them. Shared understanding mechanisms must thus be adapted accordingly.

In addition, technology, when misused, can cause more problems than opportunities for shared understanding creation. All the mentioned challenges are discussed in the sections below.

4.6.1 Agency theory and shared understanding

Looking at shared understanding through the lens of agency theory, the main assumption of shared understanding is that an organization decides what the relevant information for the organizational members is, and what actions they should take. This is because agency theory talks about opportunistic behavior of organizational members and puts certain mechanisms in place (e.g. formal and informal) to avoid this opportunistic behavior. At the same time, information is viewed as a purchasable commodity over which an organization has control.

At the network environment, the borders of an organization have become blurred and an organization is not able to control information available to its members as well as their actions. Organizational members get information from a variety of sources over which their organizations have no control and are themselves deciding what is relevant for them and what is not. Can shared understanding thus still be viewed as a set of basic assumptions and values about how organizational members determine relevant information (over which an organization has no control) and take actions? If the assumptions from agency theory are no longer applicable to shared understanding which departs from organizational boundaries, what mechanisms are there then?[12]

[12] Section 4.6.1 Agency theory and shared understanding has been prior published as part of the paper: Bondar, K. and Katzy, B.R. (2013). An emergent perspective on shared understanding in knowledge-

4.6.2 Actor-network theory and shared understanding

If I look at dimensions of shared understanding through the lens of actor-network theory, they may observed to be absent in the network.

First of all, I look at organizational identity. Schein (1992) describes that shared understanding is developed within the context of organizational culture that a certain organization possesses. If we go into the network, we find different organizations that come together and have totally different cultures. There is no unique organizational culture and as a result organizational identity in the network, yet organizations are still able to cooperate and coordinate themselves in the network. Is there a shared understanding among different parties and organizations in the network that do not have a common culture and as a result organizational identity? Is organizational identity a necessary dimension to achieve shared understanding?

Secondly, I address the subject of goals. Different parties in the network come with completely different goals, which may not be in alignment with each other. As in the example described in the Introduction Section of Berlin Brandenburg Airport, some parties had a goal of cost efficiency, whilst other parties sought prestige, and still others wanted the airport to be built as fast as humanly possible. The question is, therefore, how goals are negotiated in the network when each member steps up with a completely different set of goals. How is it possible to make sure that all the members are focused in the same direction and have their goals in common?

It is norms that we turn to next. Some authors have written that even though organizational goals and values remain consistent, the language to describe those goals is changing (Rokeach, 1986; Williams, 1979; Young & Harrison, 2004). Due to the rapid progress in technology and new social media, are the same mechanisms there to achieve organizational goals as before? Organizations that aim to maintain their impact over time must pursue methods to make their goals appealing to the new generations (Gee, 2011; Gergen, 1999; Rokeach, 1986). Are organizational norms remaining as they have been or are they also undergoing changes? How do they effect shared understanding creation over time?

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Finally, power structures should be discussed. In the new working environment, hierarchies are becoming flat and power structures are becoming more obscure. Teams are starting to emerge based on evolving opportunities rather than on the basis of managerial demand (Katzy et al., 2011). The supervisory role is becoming less visible in the context of managerial control, and is instead leaning toward building mentor relations with organizational members. Are power structures a necessary dimension for shared understanding or can there be shared understanding in the network where no member has more power than the other?[13]

4.6.3 Digital natives and shared understanding

Shared understanding is not only challenged by actor-network theory. Its revision is being provoked by the invalidity of the agency theory in the framework from which it was developed. Young people, the newly hired organizational members, are also demanding new ways for shared understanding to be created and sustained.

A change in attitude towards values, traditions, work and leisure is taking place in the modern working environment (Dooley, 2011). Therefore it is not a surprise that the digital natives as captured by Twenge (2006, in (Barzilai-Nahon & Mason, 2010)) are demonstrating high self-esteem and confidence coupled with a lack of respect for authority and the desire to enjoy the present moment to the fullest. This is also a generation of contradictions, which, on one hand, prefers a work-life balance and puts spending time with their children as a top priority (Gratton, 2010). On the other hand, however, it believes that a 24/7 work ethic can be essential for the success and becoming a slave to one's BlackBerry is a must (Perlow & Porter, 2009). At the same time, the 'millennials' are no longer interested in a long-life employment and are willing to take risks to find meaningful jobs and not twiddle their thumbs in boredom at the office from 9 till 5 (Barzilai-Nahon & Mason, 2010).

Together with the net generation coming into the working environment, there is also some evidence that new working practices have started to appear. With the introduction of smart phones, instant messengers, telephone and video conferences, there has been made a dramatic shift from being physically present in the office to coming into the

[13] Section 4.6.2 Actor-network theory and shared understanding has been revised as part of the paper: Bondar, K. and Katzy, B.R. (2013). An emergent perspective on shared understanding in knowledge-based organizations. Proceedings of the 19th International ICE Conference on Engineering, Technology and Innovation. The Hague, the Netherlands, June, 24-26.

office several times during the week. Indeed remote work has proven to provide real business benefits (Microsoft, 2010). The main challenge is for managers to properly structure the remote-work and be supportive towards those organizational members who want to pursue it. Furthermore, shared understanding creation presents itself as an important element in this structure. Only by achieving shared understanding among all the parties involved, can trust be built and productive cooperation take place.

4.6.4 Information technology and shared understanding

Information technology (IT) has offered a means of overcoming the barriers of space and time, allowing new ways for firms to organize their internal processes and interactions with other firms (Nohria, 1992). Fulk and DeSanctis (1999) similarly support the idea that new technologies have been designed to support new organizational forms.

At the same time, any technological innovation that is named as *new media* can be described as equivocal, as, it comes with many conflicting interpretations that require prolonged discussions as well as the support of individuals equipped to deal with it (Daft, Lengel, & Trevino, 1987). Though it can be anticipated that equivocal information technology innovations can make new organizational activities run, specific applications have to be understood thoroughly from the start (Swanson & Ramiller, 1997) seeing as they have an enormously wide range of usage (Weick, 1990).

The way organizational members perceive new technology is directly related to the advantaged this technology brings (Kling, 1980). After technology is adopted, organizational members dynamically change and reproduce those technologies through use (Orlikowski, 1992). Berente, Hansen, Pike & Bateman (2011) emphasize in their article that both individuals and organizations must build a set of shared schemas, practices and skills in order to make sense of the technologies provided and to benefit from them.

On the one hand, the advances in technology have also made it possible for teams to be coordinated virtually across the globe. Still, gaps in understanding result in miscommunication and obstacles in effective coordinating. This improper coordination can be caused by a variety of disconnects: cultural (coordination of the work of organizational members with different cultural backgrounds), temporal (coordinating activities across different time zones), historical (coordination of organizational members that may or may not have previously worked together), spatial (coordination

of the work members remotely-located) and technical (coordination of organizational members with different levels of technical knowledge as well as across different technical platforms or virtual shared spaces) (see (Orlikowski, 2002; Watson-Manheim, Chudoba, & Crowston, 2002) for the details review) and has to be addressed accordingly.

On the other hand, IT has provided organizational leaders with a variety of control mechanisms to make sure that organizational members behave correctly. Electronic badge systems on organizational premises, monitoring of downloads and installations, different levels of access to different information depending on the position of an organizational member, are just few examples of it. On contrary, the use of new technologies such as storage area networks, cloud computing and mobile business devices poses lots of questions to organizations on how to manage security of their resources (Gupta & Zhdanov, 2012).

With all the technological tools available, some organizational leaders claim that they no longer need shared understanding among organizational members, as, technology does everything. But this is not the case. Technology brings both opportunities and challenges to shared understanding creation and has to be viewed as a tool of support rather than a substitute for shared understanding.

In computer-mediated environments, technology brings both enabling and disabling factors toward the pursuit of coordination. Miscommunication which occurs, becomes a managerial concern (Cramton, 2001). Hinds & Weisband (2003) point out that technology does not cause miscommunication, but rather the lack of shared understanding among different members. Similarly, technology does not immediately create shared understanding among different members. For example, though the usage of web-enabled call centers with chat facilities to support distributed work is getting more and more popular (Dickey et al., 2006) – online communities of customer (Morse, 2003), distributed learning (Eastman & Swift, 2002) or team project communications support (Graveline, Geisler, & Danchak, 2000) – preliminary studies indicate that chat environments are doomed to miscommunication (Cornelius & Boos, 2003).

4.6.5 Theory of the firm and shared understanding

As shown above, the network environment, information technology and digital natives bring many opportunities and challenges to shared understanding creation. Moreover, the question of whether we still need the firm arises. Do we need the firm for resource

coordination or is a network enough? Can everything be coordinated via LinkedIn or Facebook or is the stable structure of the firm needed? My answer to this question arises from Figure 3. Though digital natives can have the same understanding of values and goals, their goals must first be aligned in order to bring about profit. My answer thus to the rationale of the firm is that the firm creates shared understanding among resources, which are then aligned and this alignment increases performance.

In my thesis, I am looking at mechanisms for shared understanding creation, which are challenged by the new working environment to provide rationale for the firm. According to Figure 5 mechanisms for shared understanding creation are moderated by network effect, digital natives' behavior, new social media and information technology use to create shared understanding (a dependent variable). Alignment also comes as a dependent variable but is not the focus of my thesis. At the same time performance is going to be measured in a weak form by asking the perceptions of the interviewees as described in Chapter 5 below.

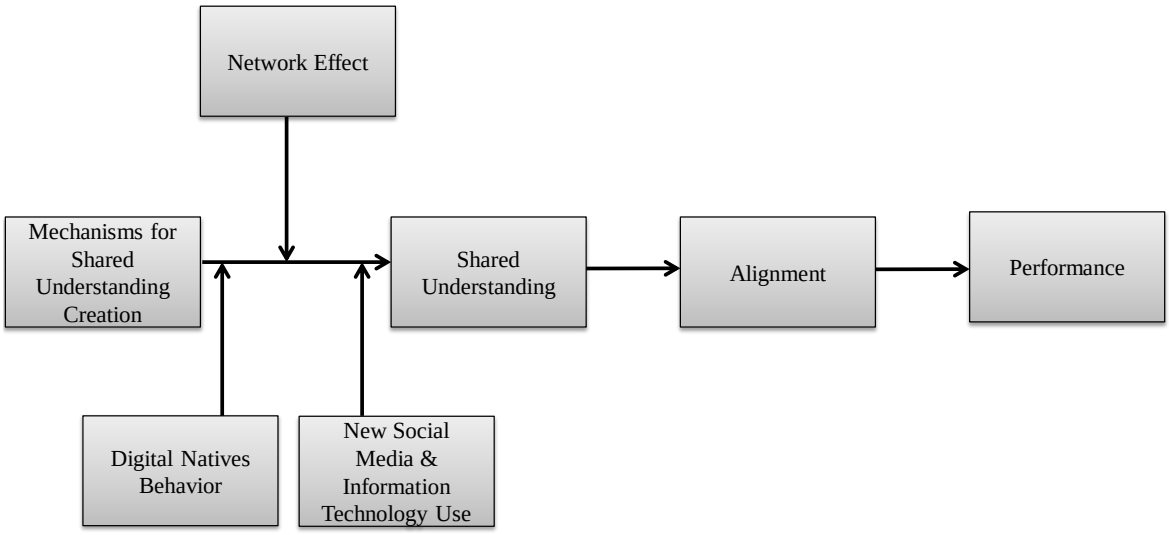

Figure 5. Challenges for shared understanding creation

4.7 MECHANISMS FOR SHARED UNDERSTANDING CREATION

The discussion provided in the previous Section 4.6 Challenges for shared understanding has led me to the conclusion that researchers and practitioners need to rethink how shared understanding is accomplished in network organizations. Such practices for the configuration and reconfiguration of resources have been summarily

categorized as dynamic capabilities. Furthermore, their provision has been seen as a rationale for the existence of the firm and a precursor to its performance in time-based or innovation competition (Eisenhardt & Martin, 2000). This thesis follows their recommendation for research to substantiate the lofty concept of dynamic capabilities through empirical research on the concrete sets of such practices in different domains.

It is true that shared understanding itself does not change from a hierarchical to a network perspective in an organization. What is changing, as described above, are the mechanisms through which shared understanding is being achieved. Yet in order to see whether the mechanisms have changed, it if first necessary to have a look at the mechanisms for shared understanding creation described in literature. Then these mechanisms can be juxtaposed against the ones found in the interviews and discussed in the discussion section of this thesis.

An extensive organization science literature review has provided fourteen different mechanisms that facilitate the emergence of shared understanding among organizational members. All of them are summarized in Table 1 and are discussed afterwards.

#	**Mechanisms to create shared understanding/Artifacts**	**Authors**
1	Spontaneous communication	(Hinds & Mortensen, 2005)
2	Fostering communication of rationally similar members	(Preston, Karahanna, & Rowe, 2006; Williams & O'Reilly, 1998)
3	Meetings	(Cheney, 1983; Flood & Jackson, 1991)
4	Feedback loops	(Malina & Selto, 2001; Michel, 2007)
5	Creation of informal networks	(Senge et al., 1999; Trist, 1983)
6	Connections made through routines	(Feldman & Rafaeli, 2002)
7	Process of reflection	(Arias, Eden, Fischer, Gorman, & Scharff, 2000; Kleinsmann & Dong, 2007)
8	Process of sense-making	(Bloor & Dawson, 1994; Choo, 1996)
9	Interdependency	(Janz, Colquitt, & Noe, 1997)
10	Informed participation	(Arias et al., 2000)
11	Standardized decision making	(Michel, 2007)
12	Rule-based trust	(Kramer, 1999)

13	Reward structures	(Ray, Muhanna, & Barney, 2007)
14	Information technology to support creation of shared understanding	(Griffith, Sawyer, & Neale, 2003; McGrath & Berdahl, 1998; Smith, 2001)

Table 1. Mechanisms to create shared understanding

4.7.1 Spontaneous communication

The culture of communication is very important. It is necessary to open and develop a variety of communication lines (Mohr & Spekman, 1994) in order to foster information sharing and creation of shared understanding (Ireland & Bruce, 2000). It is necessary to create different points of contact in the organization, in order to overcome the lock-in effect and create an atmosphere in which innovative thinking is encouraged (Barratt, 2004).

An example of such communication is spontaneous communication. Spontaneous communication is defined as informal and unplanned interactions among members (Kiesler & Cummings, 2002; Monge & Kriste, 1980), helping them to build social ties (Festinger, Shachter, & Back, 1950). If the work culture does not provide the opportunity for its members to spontaneously interact, then it can inhibit the development and maintenance of shared identity (Hinds & Mortensen, 2005) and decrease the perceptions of community (Sarbaugh-Thompson & Feldman, 1998). The promotion of spontaneous communication comes thus as the first mechanism for creating shared understanding among all organizational members.

4.7.2 Fostering communication of rationally similar organizational members

In addition to spontaneous communication, communication between rationally similar members should be fostered. Rational similarity is defined as similarity on the basis of background characteristics (Preston et al., 2006). Those individuals with similar demographics and experience often have similar beliefs and perceptions and can more easily transfer their understanding of what their organization stands for to their colleagues as well as form more intensive relations. Williams & O'Reilly (1998) similarly emphasize that organizational members find it easier to interact with those similar to themselves and are more eager to pass information on to similar colleagues compared to the ones who they see as different from themselves.

4.7.3 Meetings

Meetings and discussions are considered to be a useful mechanism for creating shared understanding of the context concerning a specific issued discussed. Such mechanisms help organizational members to identify themselves with the whole organization rather than as individuals within it (Flood & Jackson, 1991). For this reason, Cheney (1983) emphasizes that meetings help different stakeholders who possess different values and perspectives to develop a shared meaning and move from individual pasts to a common future.

4.7.4 Feedback loops

Organizations use different feedback mechanisms to make informed decisions (Michel, 2007) and establish the required shared understanding (Malina & Selto, 2001). The feedback loops help senior managers both to make sense of the decisions made and to adjust strategies based on the insights obtained. They also help to reduce knowledge asymmetries (Abernethy, Bouwens, & van Lent, 2004) and adequately address the expectations of different stakeholders. All in all, as pointed by Michel (2007), feedback loops enable a balance between different expectations of the current performance and future opportunities in the market, and help organizations to score high on shared understanding.

4.7.5 Informal networks

One more way that organizations can promote the creation of shared understanding amongst all organizational members is to facilitate the development of informal networks (Senge et al., 1999). According to Trist (1983), such informal networks help to promote shared understanding of different obstacles that organizations have to deal with and help to develop shared values and organizational norms. As a result, evolving cross-organizational dialogue makes it possible to collect not only different experiences and knowledge (Herriot & Pemberton, 1995), but also to increase the possibility of finding new solutions to existing problems as well as shape the future organizational vision based on organizational values (Morgan, 2006).

4.7.6 Connections made though routines

Organizational routines have often been used as a form of coordination (Cyert & March, 1963; Nelson & Winter, 1982; Simon, Smithburg, & Thompson, 1950) and are defined as recurring patterns of behavior of different members involved in conducting organizational tasks (Feldman & Rafaeli, 2002).

Routines put organizational members into a position of constant verbal and non-verbal communication, which helps to create connections among them and thus enable shared understanding (Feldman & Rafaeli, 2002). Even an occasional contact with one another produces a sense of connection (Zajonc, 1968); when this is done more frequently or on a systematic basis, the connections become stronger and people start to better understand the ideas of others (Homans, 1950). Creating and sustaining a network of connections through routines permits the collection of different perspectives transformed into collective shared understanding among routine participants as well as the whole organization.

Connections made through routines as pointed by Feldman & Rafaeli (2002) can help organizational members to clarify organizational goals and priorities, create the conception of mutual tasks performed and get a better overview of organizational power and identity. For example, involving members from different departments in the hiring routine of the new organizational members promotes the facilitation of better understanding of how the organization functions, what its priorities are and what kind of specialists are in demand, as well as what different departments are responsible for (Feldman & Rafaeli, 2002). Another example (Westley, 1990) illustrates the positive relationship between shared understanding and conversation routine. This same example emphasizes the value of including middle managers in strategic planning meetings, as this inclusion provides them with the opportunity to appreciate the sense behind decisions made.

4.7.7 Reflection

The process of reflection sheds more light on mechanisms for creating shared understanding. Reflection is the activity during which organizational members can discuss what they have done, are doing and will do, but on a macroscopic level (Kleinsmann & Dong, 2007). It also helps organizational members to question the actions taken as well as reframe the existing problems and get ready for the new moves. When members constantly reflect on different events as well as get involved in the informed participation, this leads to ownership and a stronger sense of community (Arias et al., 2000). Brown, Duguid & Haviland (1994) similarly illustrate that by supporting the process of reflection, information that is collectively constructed is put into the problem-solving context, allowing everyone involved to participate from a more meaningful perspective.

4.7.8 Sense-making

Organizational actors are always searching for ways to continuously understand what is happening around them. In order to make sense of different, sometimes ambiguous information and environments, organizational members have to construct a shared sense of social reality (Bloor & Dawson, 1994). This means that they are used to analyzing a range of events. Hence, the sense-making process allows members to rationalize what is taking place in their working environment in order to construct a shared interpretation for future organizational actions (Choo, 1996). Exploring the ways actors understand the reality and then make decisions or take actions serves as a powerful tool for making associations among members and thus creating their shared understanding. This is especially true when viewing organizations as interpretation systems (Weick & Daft, 1983) that translate events taking place in the environment, develop models for understanding, and give meaning to the facts. Moreover, deriving the relevance from organizational events is crucial for members to understand organizational reality (Bloor & Dawson, 1994).

4.7.9 Interdependency

Shared understanding can also be created through the process of interdependency. Performing tasks wherein the level of interdependency is high, permits greater shared understanding (Janz et al., 1997) compared to breaking tasks into less dependent steps, where the interactions are limited and thus shared understanding is less likely to be formed (Hollingshead, 2001).

4.7.10 Informed participation

Informed participation can be considered as one more mechanism for creating shared understanding amongst all members. Brown et al. (1994) identify the meaning of informed participation as a so-called ‘paradox’ that organizational members cannot be informed unless they get involved and they cannot get involved unless they are informed. Informed participation helps to establish a stronger sense of community and ownership (Arias et al., 2000) among all members. For example, ‘around-the-table’ interactions permit information exchange and the creation of a feeling that every member in the organization is heard and valued.

4.7.11 Standardized decision-making

Organizational members need to make different decisions every day. It follows then that standardizing decision-making processes by standardized protocols such as performance

reviews, individual objective agreement, or strategic plans, promotes communication and also frames recurring decisions to achieve high efficiency and help organizational members to do things appropriately (Michel, 2007). Such processes facilitate sharing and coordination. In the same way, knowing how things need to be done provides more flexibility, especially when organizational members align their behaviour and decisions with the standards of the organization (Beer, 1997). Due to the fact that organizational members have shared beliefs, they can apply the same standards to the new situations, but still remain flexible in fast changing environments.

4.7.12 Rule-based trust

Rule-based trust helps to create shared understanding regarding appropriate behaviour in the organization (Kramer, 1999). There is a consensus in the literature that trust contributes to organizational stability (Heide & John, 1990). Rule-based trust, in a similar manner, assures confidence in organizational members whilst mutual trust is taken for granted, therefore promoting higher interaction and socialization among the members.

4.7.13 Reward structures

Shared understanding can also be fostered by the maintenance of a variety of reward structures that encourage collaboration among different members (Ray et al., 2007). The rewards can be both financial and non-financial and help organizational members to feel appreciated, recognized as well as to realize that they are working in-line with organizational goals, priorities and values.

4.7.14 Information technology to support shared understanding creation

Very often technology plays a supporting role at work. It may provide the means for teamwork structuring, enable quicker information dissemination, as well as bring about new systems for communication (McGrath & Berdahl, 1998). Technology can also enable task automation and make teamwork more efficient (Griffith et al., 2003). It also allows teams to work independent of place and time zone, and to cooperate productively in the virtual environment (Griffith & Neale, 2001).

Recently emerged technologies help organizations to construct a collective sense of identity and shared understanding. This is done in several ways. Communication technology such as e-mails, social media and Skype, help teams to always stay informed independent of the location they are in (Griffith et al., 2003). Second, technologies help to insert valuable knowledge into circulation (Brown & Duguid, 2000) by means of

different collaboration platforms. Next, the creation of different databases that help to sort, find, store or retrieve information (Smith, 2001) provides more links to understand how the organization functions. Moreover, group support technologies provide new functionalities to the existing team processes (Griffith et al., 2003). All in all, technology plays a supporting role in creating shared understanding among all organizational members.

