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The Impact of Online ICT on the Dimensions of Social Capital

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ABSTRACT

This study aims to investigate the impact of information and communication technologies on social capital. It evaluates ICT in terms of "knowledge sharing." Similarly, social capital is taken into consideration in terms of organizational context. Within such a framework, constructs affiliated with these two concepts have been investigated. This investigation shows that communication technologies and social media technologies do have similar as well as varied impacts on dimensions of social capital. These impacts stem from the developments in the social elements of ICT. Moreover, variations in these elements are reflected as variations in the dimensions of developed social capital between communities with face-to-face interaction and the ones who have not yet achieved face-to-face interaction. This study also reveals that the social capital observed in face-to-face interaction can as well be seen online communities.

Keywords: Social capital, Information and Communication Technologies

1. Introduction

The concept of social capital has gained its modern form in the 1980s and 1990s with the approaches referring to network ties of goodwill, mutuality, shared norms, trust, and a sense of community that people can derive value from being a member of a society or community (Bourdieu, 1985; Coleman, 1990; Portes, 1998; Putnam, 2000; Burt, 2001). By being a member, individuals can access community resources that are not available to others because social capital is widely stressed as the resources embedded in social networks for the mutual benefit of parties within the networks. Although the concept of social capital has a much longer existence, it has become a prominent topic of discussion over the last two decades especially because of the rapid improvements in information and communication technologies. Like every aspect of our daily life, social capital also has to be adapted to the new era of communication. One of the eras where this adaptation can be seen easer is the way of the use of knowledge in organizations. In order to utilize expected benefits for knowledge sharing in an organizational context, relations between Information and Communication Technologies (ICT) and Social Capital may need to be criticized in line with the changes in constructs and dimensions.

Since the relationships among individuals have been presented in a concept of community, social capital has gained such other aspects emerged in interdisciplinary research fields such as knowledge management (Nahapiet and Ghoshal, 1998; Lesser, 2000; Cohen and Prusak, 2001; Adler and Kwon, 2002). In this sense, social capital investments inherently serve to motivate members who are interconnected in an organizational network to share knowledge (Huysman and Wulf, 2006). Furthermore, Huysman and Wulf (2006) state that creating the space for these members to share facilitates the development and dissemination of social capital, which enhances efficiency and effectiveness of knowledge sharing in a community. Within this sense, communities are seen as the valuable source of commitment, mutuality and trust (Wenger, 1998). On the other hand, evaluating knowledge sharing not only requires individual's abilities in a community, but also such technological aspects providing ability to interact as the tools for knowledge sharing. According to Wasko and Faraj (2005), individuals tend to use information and communication technologies (ICT) when they are motivated to share knowledge with others and when they have the opportunity in terms of availability of ICT tools. Within the improvements in ICT, the relationships between ICT and social capital in communities have drawn researchers' attentions more and more (Norris, 2002; Quan-Haase and Wellman, 2005; Uslaner, 2004; Lin et al., 2001; Huysman and Wulf, 2006; Ellison et al., 2011; Yang et al., 2009; Lee and Lee, 2010; Castells, 2011; Hampton et al., 2011). However, debates on communities handling ICT tools for interacting are still part of newly developed literature in sense of utilization of online tools to share knowledge especially in geographically dispersed communities working online. On this basis, the impact of internet on communities as a communication technology in building and accumulating social capital has been assessed (DiMaggio et al., 2001; Hampton, 2002; Nie, 2001; Quan-Haase and Wellman, 2004; Uslaner, 2004) by conducting on more specific internet technologies (Anderson, 2004; Drentea and Moren-Cross, 2005; Pasek et al., 2009; Ellison et al., 2011; Hampton et al., 2011) to understand the net effect of online ICT applications on interpersonal interactions.

Beyond the use of Internet, the rise of new online tools makes some sort of incremental changes in traditional communities through virtual communities. Due to their characteristics, these tools allow individuals to connect with others virtually and to facilitate the creation of networks of individuals who have similar purposes. It also provides opportunities to meet other users, who have such differences in background, beliefs, and norms (Lee and Lee, 2010). Within this frame, despite the fact that online communities enable new linkages to access external resources and make knowledge exchange quick and diverse by assisting knowledge flows in online communities (Ahuja, 2000; Huysman and Wulf, 2006), there is little commonly accepted view about the blurred issues of social capital enabling participation and sharing. These issues mostly come from the highly interrelated (Huysman and Wulf, 2006) dimensions of social capital and changing nature of communities in parallel with the advancements in ICT.