All fourteen mechanisms to create shared understanding described above have been grouped into four broad categories as shown in Table 2. The categories are the following: communication, processes, people management and information technology.

#	Mechanisms to create shared understanding/Artifacts	Classification
1	Spontaneous communication	**Communication**
2	Fostering communication of rationally similar members	
3	Meetings	
4	Feedback loops	
5	Creation of informal networks	
6	Connections made through routines	**Processes**
7	Process of reflection	
8	Process of sense-making	
9	Interdependency	
10	Informed participation	
11	Standardized decision making	
12	Rule-based trust	
13	Reward structures	**People Management**
14	Information technology to support creation of shared understanding	**Information Technology**

Table 2. Grouping mechanisms to create shared understanding

I presume that shared understanding based on the literature review is created by communication, people management and process-oriented mechanisms, which are interconnected by information technology. Hierarchical organizations look for a certain profile of an organizational member to fill in the vacant position. Afterwards they push

a newly hired member by means of communication, people management and process-oriented mechanisms interconnected by IT, towards shared understanding creation. This argument is illustrated by Figure 6.[14]

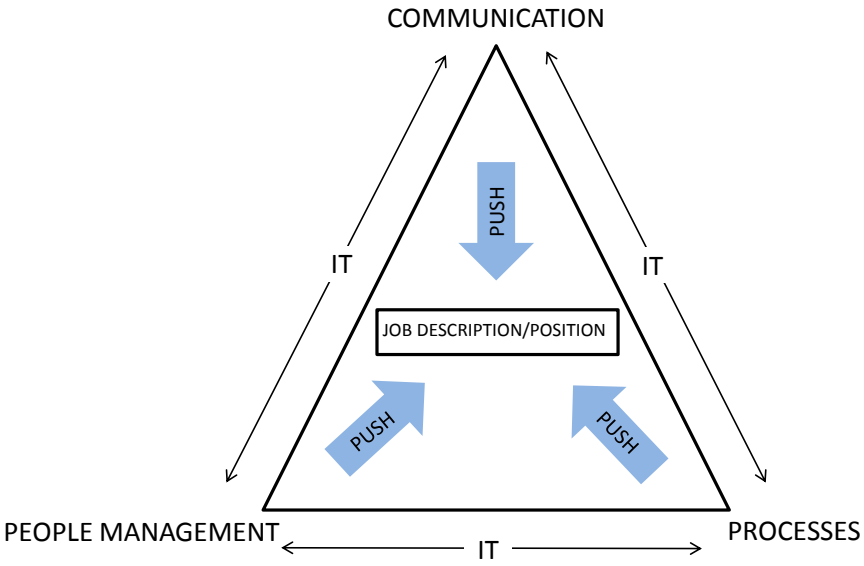

Figure 6. Conceptual model of shared understanding creation derived from literature

4.8 RESEARCH QUESTION

Given the reasoning above, the actor-network theory questions fundamental assumptions of shared understanding being attached to a particular organization with specified organizational boundaries. Furthermore, given the dilemma of the net generation, which demands new ways for aligning its efforts with organizational goals and technology that does not create shared understanding per se, the aim of the thesis is to re-conceptualize shared understanding creation. Hence, the research question is as follows:

How do firms create shared understanding in the network environment?

[14] Section 4.7 Mechanisms for shared understanding creation has been prior published as part of the paper: Bondar, K., Katzy, B.R. and Mason, R.M. (2013). Best service delivery through organizational goals sharing. Proceedings of the 22nd International Conference of the International Association for Management of Technology IAMOT 2013. Porto Alegre, Brazil, April, 14-18.

5. STUDY DESIGN

5.1 QUALITATIVE RESEARCH

Different research methodologies can be pursued to study the research question posed. Despite the agreement in literature that shared understanding is important, it is rather difficult to study and measure it (Marcoulides & Heck, 1993; Schein, 1996). Researchers have used a variety of approaches to study shared understanding (Rousseau, 1990; Schein, 1990). The prevailing research has used ethnographic observations of interactions among organizational members in a small number of organizations (Barley, 1983; Schein, 1983, 1990). While this research was informative in nature and could help in theory-building, the small sample made it difficult to draw robust conclusions. Another approach to studying shared understanding used questionnaires given out to a large number of organizational members to a few organizations (Chatterjee, Lubatkin, Schweiger, & Weber, 1992; O'Reilly, Chatman, & Caldwell, 1991; Schall, 1983). The questionnaires were designed to measure certain elements of shared understanding that could be compared across organizations to provide conclusions on how differences in shared understanding can affect organizational performance. Such studies are useful in a sense that they provide concrete empirical measures of differences among organizations on several dimensions related to shared understanding. Nevertheless, the main limitation of this kind of research is response bias due to nonresponse correlation with dependent variables or, due to non-random choice of the organizations studied. Other studies that I discuss in Section 4.7 Mechanisms for shared understanding creation have used quantitative methods to measure the effectiveness of a certain mechanism for shared understanding creation. For example, the study of Arias, Eden, Fischer, Gorman & Scharff (2000) aimed to measure how informed participation influences the creation of shared understanding, while the study of Choo (1996) has concentrated on measuring the influence process of sense-making on shared understanding creation.

My research is based on a limited theory on the topic of shared understanding creation in firms in the network environment and examines contrasting previous studies which have mostly used quantitative methods, whereas I have chosen qualitative conceptual research (Marshall & Rossman, 1998). Relying on detailed field work, I tracked how

firms in the network environment assure that every member is aware of organizational goals and acts in accordance with them.

The qualitative research using semi-structured interviews as a data collection tool was chosen for the following.

a) The type of research question posed.

What does shared understanding mean in the network organization? This is an exploratory question and any research strategy can be used (Yin, 1994).

b) The extent of control of the events taking place.

I am observing the mechanisms to create shared understanding, and therefore have no control over behavioral events. In this case survey, archival analysis, history or interviews may be used.

c) The degree of focus on the contemporary events as opposed to the events that have happened in the past.

I am interested in understanding how firms in the network environment create shared understanding at present, which is influenced by New Ways of Work. Hence, experiments, surveys and interviews may be applied.

For the reasons stated above, qualitative conceptual research done through interviews was the most favorable research strategy to be applied in the current research.

5.1.1 How and what to observe

Schein (1992) states that in order to understand and observe shared understanding as a part of organizational culture (see Section 4.4.1.1 above), it is first important to examine different artifacts, such as organizational physical environments, ways in which organizational members interact with each other, different organizational policies, reward structures, etc. Still, it doesn't suffice to regard only the artifacts. Values as well as individual assumptions that shape shared understanding can shed more light on the topic. It becomes necessary thus to observe how organizational members interact, what choices they make, as well as ask them about their beliefs about what is right in their opinion and how they should behave according to their individual perceptions.

Following Schein's (1992) definition of shared understanding *as a set of basic assumptions and values about how members determine relevant information and take actions*, I have decided to operationalize the study of shared understanding by looking at three organizational values/goals. I define *organizational values as acceptable standards that govern the behavior of employees within an organization*. It is important

for all organizational members to have a shared understanding of values. Values guide organizational members through different situations and help them to visualize beyond today's goals to more of a so-called 'end-states of existence' (Rokeach, 1986). Values can be learned as well as developed through experience (Williams, 1979). Hence it is necessary to give organizational members opportunities through which they could develop a shared sense of organizational values. Cheney (1983) emphasizes that participation in an organization helps individuals to identify and accept organizational values which leads to the state of affairs in which individual and organizational interests overlap.

5.1.2 Defining organizational goals

Without a doubt, the new working environment (see Section 4.6 above) has put new constraints and challenges on the primary goals of organizations. In order to have a closer look at the mechanisms for shared understanding creation in firms in the network environment, I have identified three organizational goals to study: information security, quality of services and quality of products, which may shed light on new mechanisms to create shared understanding in New Ways of Work. In fact, any organizational goal could have been chosen. But for my research I have taken the organizational goals mentioned above for the following reasons.

Information security. A hierarchical perspective on organizations views information as claimed by the agency theory as a purchasable commodity (Eisenhardt, 1989b), which is controlled by an organization and lends an intended power. When looking at organizations from a network perspective, the loss of control over the knowledge assets and the disappearance of physical organizational boundaries (Inns & Jones, 1996) are observed. Information can easily be disseminated among network members and organizational 'know-how' can be spread into the clouds in a few seconds. For that reason, researchers and practitioners wonder how organizations can create shared understanding about information security in network organizations.

Information security is defined as the preservation of:

- *Confidentiality* – making sure that only those authorized have access to the information.
- *Integrity* – preserving the completeness and accuracy of information and processing methods.

- *Availability* – making sure that authorized users can access information and associated assets when needed (British Standard, 1999).

Quality. According to Oisen (1971), successful project management that improves performance requires three components: cost, time and quality, which are also known as the Iron Triangle. While cost and time are variables that are normally predefined before the project starts, quality standards are more vague and can differ from one organizational member to another. Organizational members can have different beliefs about what quality entails, based on their education, prior experience, communication with their colleagues, etc. Therefore, creation of shared understanding about organizational quality standards can define not only the success of the project, but organizational performance in general.

Reeves & Bednar (1994) argue that there is no universal definition of quality. Their review of different literature streams connected to quality in search of a universal quality definition, has yielded inconsistent results. In my research I am interested in two streams of quality that are *quality of services* and *quality of products*. Hence, the most appropriate definition of *quality* for my research is *the extent to which service or a product meets and/or exceeds the expectations of the customer* (Groenroos, 1990; Zeithaml, Parasuraman, & Berry, 1990).

5.2 SELECTION OF SAMPLE

In this section, criteria for choosing research sites in which shared understanding creation was studied will be discussed. A brief introduction to each site will also be included.

From an exploratory study conducted in Switzerland (Katzy et al., 2011), described in Section 3 of this thesis, it was concluded that there are 3 types of firms depending on their response to technology and new social media: 1) pioneering, 2) those that resist changes, and finally, 3) the followers. The sample of pioneering firms included mostly organizations in the high-tech industry that were developing new products and technologies as well as consulting organizations. Consequently, I have decided to choose organizations from those industries to study in my current research. The common thing about these firms is that they are all pioneering in using new technology and new social media and could provide interesting insights into mechanisms of creating shared understanding in New Ways of Work. When looking at the pioneering

firms, I suspect that this is the way that shared understanding will be created in the future by all firms.[15]

I chose 5 firms from Spain and Ukraine for my research (Table 3). All firms were established in the industry, international in their operations, and had over 250 employees. Information security/quality and the quality of products/service as communicated by the CEO of each firm was one of the key organizational goals. Moreover, each firm was in the middle of a reorganization period and was establishing new ways to create shared understanding about organizational goals among its members.

The firms studied were also using different kinds of technological tools, such as e-mails, internal platforms, video-conference tools, Skype, instant messengers, etc. to promote shared understanding creation.

Organizational Goals / **Firms**	*Information Security*	*Quality of Services*	*Quality of Products*
Telecommunication Organization, Spain	X		
IT Consulting Organization, Spain	X		
IT Consulting Organization, Spain		X	
IT Consulting Organization, Spain		X	
IT Product Development Organization, Ukraine			X

Table 3. Firms and corresponding goals

5.3 BRIEF SUMMARY ON FIRMS' BACKGROUND

5.3.1 FIRM A: Information security at telecommunication firm 'A' in Spain

The first firm involved in the study on shared understanding about information security is an internationally operating manufacture of telecommunications and measuring equipment. Its main products include televisions, PCs and other networking products, semiconductors, digital imaging, electronic components, etc. The firm 'A' has been on

[15] Section 5.2 Selection of sample has been revised as part of the paper: Bondar, K., Katzy, B.R. and Mason, R.M. (2013). Best service delivery through organizational goals sharing. Proceedings of the 22nd International Conference of the International Association for Management of Technology IAMOT 2013. Porto Alegre, Brazil, April, 14-18.

the market for more than 60 years and invests a lot of resources into research and development. Information security as communicated by CIO is one of the key organizational values and goals, and the senior level managers put a lot of resources into making sure that each employee is aware of information security issues and acts correspondingly. The hack attack that took place one and a half years ago has made the organization's leaders reconsider security standards and put more emphasis on what could be shared in the firm as well as with external contractors.

5.3.2 FIRM B: Information security at IT consulting firm 'B' in Spain

The second set of interviews on shared understanding about information security was conducted at an IT consulting firm with more than 50 years of experience in providing technology solutions and services to customers in more than 90 countries world-wide. Its main services include but are not limited to business and technology consulting, enterprise solutions, application services, cyber-security, business and technology transformation, etc. The firm's clients come from a wide range of industries including banking, insurance, health, chemical, energy and natural resources, etc. Working with sensitive information from customers, Firm 'B' tries to make sure that both its consultants and customers treat information according to the rules and organizational values. Besides, being an American firm, Firm 'B' puts in place certain mechanisms that control and prevent information dissemination to the outside.

5.3.3 FIRM C: Quality of services at IT consulting firm 'C' in Spain

Firm 'C' has over 15 years of experience in applying information technology and communication to meet the strategic objectives of its clients. Being a part of the ICT strategy of Internet cluster in Spain, Firm 'C' offers services related to new technologies and especially the Internet. Its main services include web solutions, e-Commerce, industrial and logistics software, internet strategy consulting and much more. The main mission of the firm is to invent and develop innovative solutions and always strive for the best quality of the services provided. It follows that shared understanding about quality of services is a prime organizational goal.

5.3.4 FIRM D: Quality of services at IT consulting firm 'D' in Spain

IT consulting Firm 'D' where shared understanding about quality of services was studied has its main headquarters in the USA and three other major offices in Europe, Asia and Australia, employing over 96,000 professionals. With over 50 years of experience, it provides such services as cloud solutions and services systems

integration, managed services and outsourcing, industry-focused solutions and service oriented architecture, etc. Functioning sectors include but are not limited to manufacturing (automotive, aerospace and defense), technology and consumption (telecommunications, retail, distribution and consumer goods, transport and tourism), and the public sector, etc. From project planning to its final implementation, Firm 'D' tries to meet the complex challenges of its clients to ensure that they are more competitive in the environment and get rapid return on investment. This implies striving to achieve the best quality of services demanded.

5.3.5 FIRM E: Quality of products at IT product development firm 'E' in Ukraine

Firm 'E' was the only firm in my sample where quality of products was observed. Furthermore, the firm is a full lifecycle product development leader that combines domain expertise and cross-industry experience. Firm 'E' operates world-wide and is committed to the realization of a complete product roadmap – from defining the product with the latest technologies to getting it to the market quicker. Its main operating industries include digital media, telecom, healthcare, finance, electronics, etc. and its main competitive advantage is built on the experience gained from working on innovative products and disruptive technologies. That is why it is vitally important for Firm 'E' to assure that quality of products is met in every product which the organization produces, and that its every employee is aware of the organizational quality standards.

5.4 DATA COLLECTION

I collected evidence from different sources: (1) semi-structured interviews, (2) direct observations at the organizations, (3) extensive printed and online document reviews, and (4) informal follow-ups with e-mails, phone and Skype calls. Triangulation of the collected data from multiple sources has strengthened my confidence in the findings (Eisenhardt, 1989a).

5.4.1 Interview data

One of the most important data sources were the semi-structured interviews. First, four pilot interviews at a healthcare and well-being firm in the Netherlands and a strategy consulting firm in Germany were conducted, during which questions on information security and quality of services were clarified and added. The profiles of the interviewees were identified beforehand, but were adjusted based on the organizational

structures of the individual organizations taking part in the study. All in all, the profiles typically consisted of CEO or General Manager, CIO or Chief Operating Officer (COO) or Senior Partner, project manager, team leader and two organizational members or consultants. Five interviews were conducted at each firm involving three levels of shared understanding (Table 4).

Levels of Shared Understanding / **Organizational Levels**	*Assumptions (beliefs about human nature and reality)*	*Values (shared principles, standards, goals)*	*Artifacts (visible, tangible aspects of organizational culture)*
Senior managers	X	X	X
Project managers	X	X	X
Organizational members/consultants	X	X	X

Table 4. 3x3 matrix of organizational and shared understanding levels

Before the interview, the CEO or General Manager of the firm received an information form about the study with the purpose of the study as well as its main objectives (Appendix 2). After the CEO became familiar with the study through the information form and a short presentation of the researchers, he/she identified organizational members to be interviewed based on the profiles stated in the information form. The positions of the identified members were later discussed with the researcher, and, when needed, were switched to someone more appropriate. When this was finished, each interviewee received an information form with the purpose of the study and its main objectives and booked one hour for the interview in his/her agenda.

The semi-structured interviews ranged from 45 to 60 minutes and covered three levels of shared understanding: assumptions, values, and artifacts (Schein, 1992) (Appendix 3). I addressed twenty-four open-ended questions to the CEOs, CIOs and Project Managers and nineteen questions to organizational members on information security. The questions on quality of services/products ranged from twenty-one addressed to CEOs, Senior Partners and Project Managers and fifteen to the consultants.

First, I asked the informants to describe their general assumption about information security/quality of services/products. The most typical question was: What do you define as information security/quality of services/products at your organization?

Secondly, I addressed informants questions about information security/quality of services/products at their organizations, what they know about it and whether they perceive everyone at their organizations to have the same shared understanding about information security/quality of services/quality of products. Some of the questions asked were the following: What do you know about IT security/quality of services/quality of products in your organization? Do your colleagues/team members share your understanding about information security/quality of services/quality of products? How do you know it?

Finally I proposed that informants describe mechanisms for shared understanding about information security/quality of services/quality of products is created at their firm. Some examples of this type of questions included: How did you learn about information security/quality of services/quality of products at your organization? Can you make suggestions about improvements in information security/ quality of services/quality of products? Have you done so? Does your organization encourage this? If yes, in what way? How would you describe organizational culture and how it promotes the creation of shared understanding about information security/ quality of services/quality of products? In addition to that, I asked about the perceptions of interview participants on whether shared understanding has been achieved, and about its influence on organizational performance.

Based on prior knowledge obtained during an extensive literature review, I could infer different mechanisms for how shared understanding is created as described in the literature along with additional emergent ones. The interviews also included questions on whether technology and new social media have influenced the creation of shared understanding about information security/quality of services/quality of products and, if so, in what way(s).

All the interviews were audio-recorded and transcribed afterwards.

5.4.2 Observational data

Observations can help a researcher to capture additional information which participants of the study may not remember accurately, including different events and activities that took place or were carried out. In each of the sites I was allowed a half- or a full-day visit with some of the interviewees.

5.4.3 Documents and artifacts

Apart from interviews and observations, several types of hard-copy and electronic data were collected. Table 5 provides an overview of a variety of hard-copy and electronic data that were collected in five different sites and used afterwards for results' triangulation.

Data Source	Example
Documentation	• Quarterly magazines • Corporate policies • Employees' guidelines • Social media guidelines • Internet publications
Physical Artifacts	• Public websites • Communication systems • Collaboration platforms

Table 5. Triangulation of different sources of data

5.4.4 Informal follow-ups with e-mails, phone and Skype calls

After the interviews were transcribed and initially analyzed, some additional questions have arisen that needed clarifications. These clarifications we did with the interview partners mostly via e-mails or Skype call. Sometimes phone calls were used.[16]

5.5 DATA ANALYSIS

I began my data analysis by writing down individual reports including observations, interviews, data from the documents as well as artifacts obtained at the organizations (Yin, 1994). I triangulated these data, putting a special emphasis on topics that were supported by different sources of data (Jirk, 1979).

Coding as an interpretive technique that allows organizing data and provides meanings to the interpretations of a certain method was used. Based on the initial examination of the material obtained, the interview transcripts were coded by two researchers independently using Atlas.TI software to identify text segments that referred to certain mechanisms of shared understanding creation. Each text segment was then assigned to a

[16] Section 5.4 Data collection has been revised as part of the paper: Bondar, K., Katzy, B.R. and Mason, R.M. (2013). Best service delivery through organizational goals sharing. Proceedings of the 22nd International Conference of the International Association for Management of Technology IAMOT 2013. Porto Alegre, Brazil, April, 14-18.

theoretically meaningful category which derived from the literature and comprises a comprehensive code book (Appendix 4). The iterative strategy was used to build a full set of codes, each of which clearly fitted into one of the categories. Individual reports were then sent to the sites in order to finally validate the findings.

All in all, 69 codes were identified, which were then grouped into 7 categories. The categories were the following: "Education & Development", "Communication", "Processes", "People Management", "Professionalism", "Information Technology" and "Organizational Culture".

The category "Education & Development" included 13 codes, "Communication" – 11 codes, "Processes" – 10 codes, "People Management" had 4 codes, "Professionalism" – 3 codes, "Information Technology" – 16 codes and finally "Organizational Culture" – 12 codes.

Some examples of codes and corresponding text segments included:

Code Ed_Emp_Man (employees' manual):

… We have a manual employee, employee manual and you can read all these things about security, you can read this on this manual…

Code Ed_Train_Reg (regular trainings):

… We have special training about contacts and ethic, these things and they say what we can do…

Code Comm_Team_Meet (team meetings):

… When I work in a project that we have weekly meetings and we discuss about the open things and the schedule runs correctly and so on…

Code Comm_Disc_TL (discussion with a team leader) and code Comm_Disc_Col (discussion with a colleague):

…Then I can ask colleagues or my team leader, what I have to do when I am not sure…

Code IT_Video (video-conference):

… by videoconference or telephone conference. This is the normal thing…

Code OrgCul_Flat_Hier (not many hierarchical levels):

… I think we have a small hierarchy. I can talk directly to the general manager…

Afterwards, I began cross-interview analysis to identify similar issues across the interviews (Eisenhardt & Graebner, 2007). I used tables and figures to compare different constructs. When the tentative constructs were formed, I verified them using replication logic (Yin, 1994). Afterwards I compared the findings with the existent

literature in order to sharpen the definitions and to judge the generalizability of the emergent findings. The results of the findings obtained are the following.

6. INTERVIEWS

6.1 FIRM A: INFORMATION SECURITY AT TELECOMMUNICATION FIRM 'A' IN SPAIN

6.1.1 Assumptions

The first interview results have shown that there is no homogeneous environment at Firm 'A' concerning information security. What came up from the interviews is that some organizational members are more aware about information security, others are less; the level of awareness is dependent on the department they work in. This means that the level of importance they put on information security is different. Most of the organizational members that do not work in the IT department possess a basic level of understanding about the information security as it was communicated by the interviewees, while, for others it is more sensitive. Nevertheless, everyone treats information confidentially and what has been stressed by the interviewees is that sometimes organizational members prefer to put the tag 'confidential' on every piece of information that is sent out in order to avoid different problems. Organizational members are convinced that it is better to put more measures on the protection of information than less.