This study aims to explore the relationships between the use of ICT and the social capital in online communities. Because of the lack of clear understanding about individual specific choices and purposes in previous studies which are mainly focused on common network aspects of social capital (Norris, 2002), this study conducts on social capital by examining the specified online relationships among members and framing a specific concept in order to present some definitive answers within the world of highly diversified conceptualizations. On this basis, these specified relationships are framed by activities for knowledge sharing and social capital utilized in organizational networks. Within these bases, the study focuses on (1) the use of ICT for knowledge sharing and (2) constructs of the social capital dimensions in organizational context.

The first section, literature review, focuses on the theoretical basis of the concepts; ICT and social capital. This part covers these concepts in an organizational context of knowledge sharing by presenting basics and ongoing debates about the relationships among ICT and social capital. It represents the elaborated review for accessing the constructs enabling empirical settings used in the study. The next section is about the methodology part which describes the research methodology and basis of empirical testing. The measures and the constructs evaluated in the analysis are given in this part. The third part reports findings by giving statistical inference about sample profile, demographics and valuable descriptive. It also includes the results of the analysis executed for accessing the constructs and regression among them. Finally, the study ends with a section presenting the implications and the discussions about the findings.

2. Literature Survey

Social capital is a relatively new term for the era of virtual life. Even though the concept has a much longer existence, the modern face of social capital has been introduced in last two decades. The massive use of online tools makes the topic popular again for understanding the differences between traditional communities and newly called, virtual communities. These differences has been explored in various disciplines such as changes in economic performances (Sabatini, 2006; Schuller, 2007), changes in knowledge networks (Cohen and Prusak, 2001; Lesser, 2000; Adler and Kwon, 2002), changes in the role of social capital in organizational context (Coleman, 1988; Nahapiet and Ghoshal; 1998; Adler and Kwon, 2002). As it is known, society and social changes have always been associated with the development of technology (Castells, 2000). In parallel with the rising attention to the concept of social capital, the skills and

capabilities of individuals have been increasingly noticed in terms of their ICT competencies (Bresnahan et al., 2002). Together with the participation of information society researchers, the concept of social capital has gained its socio-technical form in sense of the developments in technology development and knowledge sharing processes (Riemer and Klein, 2004). On these bases, this section explores previous literature in line with the assessments on social capital-related ICT studies and discusses the foundations of social capital in organizational context and the conceptualization of ICT within the frame of knowledge sharing activities.

2.1. Social Capital

The modern face of the concept emerged in 1980s with several seminal works introduced by Pierre Bourdieu, James Coleman and Robert Putnam, who are known as the three key players in this field. In 1980s, together with the propositions about the role of social capital in civil society and social connectedness, it was also referred to social relationships between people enabling productive outcomes. Bourdieu (1985) characterizes social capital in line with the Marxist framework concerning social capital as a process for class formation. Coleman (1988) defines social capital in line with the communitarian view concerning it as the feature of social structures that facilitates certain actions of individuals. Putnam (1995) perceives social capital as property of individuals who are not isolated but connected with each other within a community offering embedded capital (social capital) for reciprocity, shared norms and trust. After Putnam's conceptualization, the concept of social capital has been elaborated by many scholars (Burt, 1997; Knack and Keefer, 1997; Woolcock, 1988; Fukuyama, 1999; Burt, 2001; Grootaert and Bastelaer, 2002; Narayan and Cassidy, 2001; Adler and Kwon, 2002; Sobel, 2002; Ostrom, 2000; Inkpen and Tsang, 2005) in a variety of disciplines. By following these elaborations and conceptualizations, three basic assumptions can be underlined within the existence of vague and expanding concept of social capital. These basics are (1) social capital as a resource that is available to members of a social network, (2) social structure is often the type of capital that all members of a group can access to promote their interests and (3) social capital plays an important role in generating trust and supporting cooperation leading to some sort of economic outcomes (Guiso, Sapienza, and Zingales 2004). As a broad formulation, within these varieties of relationships and networks, social capital is maintained by the members of the networks triggered by social norms, a sense of commitment, reciprocity and common understanding. In other words, it is a relational and cognitive resource (Bourdieu, 1985; Coleman, 1988; Putnam,1995; Burt, 1997) which is embedded in network relationships possessed by individuals (Nahapiet and Ghoshal, 1998) and organizations as well as the goodwill available to an individual and group (Adler and Kwon, 2002). It is also an ingredient of organizational performance in the sense of learning, because of that the driving forces of knowledge sharing within communities are not only the shared interest, but also mutual trust, norms and obligations (Lesser and Prusak, 2000; Preece, 2004; Huysman and Wulf, 2006). On these bases, the idea of defining the dimensions of social capital as **structural, cognitive and relational** (Nahapiet and Ghoshal, 1998) has become one the most influential approach with regard to nature and dynamics of knowledge sharing. When these three dimensions were combined with the features of networks introduced by Adler and Kwon (2002), the approach has become an appropriate conceptualization in sense of the utilization of knowledge sharing-in and between organizations. These features are

opportunity, with regard to the structural dimension; ability, with regard to the cognitive one; and motivation, with regard to the relational one.

2.1.1. Structural Dimension

The structural dimension refers to the pattern of social ties for a given individual. Members are embedded in a network of ties, which can function as conduits to needed information and resources. Nahapiet and Ghoshal (1998) conceptualize this dimension within three constructs as network ties, network configuration and appropriable organization. This study treats these constructs as linkages among members for network ties, position in the network as configuration and finally closeness among members as appropriate structure.

In line with Adler and Kwon's (2002) conceptualizations, **network ties** (Ahuja, 2000; Reagans and Zuckermann, 2001; Papakyriazis and Boudourides, 2001; Hampton, 2002; Matzat, 2004; Reagans and McEvily, 2003; Burt, 2004; Obstfeld, 2005; Uzzi and Spiro, 2005, Fleming et al., 2007) can be assumed as the composition of external and internal ties. According to them, having external ties provide an opportunity to leverage other members' resources (i.e. exploring new knowledge) while internal ties provide an opportunity to act together (i.e. exploiting existing knowledge). Therefore, these constructs compose organizational and inter-organizational relationships of individuals who are able to make weak and strong ties to others within a network (Nahapiet and Ghoshal, 1998). Granovetter's (1973) posits more reciprocal and frequent interactions as the source of strong ties while less reciprocal and less frequent interactions as the source of weak ties. Apparently, the concept of the strength of tie can be characterized as the composition of the frequency of interaction and the level of reciprocity among members. Within this context, leveraging network relationships (Nahapiet and Ghoshal, 1998; Gulati, 1999) through their structural embeddedness leads members to have a good **network position** (Burt, 1997; Walker, Kogut and Shan, 1997; Koka and Presscott, 2002; Hampton and Wellman, 2003) in the network to secure more diversified and richer information (Koka and Prescott, 2002). When members in the network are situated in the hub or centrality of the network, because of the diversification and richness of network ties, they can reap the benefit of knowledge exchange in terms of accessibility and permanence (Burt, 2000). Finally, Nahapiet and Ghoshal (1998) mention that members' access to other members' resources through their relational and cognitive capitals emerging from trust, similarities, shared necessities and solidarity in network. These aspects are handled with the term **network closeness** (Knack and Keefer, 1997, Tsai and Ghoshal, 1998; Norris, 2003; Newell et al., 2003; Huysman and Wulf, 2006).

2.1.2. Cognitive Dimension

The cognitive dimension of social capital refers to "those resources providing shared representations, interpretations, and systems of meaning among parties" (Nahapiet and Ghoshal 1998). Nahapiet and Ghoshal (1998) suggest that engaging in a meaningful exchange of knowledge requires at least some level of shared language and vocabulary and sharing of collective narratives. In line with Nahapiet and Ghoshal (1998), Inkpen and Tsang (2005) see cognitive social capital as the composition of shared goals and shared cultures among network members. According to them, shared goals represent the level of common understanding while

shared culture represents the level of common norms. Adler and Kwon (2002) evaluate this dimension by focusing on motivational factors. They state that members are identically motivated by self- interest and the cognitive dimension reduces the barriers to interactions among members by eliminating opportunistic behavior (Dyer and Singh, 1998) and by driving collective vision through collective goals (Adler and Kwon, 2002). Along with these explanations, constructs of cognitive dimension can be specified in a organizational context in which members are readily to conform to **shared norms** and **shared interests** enabling cooperative behaviors around collective goals (Nahapiet and Ghoshal, 1998; Lesser, 2000; Adler and Kwon, 2002; Inkpen and Tsang, 2005).