There are several assumptions among interviewed organizational members about what information security is.

- *Information security – managing information according to the rules and policies of an organization. Information security problems connected with confidentiality.*
- *Information security – protecting confidential information from unauthorized use (all the tools that are put in place) as well as preventing information leakage.*
- *Information security – the group of policies and procedures the organization has to manage information appropriately.*
- *Information security – the way information is managed in the organization and protected from being lost.*

The key words used in the assumptions of the organizational members are information management and protection, policies and rules, unauthorized access. This means that everyone has a general understanding about what is defined as information security.

Having this knowledge helps organizational members to understand why it is an important source of competitive advantage.

6.1.2 Values/Goals

The interview study results from Organization 'A' indicate that the organizational goal of information security is shared throughout the organization and among all organizational members. All organizational members describe information security at Firm 'A' as a balance between facilitating access to information and protecting what has to be protected. Therefore, different tools are put in place to inform, protect, as well as control information leakage. Organizational members are then informed about these tools and their importance. Moreover, interviewees confirm that increasing the moral of organizational members is one of the aspects of successful sharing of such goals as information security. In addition, it was evidenced that the human factor plays an important role in shared understanding creation. It is not only what the firm communicates to its members and what measures it puts in place to assure organizational goal accomplishment, but, it is also self-evident and common sense on the part of the organizational members to interpret the organizational goal accordingly and act correspondingly.

The CIO of Firm 'A' has pinpointed that there were no serious cases on the issue of information security inside the firm and that everything depends solely on the intentions of an organizational member. All organizational members know that it is very risky to give information out and no one wants to get into the trouble of being fired or going to court. After analyzing the responses of the interviewees concerning information dissemination, it was concluded that organizational members could only break the rules by mistake, but not intentionally.

6.1.3 Artifacts/Mechanisms

6.1.3.1 Organizational culture

The first important element that was necessary to observe at each firm in the study was organizational culture that was supposed to promote the creation of shared understanding and the proper fit of all the mechanisms used to create it. Based on the direct observations, interviews, as well as document screening at Firm 'A' the key points of the organizational culture consist of trust, result-orientation, and promotion opportunities that are given to organizational members to develop both personally and professionally. For example, Regional Service Delivery Manager considers:

… I consider in this company you can develop, not only professionally, but also as a person, you can experience different…

The interviewed organizational members have also described organizational culture as an informal one where it is possible to have direct contacts with other colleagues. Customer Inside Product Manager confirms:

…It's a very informal organization, it's very friendly, very direct, so you can basically have direct contact with anybody in the company, there are no closed doors…

Looking at organizational charts as well as discussing hierarchical divisions at Firm 'A' has made me come to the conclusion that it does not have many hierarchical levels and is in the transition period of becoming more horizontal than before:

…Organization A became flatter organization, with less layers, and direct reports…

Moreover, organizational culture is described by organizational members taking part in the interviews, as a collaborative and family-oriented culture, in which everyone supports each other and values are mutually interchanged. One of the interviewees supports:

…We are one company and we have to collaborate with each other and looking for the common profit of the company…

Direct observations at Firm 'A' have helped to achieve open space office layout, together with the relaxation area in the building, which, according to the interviewees, are meant to promote informal communication among organizational members and make the discussions of organizational goals easier. The ease with which one may get in contact with the line manager, coupled with the open-door policy demonstrate a collaborative and flat hierarchical approach of organizational structures. For example, Manager of Design Support illustrates:

…In my office, in my department, we are all together, beside the boss, he has his own office, door is always open, but all others have one office, we have an open office, in my department we have 50-60 people…

The interviewees also mention that Firm 'A' promotes constant learning of organizational members through a variety of training-activities and workshops. In addition to that, the voice of every employee in the firm is heard and every member is encouraged to make improvements in various organizational processes and procedures. Finally, all the interviewees stress that team leaders serve as the best examples for organizational members on how work has to be done.

6.1.3.2 Professionalism

The first mechanism that contributes to shared understanding creation at Firm 'A' as was found based on the interviews is professionalism. First of all, it includes common sense and a personal point of view not to share confidential information with people for whom the information is not meant. All the interviewees emphasize that it lies in the common sense approach, as well as personal and professional attitudes to work, that organizational inventions, financial information and strategic foresights should not be shared with the outside world, unless an organizational member were to have bad intentions to damage the organization.

Second, attachment to the community of the professionals from the same field plays a vital role in shared understanding creation. The professional image of an organizational member is in danger if he/she does something wrong or does not meet the goals set. For example, Customer Inside Product Manager shares her opinion about showing professionalism:

…We are professional people, we have all be trained, how not to do things, what not to share, what isn't permitted, so I expect the behavior not sending out private information to your family or friends, from employees, because it's just the way...the way people behave in multinational companies…

Firm 'A' based on support from the interviews recognizes that professionalism that also includes professional ethics lies in the deepest level of shared understanding creation, but is not enough to achieve it. Hence, it is necessary to educate organizational members about organizational goals, constantly communicate them, as well as put certain processes in place together with encouragements and sanctions:

…Professional training and ethics, because training allows you to know what they can and cannot do, so, we are not born professionals, we become professionals through trainings, education, and constant improvement of our knowledge about what's going on, so it's both, attitude, personal and professional attitude, and the training the company gives you, so you get awareness, it gives you awareness about things…

6.1.3.3 Education and development

The Regional Service Delivery manager has explained in the interview that no organizational member is supposed to have prior knowledge about information security when coming to Firm 'A' and is educated from scratch:

… Normally we train and explain in our own policy and we don't expect initially the employee to arrive with how to behave in terms of IS, normally we put in the worst case…

When a new organizational member joins, he/she has to go through an introduction program, which officially lasts for two days, but unofficially one week, until the new organizational member is fully established at his/her desk. During this introductory training, an organizational member gets full the informational scoop about the organization, its mission, values, goals, structure, etc., to understand how the organization functions and what is important to it. He/she also receives an employee's manual containing general information about the firm. One of the interviewees involved in the study describes the introduction training in the following way:

…There is first of all an induction program, when you start, normally going through all the areas … the second one is to do one course, one security course that launches once per year, even for the employees that already work at the company, this is mandatory to do, this online training course every year…

The organizational members interviewed have also explained that a new organizational member gets assigned a mentor from the HR department who serves an ambassador into the organization. Additionally, each organizational member has to sign a contract and a non-disclosure agreement, which informs organizational members about their rights and obligations, as well as protects the firm from information misuse.

Then the IT department provides all organizational members with tools, policies and guidelines about information security. This includes an acceptance user-policy regarding all security issues, as well as social media guidelines and code of conduct. Regional Service Delivery Manager has tried to clarify different policies associated with information security used by Firm 'A':

…There is one called Global Information Security Policy, we have some other document that is the Acceptance User Policy that is more specific in terms of IT, what is expected and what is not accepted in use of technology by employees…

In addition to this, mandatory security training courses are done once per year by each organizational member. One of the interviewees supports this argument:

…Online training was mandatory for everyone, so I guess you should get that online training as soon you get into the company, so that would be the first way to get understanding about it…

Furthermore, there is a help-desk number on the telephone device of each organizational member to contact the IT department when IT problems arise. There is also a webpage where IT problems can be brought to attention. In addition to that project, managers and supervisors serve as best examples for organizational members and can be contacted any time.

6.1.3.4 Communication

Communication plays an important role in creating shared understanding, as, it helps organizational members to make sense of organizational goals while discussing them with other colleagues. According to the interviews conducted, Firm 'A' uses different communication channels to create shared understanding. Though it may seem that online communication through a variety of tools helps to maintain relations with organizational members and customers in different places, the interviewees consider face-to-face communication to still play an important role in shared understanding creation:

…We have not lost human relationship that is important for me as well…

The most popular communication channels named at Firm 'A' include one-to-one meetings and discussions with a line manager who can be reached easily when any problem arises. Team meetings as well as talks with colleagues especially with whom organizational members have mutual trust, were also mentioned several times during the interviews. For example, Manager of Design Support indicates:

…Among other things, ask your colleagues, or ask the highest people close to you, this would be one way about asking people…

Apart from different meetings, organizational members can also create shared understanding about information security by contacting a hotline number to report any issue with IT security. The member of the IT department indicates that his/her department can be easily contacted, and processes lots of requests from organizational members. One online business specialist, for example, indicates:

..We have a help desk … you have a hotline to call, make some questions, if you think something suspicious is happening…

At the same time, the interviewees note that peer reviews as well as feedback loops done on a regular basis among organizational members and their managers help to achieve shared understanding among all the parties involved. This is due to the fact that

organizational members are able to make sense of a wide variety of the information provided and understand the future goals for the common benefit.

In order to make sure that every organizational member possesses enough knowledge about information security, Firm 'A' conducts surveys and questionnaires. The information from the interviews verifies this point:

…Surveys, you got surveys about other things, maybe motivation, about IS systems…

6.1.3.5 Processes

There are several established processes described by the interviewed organizational members at Firm 'A' to promote the creation of shared understanding about information security.

First of all, the process of sense-making entails that organizational members discuss amongst each other different organizational policies or guidelines, for example, which label to put for different kinds of e-mails that they send out, and through this process, they can make sense of and understand how the organization functions better. The process of sense-making serves as an information filter for realizing what is actually important and what is not. It also stimulates discussions among employees and brings about trust and confidence. In a similar vein the process of reflection as mentioned by organizational members suggests that interviewees reflect on different changes in organizational standards, for example, reorganizational changes that took place after the hacker attack, and understand why the changes came about and what the consequences are.

The next process that increases the creation of shared understanding as considered by members of Firm 'A' is learning by doing. Organizational members get used to following organizational security standards and procedures by doing it day by day. For example, having raised a case in intranet once, when a problem with the computer occurred. In order for the IT department to resolve the problem, an organizational member now has the capacity to fix the problem much faster in the future. Manager of Design Support indicates:

…You learn to do when the time passes, it helps you to improve…

Trust perhaps comes as one of the most crucial processes for shared understanding creation. Organizational members are convinced that when mutual trust is created amongst organizational members, their managers and the firm in general, it can produce better results in information sharing. It also leads to exchanges in advice from each

other and to an involved participation for achieving common goals. Several interviewees propose:

…Well at first, they are Firm 'A' members, because they are Firm 'A' people, we trust them…

…I trust you that you are really a good person, and you know the policies, so I can go to K. because she will give me a good advice…

Moreover, observing others doing things right, according to the obtained data, serves as a good motivation for organizational members to keep up with organizational security standards. Seeing other colleagues not breaking security rules, tagging information appropriately, and encrypting USB sticks makes organizational members behave accordingly.

Standardized decision-making achieved through, for example, information tagging and different access levels to each piece of information, helps organizational members to immediately make sense of the information, know how it can be treated, and make decisions without consulting a team leader or other colleagues.

Finally, interviewees stressed that in order to check whether every organizational member is aware about information security, Firm 'A' runs internal auditing.

6.1.3.6 People management

The results of the conducted interviews indicate that Firm 'A' tries to put in place certain people management practices to get the best people as well as to encourage them to do an excellent job.

First of all, the HR department puts a special emphasis on hiring organizational members with a specific professional background, proven record of excellence, and who have shown their integrity and professionalism at their previous jobs. Such investment in hiring routines prevents Firm 'A' from getting dishonest organizational members who can later disseminate information and bring damage to the organization. Customer Inside Project Manager underlines:

…HR department also employing people, so they know who they employ, they wouldn't take a person that later is dishonest and shares information, you know, they would probably be laid off…

Second, organizational policies' screening together with the conducted interviews indicates that both rewards and sanctions are used at Firm 'A' to promote creation of shared understanding. The rewards are divided into two types: financial awards that

comprise Firm ‘A’ products, and social ones in terms of informal thank yous for keeping up with the good job.

Next, the interviewees explain that sanctions can also take place at Firm ‘A’ for violating the rules, especially for putting the firm’s confidential information on social media sites, yet they have rarely been utilized. As an illustration, I would like to quote the Manager of Design Support:

…Worst case I would be fired depends on the degree…

6.1.3.7 Information Technology

Information technology as communicated by the interviewees plays a supportive role at Firm ‘A’, to make sure that all organizational members are informed about information security, the devices are protected from unauthorized access and confidential information does not leak outside the organization.

First of all, in order to communicate inside the firm and to get information to organizational members by means of tools such as phone, instant messenger, or video-conference system, and to send e-mail reminders about information security, digital newsletters as well as new policies and internal collaboration platform, intranet are used. Several quotes indicate this point:

…Normally I use videoconference when I connect with him (line manager)…

…So we have the line meetings and the office communicator, that is having similar than Skype, and it’s also connected to our videoconference…

Second, Firm ‘A’ encrypts all the information and devices in case, for example, a laptop gets lost, no information can be accessed by the third party. To illustrate, Online Business Specialist shares:

…We have an encryption in the hard disk, and we have a 20-days password, that we have to refresh every 20 days…

Similarly, information back-up is used so that records of the information organizational members have on their computers are always kept, and this data cannot be damaged or lost.

Next, what has been observed is that some websites are restricted in such a way that an organizational member gets an alarm when he/she launches them. If an organizational member still wants to access the website, he/she is supposed to write a case justification explaining why he/she needs to access this particular website.

Installations are also forbidden on the computers at Firm 'A'. An organizational member gets a system alarm to contact the IT department when he/she wants to install something on the computer. If an organizational member still needs to install something on a computer, he/she is similarly supposed write a case justification explaining why that particular software needs to be installed. One of the interviewees supports:

…We don't have administrative users, so I can't install any kind of software, and everything that is downloaded in the network, in the Sony network, is checked by the proxies, all through the proxies, so all is controlled…

Moreover, organizational members are made aware that everything they do on organizational laptops or computers is tracked. An online business specialist verifies this:

…Everything that you do with your company laptop is tracked and monitored…

If there are some technical problems, organizational members have to make online requests on the internal collaboration platform and then actions are taken from there. This procedure allows keeping records of problems, archiving them as well as calculating human resources needed to tackle technical problems:

….When you enter in intranet, there is one icon what we call Helpdesk … you raise the call of one application and this is automatically going to the technician …

Additionally, Firm 'A' has different levels of access to information that has also to be tagged appropriately. These access levels include secret, highly confidential, confidential, open within organization, and open to anyone information. This system serves to promote the creation of shared understanding of the level of importance of each piece of information. Besides, organizational members are instructed that if an e-mail contains confidential information, it has to be tagged appropriately.

Finally, Firm 'A' uses a badge system to restrict access to different departments, especially to those dealing with Research and Development. Manager of Design Support confirms:

… But at that time we applied badges...

6.1.4 Main challenges

At the same time, the results of the interview yield that Firm 'A' has some internal and external challenges. The CIO stresses that the organization has two main challenges with information security. On the one hand, the internal challenge is how to make sure

that all the measures taken to create shared understanding about information security are enough and what actually enough entails:

…So the main challenge is how to make sure that these measures are having any positive impact, because it is very difficult to control, obviously that this is having a positive impact, so from an auditor point of view … because I have to make it work that the employees are really doing this, this is very difficult, this is the challenge for me…

In addition to that, the interviewees support the fact that organizational members read e-mails about information security when they specifically have to do with their jobs and only scan e-mails if they are not job-related.

On the other hand, the external challenge requires assurance that outsourcers (other firms Firm 'A' works with) manage information correctly, as, their organizational members do not go through the training processes that the internal organizational members do.

Last but not least, the information obtained from the interviews suggests that Firm 'A' views shared understanding about information security as the balance between trust and control. Still control comes first.

6.1.5 Shared understanding and New Ways of Work

Interviews conducted at Firm 'A' evidences that information technology has a certain impact on creation of shared understanding. New communication tools become available, information sharing becomes easier and faster, permitting the creation of a common repository of information as well as access to more people. The interviewees emphasize:

…Especially technology has have the biggest impact on shared understanding, because … we have put in place a lot of new software, new technologies, to improve business processes … over the last few years we have improved quite a lot in terms of managing projects, managing different processes, different interactions between department…

Technology also has improved the business process in terms of better collaboration and visibility of employees. Organizational members can more easily find out who is working on what project and who is responsible for what area in the organization in order to get in contact when needed. Due to this fact, shared understanding starts to make more sense, as, organizational members know how the organization functions, and what is important to it. Customer Inside Product Manager explains:

…If you work in one department, and want to collaborate with someone else in a different department, you have processes of how to do it, where to start, what to do, what document send, and that has been developed through technologies that allow you to do that, to do the diagrams, you know, follow the process, where you are, what you have to do, and I would say especially software technology allows employees to have a better shared understanding how the company works…

Still, human relations remain constant, and personal communication plays a vital role in shared understanding creation.

6.2 FIRM B: INFORMATION SECURITY AT IT CONSULTING FIRM 'B' IN SPAIN

6.2.1 Assumptions

Organizational members of Firm 'B' have certain assumptions about information security. Some but not all of them include the following definitions:

- *Information security – balance between information availability and protection from an unauthorized access and usage.*
- *Information security – protection of information that belongs to the organization, but at the same time it is shared among all employees who can easily access and use it.*
- *Information security – the data is secured in order only the right people can access and use data.*
- *Information security – measures taken to protect information.*

As is seen from the above statements, almost everyone uses such terms as availability/access and protection to describe his/her personal understanding of what information security is. Hence, though each organizational member defines information security in his/her own words, the main principles are still the same and everyone understands that it is a sensitive issue for the firm.

6.2.2 Values/Goals

Information security at Firm 'B' as described by the interviewees, is seen as a shared organizational goal which entails the assurance that organizational members can access and use data properly. But at the same time information does not go outside the organization and the right mechanisms are used to protect it. Information security as a shared organizational goal correlates with increasing the ethics of the organizational

member about this sensitive issue by making sure that all organizational and customer information is protected and treated correctly.

All the interviewees attempt to consider their understanding of information security on a general level. The general level according to the interviews is that organizational members do not have to understand everything about information security, but every department is an expert in a particular issue on information security. This, as suggested by the interviewed organizational members, is due to the fact that there are many security policies at Firm 'B'. For example, if a consultant is asked by the press to comment on some issues, he/she can refer to the Marketing department and they will consult him/her on the actions needed to be taken. Similarly, the CEO is not aware of all security standards but knows who to refer to if certain issues arise.

At the same time, IT consultants are sure that they all have the same level of shared understanding about information security. They see it in their interactions and the way they work. Still IT consultants think that information security is not their main task. They have to know about information security on a general level, e.g., antivirus, or the computer is encrypted, or the computer is protected with the password, but they have no stake in the details.

6.2.3 Artifacts/Mechanisms

6.2.3.1 Organizational culture

The first thing that was observed at Firm 'B' was its culture, to permit a comparison of shared understanding creation at firms with a similar culture. First of all, Firm 'B' is a matrix company, meaning that its every organizational member has more than one boss. It is also a learning company where members can make mistakes. According to the general manager, it is not bad to make a mistake, but rather the most important thing is to realize this mistake and learn lessons from it.

Second, the general manager has communicated in the interview that Firm 'B' is very open and does not have many hierarchical levels:

… I would define it (organizational culture) as very open in the fact that we all understand that this is not a hierarchical organization …

Next, work done at Firm 'B' is result-oriented and organizational members are accountable for the results they produce, not for the time they spend in the office or at the customer's side. The interviewees corroborate this:

… This is an organization with people responsible that they have accountability of what they do…

Furthermore, organizational members stress that they can easily reach their line managers when needed and an open door policy has always been promoted. Open space office layout as observed during several visits at Firm 'B', allows for easier communication among team members. Interview participants also share on this topic:

… Regarding also culture of the company, open doors, you'll see all the desks, all the offices have transparent rooms so you can see if I am here or not…

What has been proposed by the interviewees is the fact that they feel valued and have a lot of promotion opportunities for both personal and professional growth. Firm 'B' also has trust in its members, that they follow the rules. Hence, there is never a double-check as to whether project managers have passed the information to their subordinates or not, as, it will in any case come out at some point.

Moreover, organizational members involved in the study illustrate that performance reviews are done by a manager and a subordinate together on an annual basis and help organizational members to better analyze the results of the work accomplished and set goals for the future. Every year there is also an audit conducted, through which organizational members are asked about organizational drawbacks and ways for improvements.

Additionally, several participants of the study note a variety of social events organized by Firm 'B', which allow for more opportunities for informal communication.

6.2.3.2 Professionalism

Professionalism was the first mechanism that was mentioned by interviewees that affect shared understanding creation. First of all, it includes common sense understanding that organizational members recognize which information can be shared with outside world and which not, and the consequences of confidential information sharing.

Second, it was explained by several interviewees that it is expected from experienced consultants that they know about IT security from their previous jobs and it is part of their professional ethics. For example, Manager of Business Intelligence indicates:

… All the employees that are IT consultants, I think they share the same levels of understanding in this way…

Or another interviewee pinpoints:

… You do it because you know it how you don't have to do it when you are an IT consultants…

Experience gained from the previous jobs can also be verified with the following quotation:

… If you are an experienced consultant, maybe these things they don't have to explain because you have to know it…

6.2.3.3 Education and development

Though professionalism is the core mechanism wherein shared understanding creation about information security lies, education also plays a vital role. Before any organizational member starts the job at Firm 'B', he/she has to sign a legal statement as a part of his/her contract about not misusing the data – a non-disclosure agreement which protects Firm 'B' from any legal issues connected with data misuse.

Afterwards, as communicated by the interviewees, Firm 'B' conducts introductory training about its basic rules and policies through which every newly hired organizational member should go. General Manager demonstrates:

… There is an introduction program … They (organizational members) enter into the company and we explain them where to find the information, what are the basic rules ... even which is the culture…

After the training, an organizational member gets a manual, which also includes corporate policies about information security as well as guidelines for social media usage. Manager of Business Intelligence explains:

… We have a manual for every employee explaining your responsibilities, also explaining your rights also, not only duties but rights also …

Moreover, all organizational members have to take part in the information security awareness program, which covers all the policies about information security, and obligatory web training conducted annually on professional ethics including information security. The participants of the study verify:

… Through these policies where you can find that and then through some training that we do to them (organizational members)…

… In these ethic courses they explain you how critical is the information…

Finally, each newly hired organizational member is assigned a mentor who guides him/her through the first days at Firm 'B', to whom a new member can always refer

when some questions or problems arise. One of the interviewees strengthens this argument:

… Your manager explains the main tools that you have in this company…

6.2.3.4 Communication

The interviewees taking part in the study have recognized that shared understanding creation at Firm 'B' is also dependent on the communication taking place inside the organization. This includes, first of all, one-to-one meetings with a team leader or a project manager, team meetings as well as discussions with a team leader or colleagues whom organizational members trust. The interviewed CIO shares:

… So there are some discussions open and the management is in there, so some employees that have some concerns they can explain there and have an answer in a time manner…

Second, CIO has personal conversations with organizational members about new inventions, security standards, etc. If an organizational member has any questions about information security, he/she can always contact the IT department and get a quick response.