2.1.3. Relational Dimension

The relational dimension of social capital refers to "the kind of personal relationships people have developed with each other through a history of interactions" (Nahapiet and Ghoshal, 1998). This dimension of social capital comprises the quality of social interaction among the members in the network (Ahuja, 2000; Yli-Renko et al., 2001) and shapes the cooperative ambience between members (Ahuja, 2000). Within this cooperative ambience, some constructs such as trust, and reciprocity make members willing to exchange and share their knowledge (Nonaka, 1994; Koka and Prescott, 2002). Members in a community who share trust are more willing to share their knowledge by participating the knowledge exchange events in the community (Tsai and Ghoshal, 1998). Tsai and Ghoshal (1998) showed that **trust** has positive and significant impact on the resource exchange. Particularly, Chiu et al. (2006) reports the positive impact of trust on the knowledge sharing. Similarly, **reciprocity** can enhance the likelihood of further reciprocal exchange arrangements, if obligations are seen as being satisfactorily fulfilled trust (Ring and Van de Ven 1994).

To sum up, social capital is handled in this study by following organizational context for knowledge sharing. It has three dimensions and each dimension have some constructs. Table 1 shows these dimensions and its constructs.

Tablo 1: Dimensions of social capital and its enablers for knowledge perspective

Nahapiet and Ghoshal (1998)	Adler and Kwon (2002)

o   Structural social capital
    ▪   Network ties
    ▪   Network configuration
    ▪   Appropriable organization
	o Structural Opportunity
	    ▪ Network ties
	    ▪ Network position
	    ▪ Network closeness

o   Cognitive social capital
    ▪   Shared codes
    ▪   Shared narratives
	o Cognitive Ability
	    ▪ Shared codes
	    ▪ Shared Interest

o   Relational social capital
    ▪   Trust
    ▪   Norms
    ▪   Identifications
	o Relational Motivation
	    ▪ Trust
	    ▪ Reciprocity
	    ▪ Identity

2.2. Information and Communication Technologies

Especially in the last decades, the skills and capabilities of individuals have been increasingly noticed in terms of their ICT competencies. The skills conducted here are not only technical, but - more importantly – informational: skills that enable individuals to access, to process and to interpret information in useful ways. In this frame, there is a growing attention to the fundamental impact of ICT on social capital (Blanchard and Horan, 2000; Franzen, 2003; Uslaner, 2000; DiMaggio et al., 2001; Hampton and Wellman, 2003; Quan-Haase and Wellman, 2004; Huysman and Wulf, 2006; Ellison et al., 2007). This attention to the impact of ICT on knowledge creation and skill diffusion makes clear that the ability to create, share and utilize knowledge is continuously upgraded by the advancement of ICT. In parallel with these advancements in organization, ICT introduces some other opportunities for organizations in the sense of having and managing their social assets (Millen and Patterson, 2003). Use of ICT in a virtual environment, including online communities, builds social norms and assets in organizations. Nowadays, instead of only a tool for interaction, ICT should be assumed as an actor of exchanging, codifying, storing, retrieving and delivering (Wang, 2012). Therefore, focus on social capital in sense of individual level turns to community level. At that point communities are seen as the prime sources of social capital (Wenger, 1998). This section explores online communities as a place for exchanging knowledge in an organizational context.

2.2.1. Online Tools for Knowledge Sharing

Within the existence of insufficient research attempts, there are some commonly accepted results about the relationship between ICT and social capital. For instance, Putnam (2000) argues that electronic technology contributes to a decline in social capital, whereas others argue that ICT such as the Internet and its latest applications, such as social networking sites facilitates social capital building (Hampton and Wellman, 2003). In detail, Quan-Haase and Wellman (2004) state that the effects of the Internet on social capital has three results. First, it transforms social capital. Second, it diminishes social capital. Third, it supplements social capital. Norris (2005) concludes that the Internet seems to widen the experience of community, and the other (Steinmuller, 2004) that social networks are influenced by ICT however the results vary mostly because of divergent the user specific choices evaluated for the internet as a particular ICT. They (Norris, 2003; Steinmuller, 2004) also show that the findings about the relationship between one particular technology and social capital cannot be directly applied to other technologies.

Because of these divergent result, researchers (Wasko and Faraj, 2005; Huysman and Wulf, 2004; Preece, 2000; Wellman et. al., 2001) conducted both specific ICT tools and dimensions of social capital. As explained above, researchers are focused on the three dimensions of social capital (Nahapiet and Ghoshal, 1998) and features of these dimensions (Adler and Kwon, 2002). These are structural opportunity, cognitive ability and relational motivation. Huysman and Wulf (2005) posit the effect of information technologies on these dimensions. They (Huysman and Wulf, 2005) expect that distributed communities with a high cognitive ability (i.e. a shared frame of reference) and motivations to share knowledge (e.g. a shared purpose), but with low structural opportunities will be in need for communication tools since, it is expected that the level of density will increase over time (Brown and Duguid, 2001 cited in Huysman and Wulf, 2006). With regard to the dimensional approaches for social capital, Pigg and Crank (2004)

consider the functions of ICT supporting both communication in various forms as well as information storage, retrieval, analysis and sharing. Bolisani and Scarso (1999) point that ICT facilitates knowledge transfer through the exchange of data. Nonetheless, this requires a double transformation process from knowledge to information and then to data, and back from data to information and finally, to knowledge. They also claim that the transfer of knowledge (especially the tacit form) often requires proximity between the transmitter and the receiver. In line with these explanations, considering ICT in two forms as **information functioning tools** and **communication functioning tools** may become necessary especially because of the fact that social capital is built upon "instrumental" and "expressive" information forms (Briggs, 2003 cited in Pigg and Crank, 2004). Pigg and Crank, (2004) differentiate between the information and communication functions. **The information function** is complex because Internet-based information transfer can take place using a variety of features of the network (Pigg and Crank, 2004). Information transfer can be "active" in that people share information using various communication features of the online networks including e-mail and video conferencing, or it can be "passive", based on one person's searching for resources on the Internet and using, for example, its archiving or knowledge management capabilities. Pigg and Crank, (2004) also offer that **the communication function** is multi-faceted and interactive, including text, audio and video, as well it may be real-time (as in VOIP) or asynchronous or archival/historical. According to them, the communication function refers to the acts of transmitting information of different types, e.g., ideas and feelings, from one person to another. Based on these challenges for classifying ICT in sense of its format and the role in users' relations, Yuan et al., (2013) considers the role of ICT tools for knowledge sharing. For that reason, they collect ICT in three groups such as **Social media tools** –as a generator of knowledge sharing among community members-, **communication tools** –as a channel for knowledge sharing-, long standing tools[1]. They state that social media can better address challenges to knowledge sharing because using social media helps users to develop better awareness of both other users' expertise (e.g., from employees' profiles) and their personal lives (e.g., from status updates). On the other hand, communication tools connect users (transmitter and receiver) directly and they are very informative and more importantly, most efficient in providing up-to-date information. Besides, they may help build stronger connections between them and thereby make providers more motivated to share knowledge (Yuan et al., 2013). Based on the given discussion, as a knowledge sharing platform, social media tools and the communication tools may lead to basic changes in users' opportunities, motivations and abilities in sense of building, maintaining, and/or expending social capital.

According to Boase et al. (2006) communication tools are going to emerge mostly as a synchronous messaging which are integrated with other knowledge sharing tools (web-based platforms). The means of online communication are many and varied. The popular communication tools for knowledge sharing on the Internet refer to applications such as e-mail, instant messaging, video-conferencing, voice over internet protocol (VoiP), Internet relay chat and chat rooms (Kreijns et al., 2003; Boneva et al.,2006; Steinfield and Scupola, 2006). These

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[1] **Long-standing tools** such as databases and digital archives that allow searching or communicating with document contributors; hence, their value for developing awareness of expertise distribution and social capital is limited (Yuan et al., 2013).

tools (e-mail, instant messaging, telephone, and video-conferencing) are complementary to each other in supporting both synchronous (e.g. instant messaging) and asynchronous (e.g. e-mail), as well as intrusive (e.g. telephone calls) and less intrusive (e.g. using instant messaging to respond to an urgent requests).