Furthermore, each organizational member gets an e-mail every month about information security. In this e-mail there is also a chance to win an iPod if the questions based on the information provided in the e-mail are answered correctly. By means of such prizes, Firm 'B' tries to motivate organizational members to read the e-mails to the end as well as analyze the information provided. Yet again, project managers are instructed to pass information about information security on to their subordinates, as, e-mail messages are considered not to be as effective and it is impossible to make sure that everyone has read and understood the message.

Peer reviews and feedback loops as emphasized by the general manager and afterwards confirmed by interviewed organizational members, plays an important role in shared understanding creation and gives organizational members an opportunity to better understand their role in the organization, the role of the organization in their personal and professional development, and set up common future goals for mutual benefit. The General Manager describes:

… We do it together and before the review we shared what we think about his performance or her performance in the company…

With the purpose of making sure that every organizational member has understood organizational security standards, online questionnaires and surveys are done. One of the interviewees explains:

… We do have some kind of questionnaires that every employee needs every year to go through …

Moreover, due to the fact that information security is part of organizational competitive advantage, an International steering group 'Records Information Management' (RIM) has been created at Firm 'B'. This group assures that the right mechanisms are used to protect information in the organization. The main aim of the group is to make sure that every organizational member knows:

- definition of information protection;
- importance of information protection;
- consequences of information misuse.

The group appoints one coordinator per country who then appoints one informing person per department in his/her country to facilitate information and problem-flows to a coordinator.

In addition to that, all organizational members are aware that if something is wrong, they have different ways of being protected. One way includes contacting the HR department or the boss of the boss, or calling the anonymous organizational members' protection group in the USA.

6.2.3.5 Processes

With regard to processes, it was established that there are several processes that contributed to shared understanding creation at Firm 'B'.

First of all, the interviewees mentioned learning by doing. It involved becoming aware of different organizational security standards, corporate policies and guidelines, the ways for treating customer information through everyday routines of getting the work done.

Second, having different levels of security and different levels of access for each piece of information according to the position of the organizational member, the document's importance and the project which a given an organizational member is working on, contributed to the process of sense-making. This involves making sense of the level of information importance and with whom it could be shared. After doing it several times,

organizational members start making sense of the information more easily and develop standardized decision making.

Next, mutual trust among organizational members and the firm that employs them, as explained by the interview participants, promotes the development of common goals for mutual benefit. For example, General Manager interviewed indicates that he does not double check whether the managers have passed on all the information discussed during the meetings with him to their subordinates. He has trust in his organizational members that they are doing it:

… We are not supposed, and we don't want to be, so structure routine that information that I give to my people, that I double check, if it goes to other people…

Furthermore, several interviewees have mentioned that working with professional colleagues who treat information confidentially and likewise observing them keeping up with organizational security standards, makes them also keep up with security standards and create shared understanding about the importance of information security.

To ensure that organizational members understand why and how information has to be protected at Firm 'B', the process of reflection is used. By means of reflection on organizational security standards, organizational members, as described by the interviewees, can better understand why, for example, certain websites cannot be accessed or why the downloads are monitored, and as a consequence respect the rules. Hence, when a person understands the logic behind every decision made, it is easier for him to stick to it.

In addition, external auditing done by the third party as suggested by the interviewed organizational members helps them to know more about information security at Firm 'B' and the importance put on it by the organization. The CIO shows:

… This survey is done by an external company, it's not internal. It's an external company. It's anonymous…

6.2.3.6 People management

According to the participants of the interviews, hiring routines play a certain role in shared understanding creation. The HR department, as mentioned in several interviews that hires new organizational members, considers that a newly hired consultant who has worked in the industry before knows about IT standards, how to treat different kinds of information as well as how to manage customer information. As a result, a certain level of shared understanding about information security is already at hand.

Likewise Firm ‘A’ and Firm ‘B’ both use rewards and sanctions for creating shared understanding about information security among its organizational members. As it was stated earlier, after receiving a monthly e-mail about information security, each employee has a chance to win an iPod when answering the questions about information security based on the information in the e-mail. The CIO confirms:

… We have a prize of a mini iPod. So for example if people read all the e-mail and read all the links that are on the e-mail, at the end of the e-mail there are some questions about what has explained in the e-mail and in the links. So if people answer correctly they have the challenge to get a prize…

In a similar manner, organizational members are aware of consequences for violating the rules on information security. Depending on the damage caused, the sanctions can range from one or two days staying at home without being paid, to being fired. The Manager of Business Intelligence states:

… There are consequences because they have to know that…

6.2.3.7 Information technology

As in the previous organization, information technology plays a supportive role in shared understanding creation at Firm ‘B’. Organizational members taking part in the study have mentioned standard communication channels such as e-mails, messenger, phone calls and video-conference system:

… We inform about the news to all the employees through e-mail but the same information you have in the e-mail you have in the social media, to assure if you don't have the e-mail any more you can find the information there…

Firm ‘B’ also uses an internal platform where all the information about the organization could be found, in addition to each piece of information that the organizational member gets in an e-mail, which he/she can also find on the platform. One of the interviewees supports:

… More and more we are using C3, which is an internal tool. For example now we are in a meeting and all the information we have around this thing... this tool allows you to generate a space and this space all the people are allowed to entry…

Digital newsletters as explained by the participants of the interviews are sent to all organizational members of Firm ‘B’ every month to remind them about sensitive issues with information security. The manager of business intelligence concludes:

… We have all these news that tell us every month or it is three or four weeks or you have to act if they call you, they ask you information, if you receive an e/mail that's not properly prompt or with the properly reference …

The CIO also indicates that all the corporate computers are encrypted in case they are lost or stolen:

… From last year we have all computers and all mobile devices encrypted, so if somebody stole the device or the computer they can't access to that…

Organizational members also have to change passwords at their computers every three months. Important information which is sent in e-mails should also be encrypted.

Downloads as suggested by the interviewees are not monitored; still there are several websites that are forbidden for everyone in the organization, e.g., websites for betting, sexual websites, etc. One of the interviewees supports this argument:

… There are some pages that are forbidden and you can't access to these pages…

In order to access some blocked websites, an organizational member is supposed to make a case justification to the IT department explaining why the access to a particular website has to be granted. Surprisingly as it may seem, security standards for access to different websites are the same for everyone.

At the same time, new programs and applications cannot be installed on corporate computers. An organizational member has to go to the IT department if he/she wants to install a new program. If an organizational member installs something on the computer without contacting the IT department, the IT department immediately gets an alarm and the responsible person goes to the organizational member, extracts the computer and uninstalls the program. Several interviewees indicate this:

… It is very restricted to install new programs, to install new applications…

… If you download something and you install something that is for example P2P software is forbidden. If it is installed you receive a message that you have to uninstall it…

As mentioned earlier, there are different access levels to each piece of information depending on the position of the organizational member, the project and the department he/she works for.

Information back-up is also done on a daily basis. The higher an organizational member is on the hierarchical ladder, the more often information backup is done. This is done in

order to recover important information in case it is stolen or lost. One of the participants of the study illustrates:

… All my information is backed up online every day on a backup server, so I don't need to take information from my laptop…

6.2.4 Main challenges

There were two challenges communicated by the interviewees that are faced when creating shared understanding about information security at Firm 'B'. The first one is the alignment of the ways senior managers communicate organizational goals to the organizational members with the ability of organizational members to understand. Sometimes it is very difficult for organizational members to understand information and also bear it in mind. As a result, senior managers have to use means understandable by organizational members to make them aware of organizational goals.

The second challenge that was mentioned by the CIO of Firm 'B', is the fact that organizational members in general do not encrypt USB sticks and if a USB stick is lost, information can be disseminated easily:

… When somebody uses USB stick must encrypt as well as the computer encrypted but we don't control it. And to be honest I am sure that nobody uses it. Nobody encrypts the USB stick. So, if I go to the desk of the all employees and I steal one USB stick probably I will have access to the information…

The interview analysis also suggests that organizational goals do not change over time, but the measures which are put in place to communicate them do. This involves, for example, the adoption of new policies, and the usage of new technological tools and processes.

6.2.5 Shared understanding and New Ways of Work

With respect to technology, it was observed that technology has had a strong impact on the creation of shared understanding at Firm 'B'. All the interviewees have mentioned that the way information is shared has changed dramatically:

… It's quicker in this way to share information because you create your groups, or you invite people, you share information …

Still, there were no issues to the knowledge of any organizational member at Firm 'B', on information misuse or any other legal issues. Professionalism of the organizational members employed together with the mechanisms put in place by Firm 'B' create a strong impact on shared understanding creation about information security.

6.3 FIRM C: QUALITY OF SERVICES AT IT CONSULTING FIRM 'C' IN SPAIN

6.3.1 Assumptions

The interviewed organizational members propose certain personal assumptions on how they view quality of services. Some of them include:

- *Quality of services – providing service that the customer requires.*
- *Quality of services – satisfaction of the customer.*
- *Quality of services – making accurate job and informing the customer about the evolution of the project.*
- *Quality of services – receiving requirements from the customer and doing best to meet the requirements.*

As it is seen, all the assumptions contain similar key words for defining quality of services. They are meeting the requirements and customer's satisfaction.

6.3.2 Values/Goals

The organizational goal of quality of services as described by the participants from the study is shared among all its members and consists of the scope of the service that meets the expectations of the customer. This means maximum quality of services that fits into the budget of the customer. All the members participated in the interviews indicate that quality of services at Firm 'C' is providing to the customers what was agreed, no more than they want and no less than they expect.

Interview results also correlate shared understanding with the position of a specific organizational member in the organization. It is stated that project managers are on the same level of shared understanding of the quality of services, but programmers are not. The programmers always want to give excellence, but the customer does not want and pay for excellence. For that reason, project managers have to make sure that at some point when the necessary requirements are achieved, the service is delivered to the customer and programmers stop spending time on a specific project.

6.3.3 Artifacts/Mechanisms

6.3.3.1 Organizational culture

Organizational culture at Firm 'C' as indicated by the interviewees is focused on the promotion of trust and result-orientation. Organizational members are given lots of autonomy in the work they do. What is important for the senior managers is the

accuracy of the work accomplished rather than what organizational members do during working hours and how much time they spend in the office. If the deadlines are met and the services provided coincide with the organizational standards, then that is what counts.

The interviewees also describe organizational culture as a very democratic one and stress that communication inside the organization is very informal due to the open space office layout. The line manager sits opposite his/her subordinates and is easily reachable when needed. The General Manager confirms this idea:

… Everybody has access to the general management. My door is always open….

While visiting Firm 'C', the area at the organizational premises where organizational members can meet and have coffee was spotted. Later it was stated by the interviewees that this area contributes to building informal relations among them. This is due to the fact that while drinking coffee, organizational members have small chats amongst each other, learn more about their personal lives and build trust and confidence. One of the study participants underlines:

… We have coffee with everybody… things like that…

Scanning of the organizational charts has shown that there are not many hierarchical levels at Firm 'C'. This was confirmed afterwards by the interviewees. Senior managers also try to keep all the organizational information open to the organizational members to the extent that it can be open. For example, all the operational things are open, but the information about the organizational passive part is closed. It is not that the senior management does not want to share this information, but it simply cannot be shared, as it was emphasised by the General Manager.

Organizational members are also encouraged to do the work better and establish an ownership of the work accomplished. The interviewed Project Manager explains:

… We inform to all of them all the propositions for making better quality insurance or something else are welcomed…

Fulfilling organizational goals as discussed during the interviews can only result from a mutual effort of organizational members and an organization. Therefore, Firm 'C' invests a lot of efforts into the education of its members. Firm 'C' as described by both senior managers and staff, tries to provide a learning environment for organizational members where they can develop both personally and professionally. Besides, organizational members are given different opportunities for the promotion of self-

realization and at the same time, their suggestions on how to improve organizational processes are very welcomed.

6.3.3.2 Professionalism

Three important elements related to the professionalism of organizational members were identified by the interviewees to accomplish such an organizational goal as quality of services. They are common sense, attachment to the professional community and prior experience. First, common sense was mentioned as a general understanding of the part of organizational members that they should always strive for achieving the best results for both self-satisfaction and accomplishment of the tasks set by the firm. Organizational members interviewed also describe that there are no formal ways at Firm 'C' for communicating how to use social media. Still, no one puts the information of the customer or sensitive information online unless it is required. This is because for the organizational members interviewed, it is obvious that confidential information cannot be shared with anyone from the outside.

Second, attachment to the community of consultants yields that it is important for organizational members to produce best results for their personal visibility in the service industries. This is due to the fact that personal visibility contributes to future success in getting new career opportunities outside their current jobs.

Finally, study participants share that organizational members are expected to have prior knowledge about quality of services before entering the firm, as well as best practices in the industry. The quotations of several interviewees strengthen the argument:

.. We expect of them they will have this knowledge (IT consulting) because we are not a niche, we are a very generalist consultant firm, so we don't have an own way to do things. We do things in the best sector practice…

… So we need people that have proficiency in the job position as soon as possible and we expect from a programmer, to program in five-six days, we expect the project manager to get a small project in one week and a big project in probably two-three months…

… If you are, as you say, people that have worked in other companies, etc. we hope that you know general things about that (quality) and of course we have our policy about things we want to show and we want you learn, but we hope you have some general things in your knowledge…

6.3.3.3 Education and development

According to the interviews conducted, Firm 'C' uses several ways to educate organizational members about the quality of services. First of all, each organizational member joining Firm 'C' should go through an introductory training, where he/she learns about organizational structure, goals, priorities and general practices on how business is done. Additionally, he/she receives a welcome pack containing an employee's manual, job description, organizational vision, mission and other administrative policies and guidelines. General Manager confirms this point:

…We have a welcome pack when you arrive in Firm C … it has a lot of information about administrative, your job position, who are you at Organization C, what is your position in the company, and what is our mission and vision…

Next, every organizational member also has to sign a contract and a non-disclosure agreement, which protects the organization from information dissemination. Social Media Consultant clarifies this argument:

… When you come in, you sign like an agreement of confidentiality… you can't share information about the client with the competitors and things like that…

Moreover, study participants explain that when a new organizational member starts his/her job, he/she is assigned to someone responsible for the project who guides a newly hired organizational member through the processes of how the work needs to be done until the new employee matures on the job. In a similar manner, interns get assigned mentors who teach them the most important things required in their positions. One of the interviewees provides evidence to this statement:

… Interns they are going to be assigned to somebody for example… one intern works a lot with me, I will teach him the way I do but they are just not responsible of a client, but they will help out…

Furthermore, Firm 'C' conducts courses and workshops on quality several times per year for all organizational members to improve their skills. They are not obligatory, but are recommended for participation. The following quote illustrates this:

… Lots of consultants go to these courses and these courses are like, I mean, the last we did was published on our intranet was how to communicate with the client…

In a similar way, Firm 'C' asks organizational members to do certifications in quality to heighten their knowledge in different aspects connected to quality.

In addition, organizational members are made aware that everything that is communicated among them or to the customer should be done in written form. Such

organizational policy allows for record- keeping of the information flow and assures that the requirements communicated to the customer are met and the chances of misunderstanding occurring are minimal.

6.3.3.4 Communication

Communication that contributes to the creation of shared understanding about quality of services at Firm 'C' can be divided into two broad categories: internal communication and communication with the customer.

First of all, internal communication as described by the interviewees includes one-to-one meetings and discussions with the team leader and as well as team meetings. Social Media Consultant explains:

… For instance with this one (project) we meet every single week and we send a daily report….

Second, discussions with the colleagues with whom organizational members interact every day also promote creation of shared understanding about quality. For example, the interviewed Project Manager pinpoints:

… If you are seated close to two colleagues you begin to talk with your colleagues…

Next, when a new organizational member joins Firm 'C', a team leader is responsible for providing him/her with information about the project he/she is going to be involved in. In addition to that, the General Manager meets the newcomers every three months.

Furthermore, as communicated by the Operations Manager every second Monday, he/she has a meeting with the project managers to discuss with them the current state of the projects as well as to inform them about the recent news. Afterwards, the project managers are supposed to pass on all the information to their subordinates. Still, no one checks whether the information has been passed on or not. Firm 'C' has confidence and trust in its organizational members that it has been done.

Moreover, meeting routines as stated in the interview by General Manager are organized at Firm 'C' in the following way: senior managers meet once a month, project managers meet twice a month and project managers have meetings with the consultants every week:

…In the high level meetings are once a month, in the middle level are probably twice a month, and in the third level are once a week…

Furthermore, in order to make sure that both project managers and their subordinates are satisfied with the work they do and have a common understanding of the goals set,

peer reviews and feedback loops are done. One of the interview participants confirms this:

…With your manager you fill in a questionnaire and you set goals, for yourself. You do by yourself and then you talk with your team manager…

Communication with the customer, on the other hand, includes providing the customer with the offer to assure that the quality is going to be met. Secondly, while the service is carried out, a customer receives different kinds of reports and as has meetings with consultants of Firm 'C' to discuss the evolution of the project. Next, before the deadline is approaching, it is communicated to the customer whether the project will be done on time or not. The Project Manager clarifies this point:

... If we know there is a risk on the quality assurance two months before, we try to inform two months before… we want to be transparent; we want to inform to the client that there is a risk in timing in two weeks, in two months…

The interviewees have stated that there can be two options if the deadline is not met. The first one is that only the main parts of the service will be finished before the deadline, and all the rest of the functionalities are done after the deadline. The second one is that everything possible will be done before the deadline and that is it. No improvements will be made. In this case the quality goes down.

The interviewed senior managers have also proposed that some organizational members want to give more quality to the customer than expected and sometimes the profit of the organization goes down as a result.

To ensure that all organizational members are on the same level of understanding of what quality of services entails, the HR department conducts a 'Grow Professional' check questionnaire. One of the interviewees explains:

… We use this questionnaire also to see if the performance of the people is one of the points we have in mind to the review of the salaries or the growing position in the company for each person…

Surveys are also done several times per year at Firm 'C'. The project manager confirms:

… We have some surveys to the people and maybe four or five surveys every year about different kind of situations…

6.3.3.5 Processes

In order to make sure that shared understanding about quality of services is created at Firm 'C', several processes are used.

First of all, learning by doing correlates the creation of shared understanding about quality of services with getting to know what quality standards in the organization are, by actually doing the job required. As stated by the interviewees, the more a new organizational member gets involved in doing an everyday job, the more he/she gains awareness of the organizational goals. One of the interviewees confirms:

… You learn by doing it in the realization (of the project)…

In a similar manner, observing the way other consultants deliver services to the customer helps organizational members to better understand what quality standards there are at Firm 'C'.

Second, interdependency involves quality assurance by making organizational members do interdependent tasks. This includes functional analysis, the process of construction and testing. Testing, for example, is also done in parallel by several testers, to make sure that everything functions properly.

Next, the processes of sense-making and reflection about the requirements for the software needed by the customer, as well as the customer's satisfaction with the products provided, gives organizational members more opportunities to understand what the customer wants and how the services provided to the customer can be improved in future.

Furthermore, trust between Firm 'C' and its members built through a variety of processes helps organizational members to feel valued and motivated to do their job with the highest quality possible. General Manager describes one of the cases of trust creation:

… - Ok, but do you check that the project managers have passed the information to the subordinates? … - No, they are supposed to do that but we don't check….

Moreover, interview participants have emphasized that when they know exactly how to communicate with the customer and what kind of service to deliver, they can run the projects better and deliver better quality. Therefore, standardized decision-making helps organizational members to filter information faster, be more confident in the work they do, as well as deliver better results.

In order for organizational members to feel like they're part of the firm, they must take part in the decision-making processes or at least to understand how the decisions are made. This was the proposition of the General Manager interviewed. The interviewees have stressed that nowadays organizational members want to know more about the firm,

how it functions, and what is important to it, than only doing a routine job as it was pursued before. That is why senior management of Firm 'C' invests lots of resources and effort to explain various decisions to organizational members, or involve them directly in the decision-making processes. The following statement illustrates this point:

…We don't take any decision without the agreement of our operations manager, and the commercial manager and also the administrative manager. With this three parts, with me and another partner we make the decisions. … For us they are the delegators of employees and they make the decisions together...

Finally, as indicated by the organizational members interviewed, Firm 'C' conducts internal auditing to ensure that all its members are aware of the latest standards in quality and adhere to them.

6.3.3.6 People management

With regard to people management, it is stressed by the interview participants that Firm 'C' prefers to put more efforts into the search for qualified organizational members rather than educating inexperienced ones. Therefore, HR selects organizational members with special background required for the certain position. The interviews illustrate this:

… So when we hire a new consultant, we try to see if the has all of this knowledge and the best practices of doing things…

Similarly to other organizations involved in the study, Firm 'C' uses both rewards and sanctions to promote the creation of shared understanding on quality of services. Every year in March there is a peer review or evaluation done for every organizational member with a project manager, where the personal improvement plan is discussed and objectives are set. Based on this evaluation, an organizational member can get a financial bonus in addition to his/her salary. The interviewed General Manager confirms this fact:

… 80% of our employees are subjected to measurable things like the quality of the products, the part of the polls and also the revenue of your division, and also the benefits of our products…

The social rewards at Firm 'C' include congratulations from the project managers or thank you e-mails from the customer for successful completion of a project.

There can also be sanctions based on the evaluation, but none of the organizational members interviewed is aware of them, for, maintaining a good job is everyone's top priority.

6.3.3.7 Information technology

Firm 'C', as discussed with the interview participants, uses different technological tools to promote the creation of shared understanding about quality of services. The most commonly used tools are e-mails, instant messenger, phones and Skype. They are used to communicate both internally and with the customer.

Next, there is an internal platform where all the information about the firm can be found. In addition, each department has its own collaborative space there. Forums and discussion groups also have a presence on the platform. Several interviewees indicate this:

… We send an e-mail with a short description to everybody; in the intranet you have this new information…

… We have an Intranet. You have documentation, about the company unit, of course quality insurance … you can access the intranet with a login and password here or in your house or in the client office …

Every month Firm 'C' sends a digital newsletter to all its members, which includes information about the current projects accomplished, new quality standards, etc.

For reasons of sensitive information protection especially information about the customers, device and information encryptions are done. Organizational members interviewed also mentioned that information back-up is done on a day to day basis in order to make sure that no information is lost.