On the other hand, together with the advance of ICT with the introduction of Web2.0[2], the recent trends in social networking sites, blogs, wikis and forums become valuable platforms for knowledge sharing. Vossen (2009) defines Web 2.0 in four dimensions. These are the social dimension, infrastructure dimension, functionality dimension and the data dimension. These dimensions technically are related with the Nonaka's (1994) process of knowledge sharing as socialization, externalization, combination and internalization. With regard to Nonaka's (1994) statement about **socialization** - process of creating tacit knowledge through shared experience-social dimension, is described as the software for sharing user-generated content or collaborative use of it (Vossen, 2009). These description of social media tools **-Social Networking Sites (SNS)-** refers to the applications for the interactions among users in which they create, share, and exchange information and ideas in online communities and networks. Another process of knowledge sharing is **externalization -**the conversion of tacit knowledge to explicit knowledge- (Nonaka, 1994), make **Wikis** a conversational technology within the frame of meaningful dialogues (Andreano, 2008) externalizing practitioners experiences for submitting it to the Web 2.0 platforms (McAfee, 2006). According to Andreano (2008), wiki technology allows users to directly interact with the content they encounter. The process of **Combination -**the reconfiguration of existing information for having new knowledge by sorting, adding, re-categorizing, and re-contextualizing- (Nonaka, 1994), appears as **forums** in Web 2.0 technology (McAfee, 2006). The final process defined by Nonaka (1994) is **internalization** -conversion of explicit knowledge into tacit knowledge-. For this process, Web 2.0 serves as **blogs** allowing users to express themselves through storytelling and narrative (Du and Wagner, 2006). Table 2 presents popular communication tools and their purposes while Table 3 shows social media tools by giving differences among them and relations between knowledge sharing processes.

Tablo 2: Popular online communication tools

E-mail	Write, store, send, and receive asynchronous messages electronically; can include attachments of word documents, pictures, audio, and other multimedia files.
Instant messaging	Allows the synchronous exchange of private messages with another user; messages primarily are in text but can include attachments of word documents, pictures, audio, and other multimedia files.
Chat rooms	Synchronous conversations with more than one user that primarily involve text; can be either public or private. Internet Relay Chat (IRC) is a protocol for live interactive Internet text messaging (chat) or synchronous conferencing.
Videoconferencing	A set of telecommunication technologies which allow two or more locations to communicate by simultaneous two-way video and audio transmissions.
Voice over Internet	A methodology and group of technologies for the delivery of voice communications and multimedia sessions over Internet Protocol (IP) networks, such as the Internet.

Source: Subrahmanyam (2008)

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[2] The term Web 2.0 was coined in 1999 to describe web sites that use technology beyond the static pages of earlier web sites.

Tablo 3: Differences between wiki, forum and blog

SNS	Wiki	Forum	Blog
Socialization	**Externalization**	**Combination**	**Internalization**
Personal and community supply	Community supply	Community supply	Personal supply
Mostly developed by authenticated users and the owner	Mostly developed by authenticated users	Mostly developed by anonymous users	Mostly developed by the owner
Content publishing consisting of text, video or audio	Displays text and graphic content contributions	Content publishing consisting of comments and descriptions of entries	Content publishing consisting of text, video or audio
Pushes content to subscribers	List of edits to entries	Shows others with similar entries	Pushes content to subscribers
Notification to owner or commenter's when the new comment have been made	Notification when changes have been made	Displays number of people who bookmarked same content	

Source: Treem and Leonardi (2012)

2.3. Relationships between Online Knowledge Sharing Tools and Constructs of Social Capital Dimensions

2.3.1. The impact of communication tools on social capital dimensions

The popular online communication tools for knowledge sharing provide such different communication channels and they enable the degree of social presence possible -the perception of being in communication with another individual, for example, facial expressions, tone of voice etc.- (Kreijns et al., 2003; Boneva et al.,2006; Steinfield and Scupola, 2006). For instance, Boase et al., (2006) stress that **e-mail** may be seen as the tool for maintaining existing social capital instead of building new ones. It may also serve as a supplement to face-to-face and phone contacts among members who already know each-other. Boase et al., (2006) found that using e-mail increases users' social networks if they have strong ties from the previous relationships among them. On the contrary, O'Reilly (2005) argues that e-mail enables users who have different backgrounds not only to develop their existing relationships but also to build new ones. These discussions about e-mail shows how more efficient the harmonized use of communication tools may be in terms of building and maintaining social capital for knowledge sharing. Because individuals may not able to share (tacit) knowledge effectively without the help of other online communication tools providing more social context such as videoconferencing, instant messaging. For example; unlike e-mail, instant messaging enables synchronous conversation and does not capture the conversation for archival works. Because of these attributes enabling flexible environment for online conversation, it has emerged as one of the primary medium for communication (Flanagin, 2005). **Instant messaging** can lead to increased work productivity by offering members not only appropriate norms but also common interests or work problems and the opportunity to connect without having to worry about space or time (Quan-Haase et al., 2005). Yet, Kennan et al., (2008) states that forming community strictly through instant messaging can be limiting as only those individuals who are on buddy lists become part of the social network connection while others are excluded. With regard to this limitation, online **chat rooms** offer some hope that people of different backgrounds might get together and learn to