Finally, Firm 'C' has different access levels to different pieces of information depending on the position of the organizational member.

6.3.4 Main challenges

The interviewees have mentioned two cases of customer's information dissemination through social media channels. This happened when two consultants put the names of the customer they have been working on Twitter in order to promote their professional image inside the professional community. They were then immediately asked to delete this information and the case has been communicated to the customer. As the consultants had not done it on purpose, according to the General Manager, they had a talk with him and could continue their jobs afterwards. After that the cases have been

put on the internal platform as well as into the working policy of the organization so that other organizational members could be aware of these cases and so that the situation is not repeated.

The interview analysis demonstrates three important outcomes. First of all, trust becomes a very important organizational value that also contributes to the creation of shared understanding. Second, experience gained previously helps to promote shared understanding about quality of services and for that reason the Human Resource department properly chooses new organizational members with the relevant background. Third, there are more things that become less controlled in the organization, e.g. behavior, time spent in the office, etc. Still, senior managers share with organizational members only what may be shared but not everything.

6.3.5 Shared understanding and New Ways of Work

Technology has, as stressed by the organizational members interviewed, changed the way business is done and consequently, the ways shared understanding is created. The way information is treated and communicated has undergone a significant change and communication in general now goes very fast. One of the participants reveals:

… It's information: how to create information, how to communicate information … it has changed a lot…

Due to the use of social media at work, a customer can much more quickly notice whether the work has been done or not, as, a customer can see whether information, e. g., articles, notes, etc. has been put on Twitter, Facebook or other social media channels. Nevertheless, there is no yet a Bible on what and how it needs to be done and how business processes have to be adapted in the new technological environment.

Moreover, information has stopped being considered a purchasable commodity and is not as valuable as before. The competitive advantage is beginning to hinge on who uses the information faster, rather than on who possesses more information:

… This means that you have a lot of responsibility and the company hasn't much power on you. I mean, they can tell you what to expect but at the end is you, you are the one that is doing this, so the technology and the social media sector have changed that also and also because it's new, totally new. There is no one right yet, everyday there are guidelines about how to do things, every single day, if you do some research, you get things that a community manager should do, other day it is totally different…

Furthermore, new social media helps to create a better shared understanding between customers and supplier even before any project is started. The Project Manager shares:

… All the social media let you know how your clients are in a lot of things. You know, the company knows one hundred percent more than 10 years ago about its clients because all people in the web … or you have all the responses of your communications in the blog, in twitter you know a lot of things and it is a responsibility of the company reinventing and optimizing all its processes to adapt to the requirements of the clients…

Surprisingly, even though technology has changed a lot of business processes, organizational members have still proposed that human communication plays an important role in the ways work is done.

6.4 FIRM D: QUALITY OF SERVICES AT IT CONSULTING FIRM 'D' IN SPAIN

6.4.1 Assumptions

Organizational members of Firm 'D' state several personal assumptions as to what quality of services means for them. Some of them include the following statements:

- *Quality of services – correct delivery of the final service, which meets the expectations of the customer.*
- *Quality of services – accomplishment with the right timing what is supposed to be accomplished by the customer.*
- *Quality of services – meeting the requirements of the customer following the established procedures.*
- *Quality of services – proper result delivery within a certain time frame.*

It can be stated that personal assumptions of Firm 'D' members contain two key words of what quality of services for them is. They are meeting the requirements of the customer and timing.

6.4.2 Values/Goals

The organizational goal of quality of services, as communicated by organizational members, is shared among all of them. It includes three elements: quantitative, qualitative and expectation management. The quantitative elements consist of service cost and time of service delivery. The qualitative are viewed as meeting the scope of the agreed service. Finally, expectation management helps to benefit the project by constantly validating its management directives. This is the official definition of quality

of services proposed by Firm 'D'. Interviewees, for their part, describe it in the following ways. Quality of service – the establishment of certain processes in order to measure provided services as well as making the customer aware of those processes. Or quality of service – providing services to the customer at a certain level of quality measured by 'service level agreement' process.

In general terms, everyone at Firm 'D' has the same view on quality of services. Even though the definition of quality could be different, as it is seen from interviewees' statements, there is a common corporate view driven by the scale matrix as well as established methodologies and processes. It could also be said thus that corporate objectives are shared throughout the entire firm.

6.4.3 Artifacts/Mechanisms

6.4.3.1 Organizational culture

First of all, all the organizational members of Firm 'D' interviewed have described organizational culture as a collaborative one, which means a mutual effort of the organizational members and senior managers to achieve a common goal. Interview participants have also suggested that Firm 'D' provides a constant learning environment, which helps all its members to develop personally and professionally.

Second, it was stressed in the interviews that the organization only controls what is delivered, but not the process of delivery itself. Results are reviewed on a monthly basis and organizational members are accountable for what they are supposed to deliver. The interviewed Service Executive confirms this fact:

… We are really a very flexible company in this way because we prefer not to control the people what are you doing this precise moment…

Next, some of the interviewees have pointed to the fact that there has been a huge transformation in the minds of the senior managers over the past several years, insofar as they have accepted the fact that organizational members can work from home and still be trusted to produce the same results as if they were working in the office.

Furthermore, Firm 'D' as seen from organizational charts, has got some structure, but not many hierarchical levels. Direct observations there also suggest that it promotes an open door policy. Organizational members can easily reach their line manager when needed. One of the organizational members taking part in the study has underlined that if she has an urgent problem and needs to see the CEO in the afternoon, the CEO would definitely find time to talk with her:

… Even Victor that is my chief and is the general manager, if I need to see him this afternoon because I have a problem I will see him this afternoon…

Marketing and Communications Director also supports this point:

… It's very easy to reach you… I think I am pretty accessible to them (subordinates) in general…

Moreover, the observed open space office layout stimulates, according to the interviewees, communication among organizational members and the interchange of different ideas for mutual learning.

In addition, organizational members have described a variety of social events organized throughout the year at Firm 'D', as well as a coffee area in the organizational premises correlating them with building informal relations amongst each other. For example, the Service Executive has provided his own example of informal relations building:

… You have to be in the right balance between informal communication or maybe take them out for you know pizza or whether you meet a specific target, etc. and there, to share information in an informal way…

Organizational members are also given a lot of opportunities for promotion and everyone who is aiming to climb the career ladder can do so. The interviewees attest to this:

… Also you will also have a career development path that will be supervised by your supervisors…

Finally, the voice of every organizational member is heard and taken into account when making improvements in organizational structures or processes. Several participants state this much:

… In this behavior the continuous improvement …

… There are other global programs that are encouraging people to embrace ideas …

6.4.3.2 Professionalism

Professionalism, as mentioned by the interviewees, plays a vital role in shared understanding creation about quality of services. First of all, it includes common sense on delivering the best possible results. Second, the attachment to the professional community of consultants and the organization itself makes organizational members build their image and reputation by doing good work. Personal visibility of the consultants in their professional community drives them to always keep up with the best

quality standards possible, as, it has a direct influence on their careers in future. For example, Service Executive pinpoints:

… Quality is a key topic in all the services, etc. So, not just at Firm 'D' but all the companies are always working to improve the quality of the services…

Firm 'D', as recorded in the interviews, makes organizational members feel attached to it by encouraging them to make transformation and improving the quality of services. The better quality delivery means more customers. Having more customers means more experience for the consultants, and more experience means more interesting work.

Finally, professional experience gained by organizational members in the previous jobs also contributes to shared understanding creation. It was communicated by the interviewees that the quality standards are the same across the service industry, and therefore, experienced consultants possess certain knowledge on how to deliver the best results to the customers.

6.4.3.3 Education and development

The results of the interviews conducted at Firm 'D' indicate that it uses several means of educate its members and creating shared understanding on the meaning of quality of services. First of all, each organizational member has to go through an introductory training, where the organizational mission, vision, goals as well as organizational structures are explained. During introduction training, an organizational member receives a manual that is used as a reference for all organizational processes and procedures. Marketing and Communications Director confirms:

… First of all, you have a manual with basic rules…

Next, every organizational member has to sign a contract and a non-disclosure agreement that protects both an organization and its customers from any data misuse. The interviewed Service Manager explains:

… In Spain specifically when you sign the contract you will see also several clauses that speaks about confidentiality of certain things …

There are also different policies and guidelines for computer and social media usage, which every organizational member has to follow. One of the interviewees supports this fact:

… There are guidelines for social media for sure…

Moreover, in order to educate organizational members about quality specifically, Firm 'D' uses its own developed methodology as well as a capability maturity model.

According to the interviewees, each organizational member has to participate in the trainings where the methodology is explained and then use it in his/her everyday work:

… Let's say they receive some training, they learn the tools, they learn the processes to deliver the service, the correct service they have to follow to deliver these services to the client…

The Service Executive also mentions a variety of courses that are provided by Firm 'D' to develop hard and soft skills of the consultants:

… There are specific courses that from time to time, you can run if you like additional courses because everybody should go…

Furthermore, there are different workshops organized within teams to make sure that everyone possesses the same knowledge about the quality of services provided by Firm 'D'. Several quotations illustrate this point:

… Firm D is having specific programs; we are using trainings and workshops mainly …

… Then in this case they ask to come to the office to make a training, etc. and then they will come back to the client afterwards. …

Yet again, in order to improve the knowledge of the organizational members as well as keep up with the latest standards in the industry, organizational members have to do different certifications on quality. One of the study participants explains:

… For certain course trainings you will need to pass some exams that Firm 'D' has to pay for. For example certifications … you can run the entire course trainings by yourself but then you will be to run official exams …

In addition to different courses, trainings and workshops, the interviewees have emphasized that having a mentor who can always be contacted when different questions and problems arise, contributes to the creation of shared understanding among organizational members. The Service Executive who took part in the interviews confirms:

… So you will have a physical person that will be your, let's say, mentor, that will answers you all the questions you have…

Finally, Firm 'D' tries to identify any educational gaps amongst organizational members, especially the inexperienced ones, and provide additional trainings for them. One of the interviewed managers states:

… And at the bottom I would say training in case that you detect gaps…

6.4.3.4 Communication

Communication at Firm ‘D’, as proposed by the interview participants, can be viewed from two perspectives – internal communication and communication with the customer. Internal communication, first of all, includes one-to-one meetings with a project manager and monthly team meetings. Marketing and Communications Director illustrates this:

… Basically in meetings face-to-face we make this communication…

During the implementation of the project, there are also alignment meetings to assure that everything is progressing according to the plan agreed with the customer. One of the interviewees describes these meetings in the following way:

… We have a meeting to decide … we need this, sometimes there are long-term projects in one month it has to be delivered … we do is to try to define a date of delivering and after that we define … the same kind of things like milestones in the middle to say...

Second, several organizational members interviewed, conclude that they create shared understanding about quality of services delivered by having discussions with their team leaders or, more often, by discussing amongst each other. Some of such statements include:

… You can ask your colleagues…

… . So the normal thing and the human thing is that you will talk to your counterpart, to your colleague…

Next, organizational members such as Service Executive suggests, create shared understanding by discussing their own failures and successes in forums with other colleagues:

… You will gain access to specific forums where you can share your ideas, your information…

Furthermore, peer reviews, revisions and follow-ups are perceived by the interviewees as a crucial part of internal communication that helps to achieve the best quality possible. Some of such quotes include:

… So, in this appraisal you talk to your direct chief and you are... they tell you, ok, your objectives "next year will be these ones" ... so you have the chance to explain with what you are happy and what you are not happy …

… Regular meetings, daily reviews, depending on the service…

With the aim of facilitating better understanding different difficulties that occur during projects’ implementation and how they can be overcome in future, senior managers use

feedback loops at the end. Such feedback loops, as stressed by the interviewees, help them to reflect on the work accomplished and obtain inspiration for the future. One of the interviewees indicates:

… And I said at least because every time that you change your project or your service you need to do that, this kind of review and get the feedback from your managers of that specific project…

Moreover, organizational members use internal platforms to search for the consultants who experienced similar problems they are facing at the moment and contact them to ask for advice.

On the other hand, project managers and consultants intensively communicate with the customer during the whole project. Before the deadline of the project arrives, they discuss with the customer the stage of the project and what exactly has to be delivered before the deadline, as well as what changes can be made afterwards. All in all, the customer is always aware of how the project progresses.

Finally, after organizational members have done different trainings or taken part in the workshops, the level of each organizational member's understanding of organizational quality standards is checked by means of questionnaires and surveys. Marketing and Communications Director repeats:

… We make here annual surveys, to know what the employees they think and they engage …

6.4.3.5 Processes

Several processes are used at Firm 'D' to assure that the best quality of services is delivered to the customer. First of all, all organizational members have to follow a quality management plan, and meet the milestones agreed to before the project starts. Secondly, the process of interdependency, as communicated by the interview participants, is widely used. For example, two independent testers have to test the software and see whether they both come to the same results demanded by the customer. Service Executive illustrates one of the cases:

… When a developer is programming a piece of code, this specific programmer does all the testing, there are specific processes for testing, etc. but when this is finished this piece of software pass to another programmer to make the same testing that the previous programmer did once again. And they will see if they get the same results. In the case that they get the same results, then, we can say that the program is ready…

Next, senior managers of Firm 'D' taking part in the interviews, hold fest that the best way to communicate to organizational members the meaning of quality of services, is to let organizational members do their work. Learning by doing, and observing others doing their work properly help to assure that organizational members internalize the organizational quality standards.

Moreover, discussions help organizational members to make sense of the specific processes or regulations introduced in the organization, the rationale behind those processes, and also to reflect on the changes taking place. Such processes of sense-making and reflection, as proposed by the interviewees, ensure that all organizational members have the same level of understanding of the services and how they are to be delivered.

Furthermore, standardized decision-making was mentioned by the interviewees as an additional mechanism for ensuring that consultants do the work properly. When decisions are standardized, the service delivery follows a certain pattern that is coherent with the organizational quality standards. One of the interviewed organizational members explains:

- *… But what does the company standardize and what in your personal opinion could be done to prove it?* - *… For consultants and for people working directly in the client in a project I think it's very defined. So, here I will tell you "ok, the processes are established, the methodology is this kind of things, very clear for everybody…*

Additionally, trust in the organizational members serves as a guarantee in itself that the work is done properly. This can be illustrated by the following example from the interviews. Communication internally at Firm 'D' goes through different hierarchical levels in the following way. Senior managers pass information on to the project managers and then project managers are supposed to pass information on to the consultants during the team meetings and discuss it with them. Yet no one checks whether the information has been passed on or not, because trust has been built among senior and project managers.

Yet again, as in the previous organization, informed participation has been identified several times as one more mechanism for creating shared understanding among all organizational members. Senior managers have stressed that organizational members want to keep abreast of all new developments, wish always to be informed not only about decisions made, but also about the rationale behind those decisions and, lastly,

demand active participation in the decision-making processes. It becomes vitally important thus, to involve organizational members in the processes of informed participation. The Marketing and Communications Manager explains:

… They want to know more about the global project. Not just the fact they are doing this or typing code or having a meeting with this person in concrete…

Finally, external auditing is done within Firm 'D' by the third parties because it is certified in quality. The audit is done on projects and consultants, and assures that quality standards accepted in the industry are met.

6.4.3.6 People management

The interviewees have indicated that the HR department selects organizational members with specific experience required for a certain position and puts expectations on the organizational members that they are aware of certain processes and tools. This is required for all the positions apart from internships. This hiring process, according to the General Manager, plays an essential role in shared understanding creation to assure that consultants share organizational goals based on their previous experience.

The system of rewards and sanctions is also used at Firm 'D' to motivate organizational members to deliver the best quality of services possible. The rewards are based on annual evaluations and consist of financial bonuses in additional to the monthly salary. For example, Marketing and Communications Director explains:

… There is a bonus, let's say, so basically at the end of the day in my department in the case of marketing, obviously, you will get this bonus…

There are also sanctions at Firm 'D', but as stated by the interview participants, they have never been put in place. Senior managers acknowledge that organizational members sometimes make mistakes about quality, but not on the intentional basis and therefore sanctions are rarely used. One of the interviewees indicates her assumptions about sanctions at Firm 'D':

… I would say the first you will not get a bonus … if you don't reach certain level you can be fired obviously…

6.4.3.7 Information technology

Firm 'D' uses different technological tools for organizational members to communicate actively within the organization, directly with the customer and with the organizational members on the customer side. First of all, e-mails, phone calls, messengers and video-conference tools are the most common means mentioned in the interviews for allowing

organizational members to share their understanding of what quality entails. Some of the interviewees confirm:

… We have the e-mail, we have the phone …

… We have tools, for example, we have tools for chatting, we implemented this tool really long time ago in order to keep direct communication to direct to people…

Second, there is an internal platform that contains all the information about the organization, its mission, vision, goals, ongoing and accomplished projects, which helps organizational members to always have access to all information needed for their work. One of study participants explains:

… Is like a big intranet … you can create your own spaces as a person or you can create a group. In our case we have something for marketing communications and there it's like a repository where you can put information, you can put plenty of documents, you can create groups …

Next, shared screens, as suggested by the interviewees, are used among consultants and their customers to show the demo-versions of the services to be delivered. The following quotes support this fact:

… You can have lots of meetings, for example, we can share the screen, we can present a ppt (power point presentation) and many people in the other side and distributed in India… at the same time in the UK…

… You can have lots of meetings, for example, we can share the screen, we can present a ppt (power point presentation) and many people in the other side and distributed in India… at the same time in the UK …

Furthermore, every month each organizational member gets a digital newsletter about the latest news of the organization, the new processes introduced and changes in quality standards. All the information that comes in the digital newsletter can be found afterwards on the internal platform. The interviewed Service Executive confirms:

… They send you e-mails, they publish the information in the intranet and they are, in a regular basis, they are sending newsletters….

Moreover, Organization 'D', as suggested by the CIO, encrypts all its electronic devices and information so that external parties cannot access information in case it is lost:

… We are encrypting all the hard disks on the laptops, in the event you forget it in the airport, or you have been stolen the laptop…

In addition, information back-up is done on a daily basis so that important information is always saved on the server in case laptops are lost or stolen.

Finally, it was mentioned several times in the interviewees that there are different levels of access to organizational information depending on the position of the organizational member as well as the project he/she is involved at.

6.4.4 Main challenges

The results of the interviews at Firm 'D' have produced varied layers of challenges that exist for the creation of shared understanding about quality of services.

First of all, it is important to have different processes and procedures in written form, of the different steps to be done when accomplishing a certain task. When a new organizational member joins Firm 'D', the procedures, for example, on how to do a case study on your own or whom to contact to do a specific case study for the project, are not well defined and it takes a lot of time for the newcomer to investigate it personally. When everything is in writing, less time is needed and shared understanding is created faster.

Second, though the processes and procedures can be very clear and what needs to be accomplished is defined, the human factor still makes a difference. Project success depends a lot on the line manager who supervises the team.

Once again, the interviewees from Firm 'D' illustrate that it is important to have well-established processes to create shared understanding of what quality of services entails. The interviewees explain that if a consultant works with the customer, then the processes are well established in Firm 'D'. If the customer is an internal one, however, for example, a consultant who has to refer to the Marketing department to help him/her with some research, then the processes are not well defined and it causes a lot of trouble.

Finally, it is very important to have good and active communication for shared understanding creation. Sometimes communication between a project manager and his/her subordinates creates misunderstanding, as, organizational members want to know more information about the decisions made or about specific issues related to the project, but they do not obtain this information. Organizational members want to know more, for example, about why a customer is unhappy or what is going on with the whole project, and not just about their specific tasks. This means that organizational members want to stay more informed and involved, demanding more information from

an organization than before to understand the reasons behind every decision made. Organizational members want not only to accomplish their jobs but also be the ones who create the tasks to be accomplished.

6.4.5 Shared understanding and New Ways of Work

All the interviewees conclude that technology has improved the creation of shared understanding. First of all, this is seen in terms of how information is delivered and spread inside the organization. For big projects, for example, it has become easier to monitor different alerts on quality as a result of different technological tools. Secondly, communication has become faster and different tools provide opportunities for organizational members to better understand what the organization does, how it functions, and what projects its various members are working on. The interview participants confirm:

… I think to have a better understanding of what the company does, and what your colleagues they do…

… Now, because of technology has been dropping down the costs, etc. and because of the different tools I have said, tools like chat, tools like video conference, tools like this, allow you to get more in contact with the people you manage. So, it's really cheaper and you can do it often…

In addition, social media help consultants to have a proper connection to the organization when they are on the customer side, and at the same time to feel attached to their organization rather than to the customer or rather than being left by themselves.

6.5 FIRM E: QUALITY OF PRODUCTS AT IT PRODUCT DEVELOPMENT FIRM IN UKRAINE

6.5.1 Assumptions

Organizational members interviewed from Firm 'E' have provided the following personal definitions of what they understand as quality of products:

- *Quality of products – customer satisfaction, which includes professional communication, high quality deliverables and support.*
- *Quality of products – the product is supposed to meet the requirements of the customer.*
- *Quality of products – meeting the criteria and functionality of the product defined by the customer.*

- *<u>Quality of products</u> – delivery the product to the customer with the functionalities discussed before the work starts.*

All definitions provided attempt to describe quality of products as meeting the requirements of the customer. As seen from statements above, the definition is quality of products, as well as homogeneity among all organizational members.

6.5.2 Values/Goals

All the organizational members interviewed, on the one hand, have illustrated that there are no global rules concerning shared understanding in the firm about quality of products and that instead, everything depends on the project for which the product is being delivered. On the other hand, everyone shares understanding about the quality of products. This is defined as the high quality of deliverables as well as the high quality of communication, which includes discussions with the customer about the product's acceptance criteria at the end of the project. It has also been stated that the quality of product standards in the software industry are the same all over the industry and amongst all competitors. Hence, organizational members who have been in the industry know exactly what is expected from them.

It was also emphasized during the interviews that every organizational member at Firm 'E' understands the general requirements of quality of products, yet additional requirements are set with specific projects. That is why there exist two types of understanding of quality of products according to the interview participants: general understanding of quality, for example, as few defects as possible, a stable code, necessary documentation, and customer-specific understanding of quality. Organizational members perceive that if they satisfy a customer, they can be sure that they satisfy their organization.

6.5.3 Artifacts/Mechanisms

6.5.3.1 Organizational culture

The first thing that was mentioned about organizational culture by the interviewees at Firm 'E' was that organizational members perceive the organization they are working for as one that cares about its organizational members. A project manager describes his perception:

… It is a company that worries about people from my point of view. It tries to use them but develop them if it can do this. So it is a company that people are maybe the most valuable resource for work and it cares about it, this resource…

Organizational members are seen as the most valuable resource. Their development is facilitated, they are offered constant support, and they enjoy opportunities for promotion. The following quote evidences this:

…I started as PM (project manager) level one, so in a quite short period of time I became PM level two, and if I would I'd become senior PM and actually it would happen I believe in this month…

As described by the interviewees, this creates among organizational members, a feeling of attachment to the organization so that they are eager to give their best to it.

Secondly, Firm 'E' motivates organizational members to create focus groups and communities of practice for domain knowledge sharing. Afterwards organizational members get thank you e-mails and are also permitted the feeling that they are part of something that changes the world.

Next, as observed during the visit to Firm 'E', open office space configuration helps organizational members to talk easily to their peers and discuss different successes and problems taking place in their work. An open-door policy allows in a similar way for organizational members to always be able to talk to their line or project managers and get advice when problems occur.

Moreover, Firm 'E' motivates organizational members to provide feedback to each other for mutual learning and improvement in the work which organizational members are doing. Project managers likewise encourage their subordinates to make improvements to existing work processes. One of the participating project managers demonstrates:

…So, I believe that if you know how to do the work, how to change the project in a better way, then you can change it and actually if you do this, you improve performance greatly …

Furthermore, the work at Firm 'E' is based on trust and result-orientation, which means that organizational members are accountable for the results they produce, rather than for the hours they spend in the office. The review of the organizational charts also shows that there are not many hierarchical levels at Firm 'E' and any senior manager can be easily reached when needed.

In addition, informal communication is promoted at the firm through special rooms for relaxation with tables for Ping-Pong, air hockey, table football and Kinect.

6.5.3.2 Professionalism

In the discussion about keeping up with organizational quality standards with the interviewees from Firm 'E', it was noticed that a common sense about doing the work correctly was mentioned most. The interviewees believe that it was a matter of logic to do the work right and of the highest quality for both personal satisfaction and for organizational profit. For example:

… People would like to do work in best way. I believe. That is the major motive for them and if they can make something and say it was great from my point of view and other people really admire you and say "thank you" for this improvement, then this person will be motivated sure….

Next, attachment to the professional community of software developers, where personal visibility and reputation play a vital role in further career development, drives organizational members in Firm 'E' to develop the best products possible.

Finally, the interviewees share that the expectations about knowing about quality of products depends on the seniority of an organizational member. Furthermore, Firm 'E' requires organizational members to have certain knowledge about running software projects before being hired.

6.5.3.3 Education and development

Firm 'E', as emphasized by the interview participants, puts a special emphasis on increasing the knowledge of the organizational members and their understanding of organizational quality standards, as well as the standards in the industry. First of all, organizational members at the beginning of their employment sign contract and non-disclosure agreements:

… We communicate to all that they work with private source code and it is private of our customer and we have no permission to share it anywhere and we sign this statement …

The interviewees suggest that there are three non-disclosure agreements that could be signed: Firm's 'E' non-disclosure agreement, non-disclosure agreement with the customer, and a non-disclosure agreement for the customer's customer. There are also document-sharing policies and guidelines at Firm 'E', which state that nothing about the customer can be shared with anyone. One of the interviewees evidences:

… Actually we find the documents about sending information, ad-hoc information so every employee read this documents and then understand that the private information could not be shared anywhere…

Secondly, the interviewees state that each newly hired organizational member has to go through a two-day long introductory training describing what Firm ‘E’ does, its main routines and procedures, reporting practices, etc. During this training each organizational member also gets a manual containing all information about Firm ‘E’, its history, customers, procedures, etc. Afterwards, he/she has to participate in specific project-related training to learn the ropes about the area of the project to the accomplished.

What’s more, every new organizational member is assigned a mentor who guides him/her during his/her involvement into the project. Together they create a work plan with expected results and deadlines, and review it on a regular basis. One of the organizational members interviewed shared:

… For one of my projects we have like mentor… Also we may have the regular meetings with this person…

Furthermore, organizational members taking part in the interviews explain that Firm ‘E’ organizes ‘agile trainings’ for all the teams to help them better grasp project requirements and the way work should be done.

Finally, the interviewees pinpoint that in order to help organizational members constantly be made aware of the latest inventions in the software development industry as well as improve their skills, different certifications are offered. In addition to that, workshops are organized for organizational members on a variety of topics and are advertised through e-mails as well as posters on the walls in throughout office premises.

6.5.3.4 Communication

Interview participants have illustrated that communication at Firm ‘E’ can be divided into two different streams: internal communication within the organization and communication with the customer.

Internal communication, first of all, consists of the personal communication of organizational members with their line managers on a regular basis about the work they are doing, achievements and difficulties in their work, as well as discussions regarding how organizational members are getting along with customers. In the case that organizational members feel uncomfortable, then they have the option of being rotated to another project.

Secondly, the interviewees suggest that while the project is progressing, constant review of the work is being accomplished. This includes one-to-one meetings, team meetings, peer reviews and feedback loops. The following quotations illustrate:

… So the team leaders for each team communicate with the team members…

… You have review, for example, regular basis, or architecture review…

… This review is the first part or activity to make sure that quality is on the expected level…

With the aim of improving product unit testing, comments on the written code, continuous integration, architect reviews as well as code documentation are done. Moreover, some interviewees explain that team members eagerly communicate with each other and share their knowledge and experience. This is done through personal communication or forums on internal platforms. In addition to that, team discussions are organized in order to promote shared understanding of what the customer requires.

Furthermore, a perusal of Firm 'E' whiteboards next to the coffee machines also showed information which the firm wants to share with organizational members. In the opinion of the interviewees, such posters help them to find out about a lot of the things that the organization wants to communicate to them.

Moreover, when organizational members are on the customers' side, their line managers constantly keep in touch with them via e-mail, Skype, or phone, as well as by means of video conferencing. Seeking to keep up the loyalty of organizational members when they are far away from the organization, line managers travel once a week to customers and hold one-to-one meetings with the programmers there. Interview participants also noted that it is a requirement that teams travel back to organizational offices once per month.

Once a project starts, the customer is aware of the quality standards and whether they can be achieved in the time which he/she proposes. Interview participants indicate that communication with the customer is comprised of code reviews, architect reviews and demo-sessions to demonstrate that the requested product meets expectations. The project manager interviewed confirms:

… So every time a project starts, then you have to discuss with the customer what he expects to have, what are the criteria down for this, what acceptance criteria are…

Notwithstanding is the fact that every organizational member is required to communicate with the customer through different communication channels. In other

words, communication with the customer does not go solely through project managers, but through all the team members involved into the project.

Finally, to ensure that all the organizational members at Firm 'E' have shared understanding about quality of products, surveys and questionnaires are conducted on a regular basis. One participant of the study repeats:

… We have sent one survey right now and actually to prepare it we spent a lot of time, discussions, internally, with the leads, so I feel there are incoming results right now and they say that it's very important when we have the results they will be collected and analysed in few weeks...

6.5.3.5 Processes

Interview participants have mentioned many established processes at Firm 'E' to keep up with the quality of products. The ones which were emphasized most are described below.

First of all, learning by doing implies getting acquainted with organizational quality standards by getting involved in the project and doing what is required. The more times an organizational member deals with the project, the more he/she understands how things need be done. Similarly, observing other colleagues accomplishing their tasks was said to help organizational members better understand organizational quality standards and what is exactly required during project implementation.

Second, Firm 'E' relies on the process of interdependency. This involves making organizational members review each other's work and write the comments into the code, making testers test the same products independently, as well as asking architects to constantly follow the project development and assure that it is being done according to customer specifications.

Moreover, organizational members interviewed suggest that processes of sense-making and reflection are often used during the whole project implementation. These processes allow all team members to better understand the requirements of the customer, reflect on different phases of the project and timing, and suggest a variety of ways for developing a product. One of the interview participants shares:

… I give them feedback providing some examples, build the strategy to for example make a team, self-organized team for example….

Furthermore, some interview participants mention that they need to make decisions every day especially when discussing product requirements with the customer. That is

why having certain standards for making decisions allows both keeping up with organizational standards and having more flexibility to decide on their own.

The interviewees also indicate the trust that Firm 'E' has in them for doing the good work, providing the best quality possible to the customer, etc. This in turn, encourages organizational members to always strive for the best results possible in their work.

In addition, the senior managers interviewed stress that their subordinates want to know more information than before. They are no longer satisfied with doing their own tasks in the project, and instead want to know what their colleagues are doing, what the customer thinks about the product, and whether the customer is satisfied or not. As a result, the processes of informed participation and involvement of organizational members into the decision making processes are widely used to maintain the loyalty of organizational members and to make them feel like a vital part of the organization that employs them.

Finally, Firm 'E' runs internal auditing to check whether its quality standards are met.

6.5.3.6 People management

People management at Firm 'E' includes several aspects. First of all, the hiring process is geared toward people with specific positions and background experience in the industry. This saves Firm 'E' tremendous resources in explaining quality standards to newcomers, which, according to the interviewees, are uniform throughout the software industry.

Second, both rewards and sanctions as described by the interviewees are used at Firm 'E' to motivate organizational members to stay abreast of the required product quality standards. Rewards are seen from two perspectives: financial and social. Financial rewards are represented by additional bonuses to the fixed salary and are allotted after each project evaluation. Social rewards are extended by such means as thank you e-mails from customers, project managers or the whole organization. The project manager also orally congratulates organizational members on the successful accomplishment of the project. One of the interviewees states:

… Financial bonus or we go like thanks e-mail, information that this person helps us all in a specific situation… thanks e-mail from customer…

Likewise, sanctions can occur at Firm 'E', which, according to the interview data, range from a talk with the project manager in the case of a breach of quality standards, to dismissal in the case that a project fails.

6.5.3.7 Information technology

Various technological tools are used at Firm ‘E’ to promote the creation of shared understanding about quality of products. First of all, interview participants name standard e-mails, messengers, Skype, phone calls and video-conference systems as the tools used to communicate inside the organization as well as with customers:

… So first is e-mail communication, we have e-mail groups, based on the target auditory, like leader, whole project, team, and so on…

… The next will be the video communication, in a special environment to see each other…

Second, digital newsletters are sent once a month to inform organizational members about organizational news, the introduction of the new policies and successes of the projects accomplished.

Next, the internal platform is widely used for knowledge-sharing inside the firm. There is a specific workspace for each project there, as well as blogs and forums for exchanging ideas. On the platform, each organizational member has his/her own profile with expertise. There he/she can also post the relevance of his/her project information which others can follow. The Wiki-based knowledge base can be also be found on the platform. The interviewed project manager explains:

… We have the shared resources, information like knowledge space, for the whole project we breakdown by technologies, teams and so on. And also we have the common repository for all documents for the project in SharePoint …

Furthermore, the interviewees propose that all information and devices at Firm ‘E’ remain encrypted so that should a device get stolen or lost, no information can be accessed. For data security, information backup is also done regularly.

Finally, much like the other firms involved the study, Firm ‘E’ puts access restrictions in place to specific data, based on the position of the organizational member and the project he/she is involved in.

6.5.4 Main challenges

There are two important challenges identified by the interviews conducted at Firm ‘E’. The first one is that organizational goals can sometimes fail to be accomplished due to the fact that they are poorly communicated and/or poorly recognized by organizational members. In that vein, it is necessary for an organization to properly explain and reiterate to its members what is important and why.

Second, an organization cannot compel organizational members to enforce good quality of products unless organizational members themselves are the ones hankering for it. It is a common individual effort and organizational effort to maintain organizational goals. If one side fails, the quality is not going to be met.

6.5.5 Shared understanding and New Ways of Work

The interviewees suggest that technology has an influence on the creation of shared understanding. First of all, it allows more knowledge-sharing and access to more information. Second, technology helps to connect a larger amount of people relevant for business purposes and allows them to achieve common goals in a much faster time frame.

Next, diverse technological tools foster communication and unite teams who are working remotely. Finally, information moves faster and from more directions, which permits better quality of information delivery.

7. INTERVIEW ANALYSIS AND DISCUSSION OF RESULTS

7.1 SHARED UNDERSTANDING CREATION AND THE FIRM

7.1.1 Mechanisms for shared understanding creation provided by the firm in the network environment

Though shared understanding creation now departs from firms' boundaries, firms still play an important role in shared understanding creation. The firm is still a coordinating mechanism. It now operates under different assumptions however.

First of all, firms taking part in my research put a special emphasis on increasing the knowledge of their members and their understanding of organizational security and internal as well as industry-wide quality standards. This is done in several ways. Organizational members sign contract and non-disclosure agreements at the beginning of their employment. Some firms also have a document sharing policy that states that nothing about the customer can be shared with anyone. Each newly hired member has to go through introductory training, describing what an organization does, its main routines and procedures, reporting practices, etc. Afterwards, he/she has to participate in a project-specific training to gain understanding about the area of the project to be accomplished. At the same time, every new member is assigned a mentor who guides him/her throughout his/her involvement in the project. Together they create a work plan with expected results and deadlines, and review it on a regular basis. In addition to that, workshops are organized for organizational members on a variety of topics and are advertised through e-mail and by posters on the walls in all over the office premises. For example, one of the interviewees shares:

…You will do learning, you will see some videos, you have to fill some surveys … some questionnaires… to do an online exam, it is an evaluation more than an exam, to ensure you know how to manage this information …

What this suggests is that firms create shared understanding amongst all their members by educating them and by fostering both their personal and professional development. The emergent mechanisms which derived from the interviews are summarized in Table 6.

Certain mechanisms in Table 6 are marked in yellow. Workshops, for example, were confirmed for such organizational goals as quality of services and quality of products, while certifications were only confirmed for quality of services.

#	Mechanisms to create shared understanding/Artifacts	Classification
1	Contract	**Education & Development**
2	Non-disclosure agreement	
3	Employees' manual	
4	Organizational policies	
5	Organizational guidelines	
6	Introductory training	
7	Trainings & courses	
8	Workshops	
9	Certifications	
10	Mentoring	

Table 6. Education and development mechanisms derived from interviews

Secondly, communication, as came up in cross-interview analysis, still plays a key role in shared understanding creation. Hence, firms provide abundant opportunity for their members to interact. Internal communication first of all includes face-to-face meetings with a project manager and monthly team meetings. Discussions with senior managers and other colleagues are also widely used. Secondly, peer reviews, revisions and feedback loops are perceived as a crucial part of internal communication which helps to achieve the best results possible. Furthermore, organizational members use internal platforms to search for other members who have experienced similar issues which they are currently facing, and contact them to ask for advice. Discussions on internal forums also help to find the best possible solutions to the problems which arise. To ensure that all organizational members at the firms studied have shared understanding, surveys and questionnaires are conducted on a regular basis. All the mechanisms are shown in Table 7.

As for the mechanisms in training and development, tools came up which were only confirmed for a certain organizational goal and are marked in yellow in Table 7. Meeting with customers were confirmed as a tool for maintaining quality of services

and quality of products. Discussions amongst organizational members were only found in the interviews on quality of products. Meanwhile contacts to IT departments were only relevant for information security.

#	Mechanisms to create shared understanding/Artifacts	Classification
1	One-to-one meetings	**Communication**
2	Team meetings	
3	Meetings with customers	
4	Discussions with a team leader	
5	Discussions with colleagues	
6	Discussions of organizational members in forums	
7	Feedback loops	
8	Peer reviews	
9	Questionnaires	
10	Surveys	
11	Contacts to IT department	

Table 7. Communication mechanisms derived from interviews

In the times past when agency theory reigned, instigating control mechanisms allowed firms to achieve alignment of their goals with the efforts of its members. Today this is all gone. Shared understanding can now only be achieved through a common effort – personal and organizational. It is becoming impossible to make an organizational member produce good results unless he/she has the same aim. One of the members of the study describes:

… They have to improve the system, as infrastructure and so on, but later education and finally security is not in the system, if not more than important in the mind of each person …

This also implies that shared understanding now goes in both directions and power structures are becoming less clear-cut. That is, power structures are becoming less relevant as a dimension for shared understanding. All organizational processes are becoming oriented toward organizational members, by means of, for example, processes of reflection and sense-making and trust. Firms are allowing their members more flexibility through standardized decision-making. Interviewees also emphasize that now

organizational members want to know more about their firms and what is important to them, and not only be involved merely in doing the job itself, as before. As a result, firms are recognizing that in order for organizational members to feel like they are a part of the firm, members must take part in the decision-making processes or at least understand the reasons behind every decision made. That is why senior leaders are putting a lot of effort into explaining various decisions to organizational members or in involving them in the decision-making processes. The processes found by the cross-interview analysis are summarized thus in Table 8.

#	Mechanisms to create shared understanding/Artifacts	Classification
1	Standardized decision-making	**Processes**
2	Process of sense-making	
3	Process of reflection	
4	Trust	
5	Learning by doing	
6	Interdependency	
7	Informed participation	
8	Observing others	
9	Auditing	

Table 8. Process mechanisms derived from interviews

Table 8 depicts nine mechanisms summarized under category processes. It should be noted that interdependency and informed participation were only mentioned for such organizational goals as quality of services and quality of products.

Next, cross-interview analysis has shown that firms use several mechanisms to get the best organizational members to contribute to their competitive advantage. Hiring practices play an important role for creating shared understanding because, as mentioned above, newly hired members already possess certain shared understanding created by the professional community or industry in general. After getting the best members, firms also encourage them to keep up with the good work by means of a variety of financial and social rewards. Firms are sure that their members have to be motivated and rewards serve as one such motivation mechanism. Yet, organizational

members must also know about the consequences for failing in their jobs. Sanctions are therefore put in place. People management mechanisms are represented in Table 9.

All the mechanisms presented in Table 9 were observed in all of the five firms studied. At the same time, such mechanisms as talent management and employee retention were mentioned several times in the interviews, but were not included in Table 9, as, not all interviewees have confirmed them. These mechanisms are the emerging ones which signify that firms are starting to invest in organizational members' development, giving them opportunities for promotion and self-realization. Rewards, especially financial ones, do not suffice to make organizational members who have already achieved shared understanding to remain loyal to their firms. Instead, it's being part of something that changes the world that motivates members. Furthermore, constantly learning that what drives organizational members in the network environment, plays an important role in the pursuit of understanding organizational members' motivation.

#	Mechanisms to create shared understanding/Artifacts	Classification
1	Hiring employees with specific professional backgrounds to fit the vacant positions	**People Management**
2	Financial rewards	
3	Social rewards	
4	Sanctions	

Table 9. People management mechanisms derived from interviews

Finally, technology plays a supporting role in shared understanding creation as identified by the cross-interview analysis. The most commonly used tools for communication and shared understanding creation are e-mails, phone calls, messenger, video-conference systems as well as internal collaboration platforms. Firms also use device and information encryption to protect sensitive information, especially that of customers', and make information back-ups to ensure that no information is lost. Different access levels to different kinds of information helps to create understanding among organizational members about information importance and confidentiality.

All the mechanisms classified under the category Information Technology are presented in Table 10.

Some mechanisms like system alarms and reminders, monitoring of downloads and installations, as well as restricted access to different websites, were only mentioned in the interviews on information security. Shared screens were observed in the interview on quality of services. Skype as a communication tool was also mentioned in the interviews on quality of services and quality of products.

#	Mechanisms to create shared understanding/Artifacts	Classification
1	E-mail	Information Technology
2	Phone call	
3	Video-conference	
4	Skype	
5	Messenger	
6	Digital newsletter	
7	Internal platform	
8	Shared screens	
9	System alarms and reminders	
10	Device encryption	
11	Information encryption	
12	Information back-up	
13	Different levels of access for each peace of information	
14	Monitoring of downloads	
15	Monitoring of installations	
16	Restricted access to different websites	

Table 10. Information technology mechanisms derived from interviews

In summary, I conclude that firms still provide their members with different mechanisms for creating shared understanding. Yet these mechanisms are now more extensive and give organizational members more opportunities for personal and professional development than the ones described by the previous literature. Furthermore, following the observations that some mechanisms were only mentioned in the creation of shared understanding for one specific organizational goal, the following conclusion can be made. There are some standard mechanisms that are applicable to all

organizational goals, but there are also some that are goal specific. Senior managers must thus keep it in mind and see the applicability of each mechanism for a specific goal to be achieved.[17]

7.1.1.1 Reflection on the mechanisms described in literature

The extensive literature review as shown in Section 4.7 provided 14 different mechanisms through which shared understanding could be created. The cross-interview analysis reveals that some of these are evident in the interviews but others are not. The mechanisms for creating shared understanding in network organizations revealed in the interviews include: referring to communication meetings and feedback loops, processes as reflection, sense-making, interdependency, informed participation and standardized decision-making, people management tools such as rewards, and finally, information technology to support shared understanding creation. The reasoning behind the applicability of these mechanisms to network organizations is that they all involve organizational members in decision-making processes and help them to feel like they're a part of firms that employ them.

Secondly, three mechanisms mentioned in the literature – rule-based trust, creation of informal networks and connections made through routines – have undergone some changes when looking at network organizations. For example, rule-based trust is transformed into trust in general. Firms start building their relationships with organizational members based on trust as part of the professional ethics of the members who are not able to act opportunistically as described by agency theory. Next, the creation of informal networks was observed in attachment to professional networks outside firms' boundaries. Such professional networks normally function outside firms' boundaries, but make organizational members keep up with the good work as part of their professionalism and visibility in the professional networks, which can in turn enhance their future job prospects. Finally, connections made through routines were mentioned in the interviews as promotion of informal relations among organizational

[17] Section 7.1.1 Mechanisms for shared understanding creation provided by the firm in the network environment has been revised as part of the paper: Bondar, K., Katzy, B.R. and Mason, R.M. (2013). Best service delivery through organizational goals sharing. Proceedings of the 22nd International Conference of the International Association for Management of Technology IAMOT 2013. Porto Alegre, Brazil, April, 14-18. Some parts of the paper have been prior published as part of the paper: Bondar, K. and Katzy, B.R. (2013). An emergent perspective on shared understanding in knowledge-based organizations. Proceedings of the 19th International ICE Conference on Engineering, Technology and Innovation. The Hague, the Netherlands, June, 24-26.

members through a variety of activities as a part of organizational culture. Such activities include Christmas lunches, Ping-Pong tables on organizational premises, and relaxation areas.

On the other hand, two mechanisms – spontaneous communication and the fostering of communication among rationally similar members – were not mentioned in the interviews. There can be several possible explanations for this. First of all, spontaneous communication and communication of rationally similar members can occur during team meetings. As data collection tools did not include presence at the meetings, the above mentioned mechanisms were not observed. The other possible explanation can be that spontaneous communication and the fostering of communication of rationally similar members are not useful mechanisms for promoting such organizational goals as information security, quality of services and quality of products. But they can possibly be noted in the studies of different organizational goals and can be observed in other firms in the network environment. The study of Annabi and McGann (2013), for example, confirms fostering communication of rationally similar members.