trust one another (Uslaner, 2004). Whether the chat room is moderated or not, there is a positive impact of it on knowledge sharing. It reveals that individuals are more likely to express an opinion than individuals in face-to-face discussions (Ho and McLeod, 2008). The other communication tool may also build or diffuse social capital among its users. İts video conferencing and/or Voice over IP (VoIP) systems. Even though the concept of **videoconferencing** is originated over thirty years ago (Egido, 1988), it is still one of the online communication tool in that videoconferencing groups are nearly as good as face-to-face ones (Bos et al., 2002). It refers to a set of telecommunication technologies which allow two or more locations to communicate by simultaneous two-ways video and audio transmissions which are also used as voice over IP. **Voice over IP** (voice over Internet Protocol, VoIP) is a methodology and group of technologies for the delivery of voice communications and multimedia sessions over Internet Protocol (IP) networks. These solutions aimed by business partners enable low cost of communication and efficient knowledge sharing in their community. These communication tools provide delayed trust (slower progress toward full cooperation) and fragile trust (vulnerability to opportunistic behavior). According to Bos et.al. (2002), users communicating with these communication tools need longer time to build up social capital within the threat of opportunistic behaviors.

Different modes of utilization may have differing impacts on social relations (Mignone and Henley, 2009). For example, online discussions can also galvanize involvement and support for collective action initiatives by building social capital. In this scope, Oliva (2003) mentions that the use of online communication tools makes individuals have stronger social capital in sense of strengthening their ties. Far beyond building social capital, these communication tools can also be utilized by users to maintain previous social capital in dispersed communities. For instance, individuals tend to use videoconferencing as a way to connect with friends or people who are already known (Mignone and Henley, 2009). In parallel with these statements, Shiau (2008) states that the pre-occupation with the existing interpersonal network, the users of such communication tools such as instant messenger are more likely to confine themselves in a small nutshell, seldom looking beyond the network. In contrast to the confinement, the open nature of the communication tools such as chat rooms are more likely to attract people from diverse backgrounds instead benefits from supporting weak ties (Shiau, 2008). The other face of the impact is about the cognitive dimension. The use of communication tools might mandate users to develop shared codes and interest in time by sharing stories, meanings and etc. in an online community (Lin, 2011). As a form social support, meaningful sharing among individuals facilitates some level of cognitive social capital (Wasko and Faraj, 2005). Therefore, individuals are likely to develop cognitive social capital in their meaningful conversation for knowledge sharing. Finally, relational dimension of social capital, characterized by trust, reciprocity and identity (Nahapiet and Ghoshal 1998), can be found in online communities as delayed and fragile trust (Bos et al., 2002). Reciprocity reflects the expectation of users to have feedback, to have respond from the remote contact (Wasko and Faraj, 2005) and to share their interests. Quan-Haase and Wellman (2004) found that online participation to provide social support may intensify reciprocity.

Even though, the existence of divergent findings about relationships between the use of specific communication tools and social capital, there are some significant relationships between the communication tools and the constructs of social capital. This study offers some sort of hypothesis in order to find the overlapping impact of communication tools on the social capital constructs. These hypotheses can be seen at Table 4. Between H1 and H7 are about the impact of communication tools on social capital constructs.

2.3.2. The impact of social media tools on social capital dimensions

The combination of ICT features and associated tools (wiki, forum, blog, SNS) have made social media a good channel for knowledge sharing activities (Panahi et al., 2012). These tools make members available to get connected, to communicate with others, to build relationships, to develop trust, and to share their knowledge. It also supports knowledge creation, distribution, and visibility of knowledge more effectively compared to traditional knowledge management systems (Panahi et al., 2012). When these social media tools and applications are considered in line with the process of knowledge sharing introduced by Nonaka (1994), the composition of social media appears as wikis, forums, blogs and social networking sites (SNS). The differences among these types are becoming to disappear because virtual platforms are upgraded by adding new properties of other online platforms, the core assets of social media come from being a social networking site for sharing variety of text and media (Dickerson, 2004). According to Kietzmann and Hermkens (2011), these social media tools provide some functions identity, conversation, sharing, social presence, building relationship, reputation, participate in groups) to build an online community. These functions enable users to have identity, conversation, availability to share, present, establish and maintain relationships and reputation, and get together with groups of other members.