The main outcomes of the cross-interview analysis in relation to the mechanisms for shared understanding creation described in literature are depicted in Table 11.

#	**Mechanims to create shared understanding from literature**	**Relationship to Network organizations**
1	Meetings	**Confirmed**
2	Feedback loops	
3	Process of reflection	
4	Process of sense-making	
5	Interdependency	
6	Informed participation	
7	Standardized decision-making	
8	Reward structures	
9	Information technology to support creation of shared understanding	
10	Rule-based trust	**Transforms into trust**

11	Creation of informal networks	**Transforms into attachment to professional networks outside organizations**
12	Connections made through routines	**Transforms into promotion of informal relations through different activities as part of organizational culture**
13	Spontaneous communication	**Have not been observed**
14	Fostering communication of rationally similar members	

Table 11. Reflection on the mechanism described in literature

7.1.1.2 Conceptual model for shared understanding creation by the firm in the network environment

The cross-interview analysis has shown that there are five pillars on which shared understanding creation in firms in the network environment relies. They are education and development, communication, processes, people management and information technology to support shared understanding creation. These five pillars are compared to the four pillars as derived from literature described in Section 4.7. As a result, a triangle in Figure 6 is transformed into a square (Figure 7). What changes from a hierarchical view to a network view is that it is not only the firm which pushes its members to create shared understanding, but organizational members themselves demand more information, want to take part in the decision-making processes and create shared understanding with the firms employing them. Hence, shared understanding is moving from being pushed towards organizational members to now going in both directions. This means that shared understanding is pushed by the firm towards its members and pulled back by the members towards the firm. This idea is illustrated in Figure 7.

As is seen, shared understanding creation in firms in the network environment is a process of mutual demand and learning both from the side of the firm and from its members. Education and development of organizational members has become an integral part of shared understanding creation. As a consequence of this, people management has started to include not only rewards to motivate organizational members to do a good job, but hiring and sometimes talent-retaining policies to

encourage personal and professional development and help organizational members to feel like they're a part of something that changes the world.

What is also interesting to note is that such a dimension of shared understanding as „how things are done in an organization" or norms are undergoing significant changes. New mechanisms are appearing to meet the expectations of the new working environment as well as those of digital natives.[18]

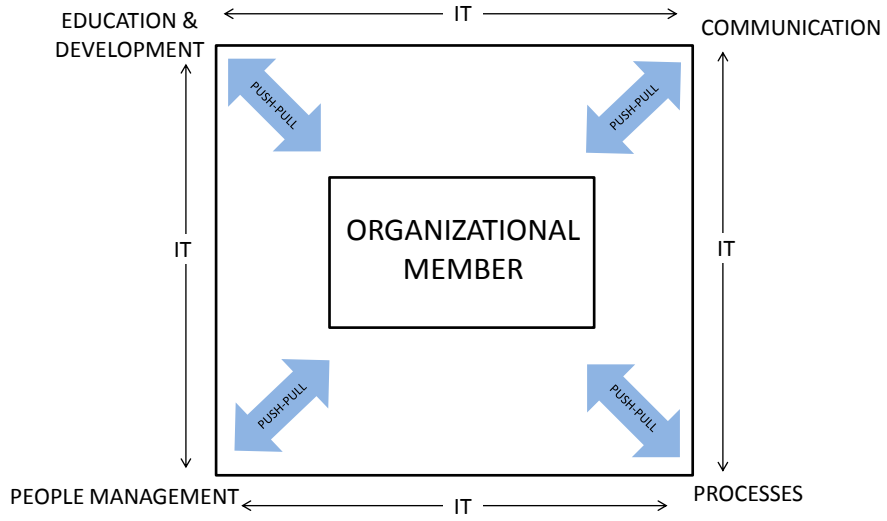

Figure 7. Shared understanding creation in firms in the network environment. Conceptual model

7.1.2 Organizational culture

The cross-interview analysis has shown key elements of organizational culture in the five firms studied, which help to promote the creation of shared understanding. As mentioned before, organizational identity and organizational culture are not perceived any longer as a necessary dimensions of shared understanding, which depart from firms' physical boundaries. Nevertheless, the cross-interview analysis shows several attributes of the environment that should be physically located in the firm in order to create shared understanding. All of them are summarized in Figure 8.

First of all, I observed that hierarchical structures are becoming flatter, which permits better information flow and easier coordination. Due to this fact, the firms studied have

[18] Section 7.1.1.2 Conceptual model for shared understanding creation by the firm in the network environment has been prior published as part of the paper: Bondar, K., Katzy, B.R. and Mason, R.M. (2013). Best service delivery through organizational goals sharing. Proceedings of the 22nd International Conference of the International Association for Management of Technology IAMOT 2013. Porto Alegre, Brazil, April, 14-18.

preferred to adopt an open-door policy in order to diminish the gap between managers and their subordinates, as well as improve coordination between them.

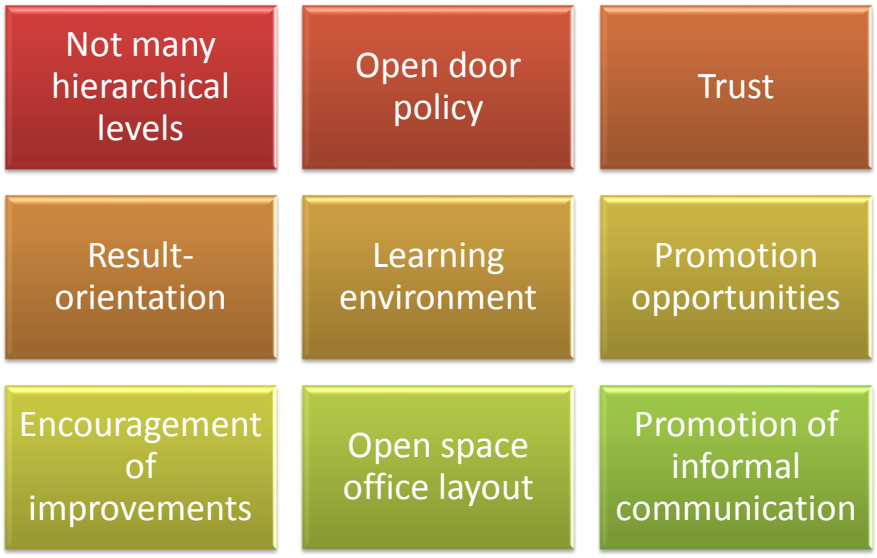

Figure 8. Key elements of organizational culture to promote shared understanding creation

Next, the senior managers interviewed recognize that organizational members demand more and more personal responsibility, interesting projects, and opportunities to develop personally and professionally. If they are not satisfied with what they are doing, they demonstrate no measure of loyalty to the current employer and instead simply leave to join competitors. As a consequence, providing an environment of constant learning and giving organizational members opportunities for promotion is becoming embedded into organizational culture, and serves as an important element for making organizational members satisfied with their jobs.

At the same time, firms in the study try to give organizational members a sense of ownership in the firms they work for. To that end, they encourage their organizational members to make improvements in existing processes and working routines. The improvements are communicated through the line managers, digital corporate newsletters, posters in the premises, etc. and are also induced by financial rewards.

The results of the interviews in multiple settings have actually demonstrated that communication still plays an important role in shared understanding creation. That is, the firms seeking to improve shared understanding about organizational goals try to

promote active and ongoing communication among organizational members by organizing open space office layouts, thanks to which each team member can be easily reachable. In a similar manner, informal communication through team lunches, Christmas parties, sports activities or relaxation areas in the premises have become a vital element of organizational culture.[19]

7.1.3 Shared understanding and its dimensions derived from the interviews

In Section 4.3 shared understanding was defined according to Schein (1992) *as a set of basic assumptions and values about how members determine relevant information and take actions*. Although shared understanding goes beyond firms' physical boundaries and is created both by professional networks and the firm, the definition is still applicable to network organizations. It has to be noted, nevertheless, that shared understanding has to be viewed under different assumptions than in bureaucratic hierarchical firms. This means that information obtained by members upon which decision-making is based, is not controlled any longer by firms. Members gain access to a range of information and must decide for themselves which information is relevant and what actions have to be taken. Through a set of mechanisms discussed in Section 7.1.1, firms can influence the ways members take actions. This implies that firms still coordinate resources, yet such coordination operates under different assumptions than proposed by agency theory.

The literature review in Section 4.4 has also provided four dimensions for shared understanding. They are „who we are as an organization" (organizational identity), „what is our primary purpose" (goals), „how things are done in an organization" (norms) and „who is in power to influnce the actions of others" (power structures). First of all, what has been found out in the analysis of the interviews is that the first dimension, organizational identity, is not a necessary dimension for shared understanding. When shared understanding departs from firms' boundaries and different firms come to cooperate in the network, possessing sometimes conflicting organizational identities, it is not possible to talk about organizational identity as a

[19] Section 7.1.2 Organizational culture has been prior published as part of the paper: Bondar, K., Katzy, B.R. and Mason, R.M. (2013). Best service delivery through organizational goals sharing. Proceedings of the 22nd International Conference of the International Association for Management of Technology IAMOT 2013. Porto Alegre, Brazil, April, 14-18.

dimension for shared understanding. One of the propositions for such a dimension could be network identity or „who we are as a network".

Secondly, the interviews conducted have confirmed that organizational goals do not change over time. What is changing is the importance put on a certain goal. For example, information security was not a primary organizational goal before the digital age, when information dissemination was a difficult task. Now with the variety of communication channels and easiness of information dissemination, firms put more importance on such an organizational goal as information security. Nevertheless, goals remain a dimension of shared understanding in firms in the network environment.

Thirdly, norms or „how things are done in an organization" still comprise one of the dimensions of shared undertanding in network organizations. At the same time, they are experiencing transformation. New mechanisms for shared understanding creation appear as suggested by interview analysis, which are trying to appeal to the demands of the net generation.

Finally, power structures were found out to be excluded from the dimensions of shared understanding in firms in the network environment. Managers have started to pursue mentoring relations with their subordinates and, as a result, who is in power to influence the decisions of others has become unclear, especially in the network environment, where no actor has more power than the other.

All in all, interview analysis suggests that shared understanding in firms in the network envirnment is comprised of three dimensions: network identity, goals and norms, as opposed to four dimensions proposed in the literature.

7.1.4 Managerial guidelines for shared understanding creation

A set of different mechanisms classified under five categories has been found to promote creation of shared understanding in firms in the network environment as discussed in Section 7.1.1. What does it give to managers who have to lead their firms in the network environment? First of all, they have to understand that there are controllable and non-controllable categories through which shared understanding is achieved. Firms can provide education and development for their members, promote communication in their firms, hire the best members to fit the vacant positions and motivate them to do the best work possible, and establish a variety of processes and information technology to promote shared understanding. At the same time, there is also shared understanding creation maintained by professional networks, which

organizational leaders cannot influence but have to be aware of. This idea is presented in Figure 9.

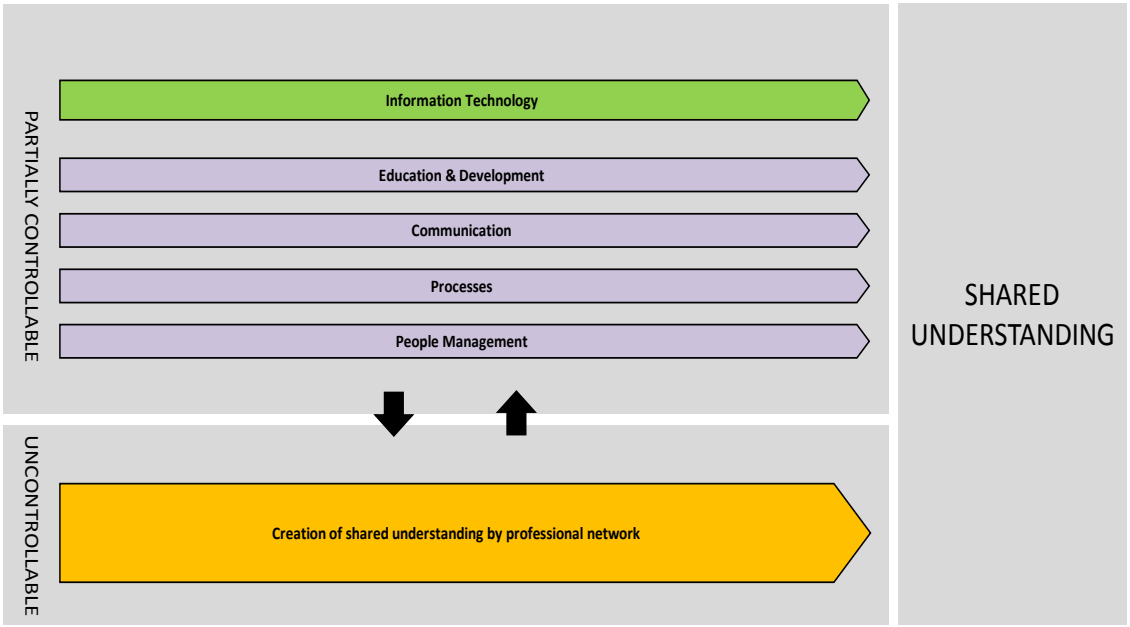

Figure 9. Visual representation of shared understanding creation

Secondly, keeping in mind that not all mechanisms to create shared understanding can be influenced by senior managers, they have to observe the ones that cannot be influenced and coordinate the ones that can be influenced (Figure 10).

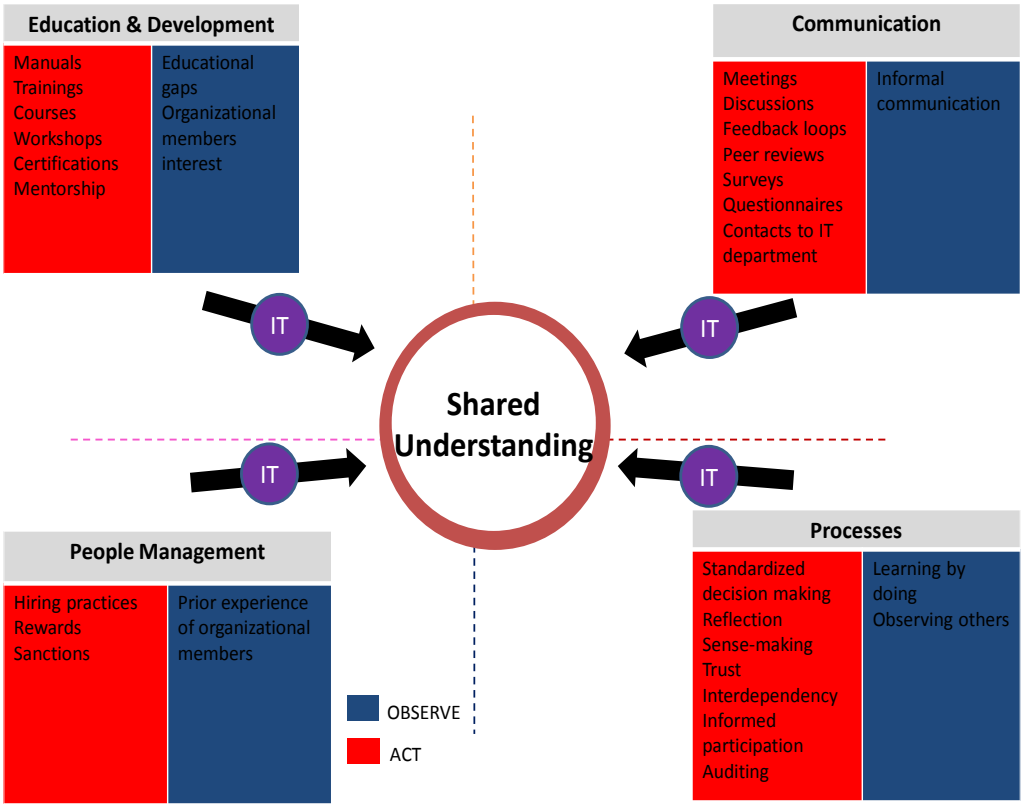

Figure 10. Managerial guidelines for shared understanding creation

For example, mechanisms classified under the category 'Education and Development'. Senior leaders have to see what gaps in education their members have, for example, whether they are aware of a certain methodology in quality assurance or do not have good presentation skills. After identifying such gaps, senior leaders have to provide trainings or workshops for their members to fill the gaps identified. By providing a constant learning environment for organizational members and acting upon the mechanisms which can be influenced, senior managers can assure that shared understanding is created among all members.

7.1.5 Shared understanding and New Ways of Work

In this section I want to provide some remarks on New Ways of Work environment and shared understanding creation.

First of all, technology has changed the way business is being done and consequently the ways shared understanding is being created. The way information is treated and communicated has undergone a significant change and communication has become more intense than ever. Due to the use of social media at work, a customer, for example, can notice more quickly whether the work has been done or not, as a customer will see whether information, e. g., articles, notes, etc. has been put on Twitter, Facebook or

other social media channels. Nevertheless, as the interviews suggest, there is not yet a 'Bible' on what needs to be done and how business processes have to be adapted in the new technological environment. This challenge still has to be investigated by future research.

Secondly, information has stopped being considered a purchasable commodity and is no longer as valuable as proposed by the agency theory. Competitive advantage is beginning to rely on who uses information faster rather than on who possesses more information.

Surprisingly, even though technology has changed a lot of business processes, still human communication plays an important role in how work is conducted. The interviewees confirm that the main source of information and shared understanding creation for them when they have some questions is asking their colleagues or organizational members whom they trust.

Finally, the access to information and contacts relevant for work, the speed and different sources for information dissemination, as well as the new possibilities to stay in touch with the team members from any location, have improved the ways organizational members perceive the work and create shared understanding. Shared understanding creation goes faster and in both directions from a firm to its members and from organizational members to the firms they work for.[20]

7.2SHARED UNDERSTANDING CREATION USING NETWORK POTENTIAL

The cross-interview analysis has shown that shared understanding creation has departed from firms' boundaries and is created by both the firm and the network of professionals. The firms themselves have started to rely on professional networks or even on other firms in the industry to achieve shared understanding among their members.

As described in Chapter 6, the first and most popular answer given by the interviewees when they were asked what made them keep up with organizational security and quality standards was common sense. They all stress that it was obvious for them not to put the firm's confidential information online or not to talk with their friends outside the firm

[20] Section 7.1.5 Shared understanding and New Ways of Work has been prior published as part of the paper: Bondar, K., Katzy, B.R. and Mason, R.M. (2013). Best service delivery through organizational goals sharing. Proceedings of the 22nd International Conference of the International Association for Management of Technology IAMOT 2013. Porto Alegre, Brazil, April, 14-18.

about research and development or the customer they are working with. After having mentioned common sense, the interviewed organizational members correlate attachment to their professional community with following rules and keeping up with the good work. For them it is natural to adhere to the professional code of conduct established in the community that guides them through the work they were accomplishing.

… It's common sense, your ethics are key issues, now we have many ways to break the rules, so your personal ethics is very important…

It was found that shared understanding in knowledge-based jobs, for example, in consulting firms, does not belong to the firm but to a professional network. The interviewees share:

…We do things in the best sector practices, so when we hire a new consultant, we try to see if he has all of this knowledge and the best practices of doing things from the industry…

If this outcome is true for all firms, we will not be talking in future about organizational culture but of a culture of professional network. This culture of professional network could possibly be the first dimension of shared understanding in network organizations. The absence of loyalty on the side of organizational members towards the firms that employ them, as well as the mobility of organizational members, are some indications for it.

Furthermore, previous experience gained in the industry contributes to shared understanding creation. The human resource department properly chooses new members with relevant experience and a proven record of excellence and integrity. One of the senior managers confirms:

…We expect that people will bring value to the company from the first day so we take a lot of time in hiring people, but we do not communicate them how to make things we expect them bring information to the company…

Now that shared understanding creation goes beyond firms' boundaries and its creation in the industry is a mutual benefit for all the entities involved, firms are starting to work together to achieve common shared understanding in the area. The interviewed CEO strengthens my argument:

… Quality is a key topic in all the services. So, not just in our organization but all the companies are always working to improve the quality of the services…

As a result, this new environment requires more collaboration between firms in order for them to survive. In the future new forms of alliances between firms could be in place as more information between firms is going to be shared, and the barrier of where one firm ends and the other begins will become even more blurry.

Next, what arose from the interview analysis is that in the professional service industry, the accomplishment of such organizational goals as quality of services or quality of products depends on the self-motivation of the organizational members. This self-motivation is interrelated with personal verses professional visibility of the members to the customers, as well as personal achievements in the professional career. For example, the interviewees from the software development firm involved in the study on quality of products consider that attachment to the professional network of software developers plays a vital role. That is, in that network of software developers, visibility and reputation prove key to further career development, which, in turn, drives organizational members to develop the best products possible.

All in all, it is becoming increasingly clear that shared understanding creation extends beyond firms' physical boundaries to the industry itself and to the network of professionals.[21]

7.3DO WE STILL NEED FIRMS?

Now we turn to some concluding remarks on this fundamental question on the theory of the firm, why firms exist and whether firms are needed for shared understanding creation. Whilst the borders of firms are becoming blurred and shared understanding is no longer created by firms only, firms nevertheless provide critical coordinating mechanisms for shared understanding creation both inside the firm and in the professional network.

First of all, firms provide infrastructure. Although the organization of knowledge work extends beyond the legal boundary of the firm, firms still provide rules, norms and technical means, e. g., collaboration platforms, and communication tools, which act as a catalyst for improved creation of shared understanding. Furthermore, though attachment to the professional network and the personal visibility of organizational members inside

[21] Section 7.2 Shared understanding creation using network potential has been prior published as part of the paper: Bondar, K. and Katzy, B.R. (2013). An emergent perspective on shared understanding in knowledge-based organizations. Proceedings of the 19th International ICE Conference on Engineering, Technology and Innovation. The Hague, the Netherlands, June, 24-26.

the network play an important role in shared understanding creation, it is firms who provide certain standards and norms of behavior that are not there in the network.

Secondly, firms educate and develop their members, as well as foster their advancement personally and professionally. They monitor educational gaps of their members and act correspondingly to provide opportunities to enhance the knowledge and skills of the firm's members.

Next, every firm has a brand. The reputation, image and values of the brand help to align the efforts of all the firm's members. To be able to get access to the network, every member first has to be a representative of the brand, understand what the brand stands for, its values and only then can he/she become a part of the network.

Yet again, firms instill order in the chaotic process of shared understanding creation through the network. As a result, the whole process becomes more coordinated.

All in all, firms are still there to bring coordination to the network. Though coordinating mechanisms are changing and operate under different assumptions, the networks still need to be coordinated and firms are the ones able to do it.[22]

[22] Section 7.3 Do we still need firms? Has been prior published as part of the paper: Bondar, K. and Katzy, B.R. (2013). An emergent perspective on shared understanding in knowledge-based organizations. Proceedings of the 19th International ICE Conference on Engineering, Technology and Innovation. The Hague, the Netherlands, June, 24-26.

8. SUMMARY AND CONCLUSIONS

8.1REFELECTION ON THE INITIAL RESEARCH QUESTION

Referring back to the initial research question posed, I intended to explore how shared understanding is created in firms in the network environment. Through designing and conducting interviews in five firms operating in the network environment I was able to identify key mechanisms that enable shared understanding creation in firms in the network environment. I have applied existing theories and concepts of shared understanding that were developed for the hierarchical view to observe whether they remain valid for firms in the network environment. I have also reflected on the fundamental question of the theory of the firm, whether we still need firms, when shared understanding creation goes beyond firms' physical boundaries. To sum up, this dissertation offers insights not only from a theoretical perspective for better appreciating the phenomenon of shared understanding in firms in the network environment, but also for appreciating different practical mechanisms that can be adopted by managers of firms in the network environment.

8.2 CONTRIBUTIONS

The overall contribution of the conducted research is both to theory and practice. I am going to address these contributions in the following two subsections.

8.2.1 Theoretical contribution

The theoretical contribution of this thesis is fourfold. First of all, it addresses the research gap of studying shared understanding in the Weber-type bureaucratic organizational setting under the assumptions of agency theory, which has become inadequate for understanding how firms in the network environment maintain their work processes. To address this gap of studying shared understanding in firms in the network environment, I have chosen to conduct interviews in multiple settings in order to closely examine mechanisms through which shared understanding is created in firms in the network environment as well as necessary conditions for its creation.

I have analyzed key mechanisms that influence and enable shared understanding creation in firms in the network environment and proposed a conceptual model of the intersection of all mechanisms identified.

The third contribution is making reflections on existing theory on shared understanding under the Weber-type organization setting. Contemporary theoretical developments on

shared understanding are mainly focused on the hierarchical perspective. Consequently, reflecting on these theories with the results collected from firms in the network environment will strengthen further theoretical developments in this domain.

Finally, showing the ways shared understanding is achieved in the firms in the network environment, I was able to reflect on the fundamental question of the theory of the firm, and pinpoint reasons why we still need firms. I was able to prove that even in the network environment, we still need the firm, and I proposed shared understanding as one of the rationales for the firm.

8.2.2 Practical contribution

The key dimensions of shared understanding and mechanisms for its creation identified through twenty-five interviews furthermore offer valuable input for corporate senior decision-makers and project managers.

The findings of the interviews provide senior decision-makers and project managers with a checklist on what should be done and what should be avoided when creating shared understanding among all organizational members in firms in the network environment. For example, involving organizational members in the decision-making processes is more effective than communicating to organizational members all the decisions made without any explanation.

The research outcomes also show real examples of creating shared understanding in firms in the network environment through constant education and development of their members. Also, organizational members are more likely to come to the firms with prior experience, and their educational gaps have to be identified and filled accordingly.

Moreover, this research effort provides a set of mechanisms which senior decision-makers and project managers can apply to create shared understanding amongst all their members.

Finally, increasing the awareness that shared understanding is no longer created inside firms' boundaries only, but in professional networks also, can help senior decision makers to combine the efforts that their firms make to create shared understanding with the efforts of professional networks and other firms in the industry.

8.3LIMITATIONS OF THE STUDY

Although the research conducted offers valuable insights for both academia and practitioners, it has also some limitations. First, the relevance attached to generalizing the results obtained for all firms in the network environment is limited. In spite of the

fact that several mechanisms and conditions were identified across twenty-five interviews, the sample size is not significant enough to generalize these results.

Secondly, there were only three organizational goals chosen to operationalize the study of shared understanding creation in firms in the network environment. The identification of different organizational goals may lead to different results in the mechanisms for shared understanding creation in firms in the network environment.

Thirdly, the cultural background of the participants was not included as an element influencing the creation of shared understanding. Moreover, firms involved in the sample were from Europe, which puts certain restrictions on the resultant generalizability to the rest of the world.

In addition, the influence of shared understanding creation through mechanisms identified on performance was only measured in a weak form based on the perceptions of the respondents. Similarly, the degree of alignment based on created shared understanding was not measured.

8.4DIRECTIONS FOR FUTURE RESEARCH

Indeed the focus of this research is to explore what shared understanding means in firms in the network environment. Therefore the focus of the results is to re-conceptualize shared understanding and identify mechanisms and necessary conditions that enable shared understanding creation in firms in the network environment. That is why to further validate these mechanisms and conditions, future studies could apply quantitative research design to test a) what the right balance is between shared understanding creation in the firm and in the network; b) what the cause-effect relationships are between different mechanisms identified in the thesis; c) what the degree of alignment is based on shared understanding created; d) to what extent created shared understanding through mechanisms identified influences performance.

Another recommendation for future research is to conduct more interviews in different types of firms operating in the network environment to improve resultant generalizability. Furthermore, in this research, only high-tech and consulting firms were studied. Hence, conducting interviews in other industries will help to improve the generalizability of the obtained results.

Based on the limitations of the study, one more proposition for future research is to study creation of shared understanding in firms in the network environment across cultures and compare the mechanisms observed. It could be tested whether the same

mechanisms that were found in the firms in Europe are applicable to the firms operating in, for example, Asia or the USA.

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APPENDIX 1

ORGANIZATIONS THAT TOOK PART IN PRE-STUDY

BCG, The Boston Consulting Group (Switzerland)

BSI Healthcapital SA

Bucher Management AG

Bundesamt für Berufsbildung und Technologie – BTT

Destination Davos Klosters

ETH Eidgenössische Technische Hochschule, Arbeits- und Organisationspsychologie

Lantal Textiles AG

Orange Communications SA

Raiffeisen Schweiz Genossenschaft

Schweiz Tourismus

Staatssekretariat für Wirtschaft SECO

Stadt Zürich, Organisation und Informatik

SWICA Gesundheitsorganisation

Swisscanto Holding AG

Swisscom AG

Swisscom IT Services AG

Walder Wyss AG

WWF Schweiz

APPENDIX 2

SHARED UNDERSTANDING IN NEW WAYS OF WORK

INFORMATION FORM

Investigator: Kateryna Bondar, Research Associate and PhD Candidate at Center for Technology and Innovation Management, University BW Munich, Germany (+49-89-3398-5363), kateryna.bondar@cetim.org.

INVESTIGATOR'S STATEMENT

You were asked to participate in a research study and I kindly provide you with additional information for your participation. The purpose of this form is to give you the information you will need to better prepare for your participation in this work and have a clearer understanding of its purpose, format and benefits. Please do not hesitate to ask further information if you feel it is necessary.

PURPOSE OF THE STUDY

Today's technical and social environment may be considered as revolutionary – many of the standard and traditional processes and structures seem outmoded and cumbersome. In revolutionary times, leadership requires an understanding of what has changed and what remains constant. Some aspects of the environment clearly have undergone significant change: the speed by which information can be exchanged, the rate of change of technology, the global nature markets (including labour and innovation), etc. The elimination of hardware and devices (paper for digital documents, mail to email, archives for databases, typewriters to computers, smart phones, etc.) the demographics of a generation that has never known the world without online technology, and the economic productivity potential of smart IT usage drive the change to New Ways of Work.

It was observed that change has started and leaders expect it to remain an ongoing process of strategic adaptation. Members of the senior workforce perceive a fundamental difference between the newcomers (digital natives) and those who have been socialized in traditional working environments (baby boomers). We see that the new generation is not satisfied with routine jobs, has less loyalty towards an employer and expects less loyalty in return, and perceives hierarchy as an old fashioned term of organizational structures before the digital age. These are just some indicators of the developing perceived strategic and industry-wide change.

How can organizational leaders then assure the proper resource coordination when information is leaking outside organizational boundaries and teams emerge based on the evolving opportunities rather than as the result of hierarchical structures? How can senior managers make sure that the organizational goals are accomplished in this new agile environment? These are the questions that occupy both academics and practitioners.

Assuming that creation of 'shared understanding' about organizational values helps to improve coordination in the organizations, I am interested to find out what is meant by 'shared understanding' in the digital age, whether technology has influenced the creation of shared understanding and what the ways to create shared understanding are exercised now.

In order to focus the scope of my work, I am dealing with three elements of organizational values: information security, quality of services and quality of products. My aim is to study the creation of shared understanding for these three elements.

Depending on the area of organization's specialization one, two or all three elements (information security, quality of services and quality of products) can be studied.

In order to have a vivid picture about creation of shared understanding about each specific element 5 interviews are going to be conducted. The organizational members/profiles to be interviewed are: CEO, CIO/COO, project managers/senior partners, team leader, and employees/consultants. This will give an opportunity to observe the creation of shared understanding at different organizational levels, but not just the assumptions of the senior managers, which may not coincide with organizational reality, as well as compare each vision to get a further knowledge about what 'shared understanding' is.

PROCEDURES

During the interview you will be asked to answer open-ended questions. The questions are structured into three sections: individual assumptions about shared understanding, shared principles or goals, and artifacts or ways shared understanding is created. The last section of questions will also include opportunities and challenges brought by the New Ways of Work. This discussion will take no more than 1 hour. Preferably the interview is done in English and will be audio-recorded.

RISKS, STRESS, OR DISCOMFORT

Some people feel that providing information for research is an invasion of privacy. I have addressed concerns for your privacy in a section below. The questions are related to your professional work, and I know of no risks associated with your responses to these questions.

BENEFITS OF THE STUDY

I expect to have a better idea of how organizations create shared understanding in the digital age, what challenges they face and best practices of overcoming those challenges. As a participant you will receive all the results and academic papers.

OTHER INFORMATION

Your responses are confidential. Individual answers are not linked to any individual, and you will not be identified unless you choose to have your participation acknowledged in a list of participants.

Based on the results and trends formulated several academic papers will be published as well as the final results will be presented in the PhD dissertation of the investigator.

If you have questions later about the research you can contact the investigator directly.

APPENDIX 3

Shared understanding about information security

Questions to ask CEO/CIO/Project Manager

Assumptions

What do you define as information security in your organization?

Values

What do you know about information security in your organizations?

Do your colleagues/team members share your understanding about information security? How do you know it?

Do you think your organization has achieved shared understanding about information security with all organizational members?

Do you have problems with creating shared understanding about information security at your organization? If yes, what are the problems and how do you manage those problems?

Artifacts

What were/are the main issues with information security in your organizations? How did/do you tackle them?

What have you changed in your security standards? What were the main drivers for this change? What was the last event that triggered your information security?

What were the reactions of organizational members before and after the change?

How do you make organizational members aware about the information security in your organization?

How do you make sure that the product is a unique one (e.g., the source code is not borrowed from anywhere)?

How do you define what can be shared online? How do you communicate it to organizational members?

Do you have any guidelines concerning the usage of social media in your organization? If yes, how do you communicate them to your organizational members?

What do you do to protect your devices in case they are lost?

Do you monitor what organizational members do on their computer (e.g., downloads, installations, websites visited)?

What can/cannot be downloads and/or installed? How do you communicate it to the employees?

How do you make organizational members aware of legal issues and plagiarism?

Have you observed that organizational members have given up information security in order work was completed? Are there in general cases when you give up your IT security?

Do you expect that when organizational members come into your organization that they should already have knowledge about information security?

Do organizational members have to sign non-disclosure agreement? Do you think it helps to create shared understanding about information security?

Are organizational members aware of rewards and sanctions associated with not fulfilling the rules? What are they and how are they communicated to organizational members?

Can organizational members make suggestions about improvements in information security? Do you encourage this? If yes, in what way.

Does your organization conduct surveys or questionnaires to find out whether organizational members are aware of information security at your organization?

How would you describe organizational culture and how it promotes the creation of shared understanding about information security?

Has technology changed/influenced the creation of shared understanding?

Questions to ask organizational members

Assumptions

What do you define as information security in your organization?

Values

What do you know about IT security in your organization?

Do your colleagues/team members share your understanding about information security? How do you know it?

Artifacts

How did you learn about IT security in your organization?

What was your reaction/attitude to IT security before the reorganization? What is your attitude now?

Do you know what can/cannot be shared online? How did you learn about it?

Do you know about any guidelines concerning social media usage in your organization? If yes, how were they communicated to you?

Do you know whether your work devices are protected in case they are lost?

What can/cannot be installed and/or downloaded on your computer?

Are you aware whether what you do on your computer is monitored (e.g., downloads, installations, etc.)?

Do you know about legal issues and plagiarism? How did you learn that?

Do you know exactly what is allowed and what is not allowed in terms of information dissemination at your organization? How did you learn this?

Have you ever given up security standards to have the work done? What was the reaction of your project manager on it?

Did you have to sign non-disclosure agreement when you entered your organization? Do you think it helped to create shared understanding about information security?

Are you aware of rewards and sanctions associated with not fulfilling the rules? What are they and how are they communicated to you?

Can you make suggestions about improvements in information security? Have you done so? Does your organization encourage this? If yes, in what way.

Does your organization conduct surveys or questionnaires to find out whether organizational members are aware of information security at your organization?

How would you describe organizational culture and how it promotes the creation of shared understanding about information security?

Has technology changed/influenced the creation of shared understanding?

Shared understanding about quality of services

Questions to ask CEO/Senior Partner/Project Manager

Assumptions

What do you define as the quality of services you deliver in your organization?

Values

What do you know about quality of services in your organization?

Do your colleagues/team members share your understanding about quality of services? How do you know it?

Do you think your organization has achieved shared understanding about quality of services with all organizational members?

Do you have problems with creating shared understanding about quality of services at your organization? If yes, what are the problems and how do you manage those problems?

Artifacts

How did you learn about quality of services in your organization?

How do you use social media to coordinate organizational members and communicate to them your vision of the quality of services?

Do you know what can/cannot be shared online? How did you learn about it? Does your organization have special guidelines for social media usage?

Has the attitude to the quality of services changed since the introduction of social media? How was this communicated to organizational members?

How do you make sure that the customer's problems are not shared online? How do you communicate it to the customer?

How do you make sure that the services you provide to the customer are unique and of high standards?

How do you make sure that organizational members are attached to you but not to your customer? And how do you make sure that they are in general attached to your organization?

How do you maintain the sense of loyalty and standards when you do not see organizational members for months?

What was the last event that triggered your quality of services?

Have you observed that organizational members have given up quality of services in order work was completed? Are there in general cases when you give up your quality of services?

Do you expect that when organizational members come into your organization that they should already have some knowledge about quality of services or do you educate them in your own way?

Are organizational members aware of rewards and sanctions associated with not fulfilling the rules? What are they and how are they communicated to organizational members?

Can organizational members make suggestions about improvements in quality of services? Do you encourage this? If yes, in what way.

Does your organization conduct surveys or questionnaires to find out whether organizational members are aware of quality of services at your organization?

How would you describe organizational culture and how it promotes the creation of shared understanding about quality of services?

Has technology changed/influenced the creation of shared understanding?

Questions to ask consultants

Assumptions

What do you define as the quality of services you deliver in your organization?

Values

What do you know about quality of services in your organization?

Do your colleagues share your understanding about quality of services? How do you know it?

Artifacts

How did you learn about quality of services in your organization?

Do you know what can/cannot be shared online? How did you learn about it?

Does your organization have special guidelines for social media usage?

Has the attitude to the quality of services changed since the introduction of social media?

How do you make sure that the services you provide to the customer are unique and of high standards?

When you are at the project side, do you still feel attached to your organization? If yes, what makes you feel attached?

Have you ever given up quality of services to have the work done? What was the reaction of your project manager on it?

Are you aware of rewards and sanctions associated with not fulfilling the rules? What are they and how are they communicated to you?

Can you make suggestions about improvements in quality of services? Have you done so? Does your organization encourage this? If yes, in what way.

Does your organization conduct surveys or questionnaires to find out whether organizational members are aware of quality of services at your organization?

How would you describe organizational culture and how it promotes the creation of shared understanding about quality of services?

Has technology changed/influenced the creation of shared understanding?

Shared understanding about quality of products

Questions to ask CEO/Project Manager/Team Leader

Assumptions

What do you define as the quality of products you deliver in your organization?

Values

What do you know about quality of products in your organization?

Do your colleagues/team members share your understanding about quality of products? How do you know it?

Do you think your organization has achieved shared understanding about quality of products with all organizational members?

Do you have problems with creating shared understanding about quality of products at your organization? If yes, what are the problems and how do you manage those problems?

Artifacts

How did you learn about quality of products in your organization?

How do you use social media to coordinate organizational members and communicate to them your vision of the quality of products?

Do you know what can/cannot be shared online? How did you learn about it? Does your organization have special guidelines for social media usage?

Has the attitude to the quality of products changed since the introduction of social media? How was this communicated to organizational members?

How do you make sure that the customer's product is a unique one (e.g., the source code is not borrowed from anywhere)? How do you communicate it to organizational members and customers?

How do you make sure that the customer's problems are not shared online?

How do you make sure that organizational members are attached to you but not to your customer? And how do you make sure that they are in general attached to your organization?

How do you maintain the sense of loyalty and standards when you do not see organizational members for months?

What was the last event that triggered your quality of products?

Have you observed that organizational members have given up quality of products in order work was completed? Are there in general cases when you give up your quality of products?

Do you expect that when organizational members come into your organization that they should already have some knowledge about quality of services or do you educate them in your own way?

Are organizational members aware of rewards and sanctions associated with not fulfilling the rules? What are they and how are they communicated to organizational members?

Can organizational members make suggestions about improvements in quality of products? Do you encourage this? If yes, in what way.

Does your organization conduct surveys or questionnaires to find out whether organizational members are aware of quality of products at your organization?

How would you describe organizational culture and how it promotes the creation of shared understanding about quality of products?

Has technology changed/influenced the creation of shared understanding?

Questions to ask organizational members

Assumptions

What do you define as the quality of products you deliver in your organization?

Values

What do you know about quality of products in your organization?

Do your colleagues share your understanding about quality of products? How do you know it?

Artifacts

How did you learn about quality of products in your organization?

Do you know what can/cannot be shared online? How did you learn about it?

Does your organization have special guidelines for social media usage?

Has your attitude to the quality of products changed since the introduction of social media?

How do you make sure that the products you provide to the customer are unique and of high standards?

When you are at the project side, do you still feel attached to your organization? If yes, what makes you feel attached?

Have you ever given up quality of products to have the work done? What was the reaction of your project manager on it?

Are you aware of rewards and sanctions associated with not fulfilling the rules? What are they and how are they communicated to you?

Can you make suggestions about improvements in quality of products? Have you done so? Does your organization encourage this? If yes, in what way.

Does your organization conduct surveys or questionnaires to find out whether organizational members are aware of quality of products at your organization?

How would you describe organizational culture and how it promotes the creation of shared understanding about quality of products?

Has technology changed/influenced the creation of shared understanding?

APPENDIX 4

CODE BOOK

#	Code	Description
Education & Development		
1	Ed_Contract	Contract
2	Ed_NDA	Non-disclosure agreement
3	Ed_Int_Tr	Introductory training
4	Ed_Emp_Man	Employees' manual
5	Ed_Policy	Organizational policies
6	Ed_Guide	Organizational guidelines
7	Ed_Workshop	Workshops
8	Ed_Course_Reg	Regular courses
9	Ed_Course_On	Online courses
10	Ed_Train_Reg	Regular trainings
11	Ed_Train_On	Online trainings
12	Ed_Cert	Certifications
13	Ed_Mentor	Mentoring
Communication		
14	Comm_One_Meet	One-to-one meetings
15	Comm_Team_Meet	Team meetings
16	Comm_Customer	Meetings with the customer
17	Comm_Disc_TL	Discussions with the team leader
18	Comm_Dics_Col	Discussions with a colleague
19	Comm_Forum	Discussions in the forums
20	Comm_IT_Dept	Contacts to IT department
21	Comm_Feedback	Feedback loops
22	Comm_Peer_Rew	Peer reviews
23	Comm_Survey	Surveys
24	Comm_Quest	Questionnaires
Processes		
25	Proc_Stand_Dec	Standardized decision-making
26	Proc_Trust	Trust
27	Proc_Learn_Do	Learning by doing
28	Proc_Refl	Process of reflection
29	Proc_Sense	Process of sense-making
30	Proc_Intdep	Interdependency
31	Proc_Part	Informed participation
32	Proc_Observ	Observing others
33	Proc_Aud_Int	Internal auditing
34	Proc_Aud_Ext	External auditing

People Management		
35	PM_Hire	Hiring organizational members with specific background
36	PM_Rew_Fin	Finacial rewards
37	PM_Rew_Soc	Social rewards
38	PM_Sanction	Sanctions
Professionalism		
39	Prof_Know	Employees are expected to have prior knowledge before entering the organization as well as best practices. HR selects people with special background
40	Prof_Commun	Attachment to the community of professionals
41	Prof_Com_Sen	Common sense
Information Technology		
42	IT_Access	Different levels of access for each peace of information
43	IT_Download	Monitoring of downloads
44	IT_Install	Monitoring of installations
45	IT_Dev_Encrypt	Device encryption
46	IT_Inf_Encrypt	Information encryption
47	IT_Inf_Backup	Information back-up
48	IT_Alarm	System alarms and reminders
49	IT_Web_Acc	Restricted access to different websites
50	IT_Int_Platf	Internal platform
51	IT_Email	E-mail
52	IT_Phone	Phone call
53	IT_Video	Video-conference
54	IT_Skype	Skype
55	IT_Mess	Messenger
56	IT_Newsletter	Digital newsletter
57	IT_Shared_Scr	Shared screens
Organizational Culture		
58	OrgCul_Open_Door	Open door policy
59	OrgCul_Flat_Hier	Not many hierarchical levels
60	OrgCul_Prom_Opp	Promotion opportunties
61	OrgCul_Improv	Improvements are encouraged
62	OrgCul_Inf_Comm	Informal ways of communication
63	OrgCul_Auton	Autonomy
64	OrgCul_Result	Result-orientation
65	OrgCul_Attach	Attachment to organization
66	OrgCul_Trust	Relations based on trust
67	OrgCul_Learn	Constant learning environment
68	OrgCul_Layout	Open space office layout
69	OrgCul_TL_Examp	Team leaders serve as best examples