Studies (Donath and Boyd 2004; Resnick 2001; Wellman et al. 2001; Ellison et al., 2007; Steinfeld et al., 2009; Phulari, 2010) about Social Media indicate that the use of social media tools has the potential to create social capital. The popularity of social media is likely due to the fact that this technology enables users to maintain a number of weak ties cheaply and easily, as well as create and maintain larger, diffuse networks of relationships from which they could potentially draw resources (Donath and Boyd 2004; Resnick 2001; Wellman et al. 2001). About the impact on network ties, these social media tools can fulfill the informational needs of users, a key ingredient for strengthening weak ties and promoting collective action (Kenski and Stroud, 2006). Moreover, it may reinforce existing ties and communities by keeping users constantly updated about what is going on with their contacts (Hargittai, 2007). On this basis, as a part of network position, Steinfeld et al. (2009) report that using social networking sites provide closer ties in a network structure if it is used to keep existed connections updated. On the other hand, it provides new contacts if it is used for searching new connections. The new connections with weak ties cause an increase in social capital for members who are in a favorable position to gain and provide emotional support (Phulari, 2010). However, Ellison, Steinfield, and Lampe (2007) found that the use of SNS has strong association with maintaining or solidifying existing relationships, as opposed to meeting new members. With regard to these propositions, social

media may help to build new connections as well as it helps to maintain existing ones. The last construct, network closeness, has also been affected by the use of social media tools. Users of social media tools have also larger networks of heterogeneous relations (Steinfield et al., 2009) and not just that, more intense use of these social media are related to closer relationships with contacts. In line with this statement, one of the outcomes of the use of social media is closeness in the community by enabling users to contact with their direct and indirect relations such as relations with friends and friends of friend and by enabling similarities, solidarities and friendships (McQuail 2010). Hansen et al. (2005) also found that practitioners tend to expand their contact by linking themselves with other practitioners' contacts. Beyond the impact on structural dimension, social media tools have also impact on cognitive dimension. Hansen et al. (2005) found that a large percentage of members in organizations share their knowledge primarily with strong ties when they participate in community. Regular interaction among members not only contributes to a shared knowledge base, but also to shared interests and shared codes. According to Hansen (1999) practitioners that strongly identify with their group and share beliefs with the group might be less inclined to engage with members from outside. Finally, increased participation in online communities may help to build trusting relationships among members. Kobayashi et al., (2006) found that enhancing the participation in Facebook groups increases social capital by creating opportunities for collective actions (McQuail, 2005). When users feel connected to a community, they meet their sense of belonging, which is the basis for conversation and social interaction. By offering opportunities for the necessity of integration and utilizing community knowledge, social media tools may cause the norm of reciprocity among members. The features of social media tools for creating and maintaining ties influence users' relational satisfactions. At Table 4, this study also offers some sort of hypotheses in order to find the impact of social media tools on the social capital constructs. Between H8 and H14 are about the impact of social media tools on social capital constructs.

Table 4: Hypotheses between ICT and social capital

Hypotheses between communication tools and structural dimension
H1: The use of communication tools has a significant impact on the network ties
H2: The use of communication tools has a significant impact on the network position
H3: The use of communication tools has a significant impact on the network closeness
Hypotheses between communication tools and cognitive dimension
H4: The use of communication tools has a positive impact on the shared codes
H5: The use of communication tools has a positive impact on the shared interests
Hypotheses between communication tools and relational dimension
H6: The use of communication tools has a positive impact on the trust
H7: The use of communication tools has a positive impact on the reciprocity
Hypotheses between social media tools and structural dimension
H8: The use of social media tools has a positive impact on the network position
H9: The use of social media tools has a positive impact on the network ties
H10: The use of social media tools has a positive impact on the network closeness
Hypotheses between social media tools and cognitive dimension
H11: The use of social media tools has a positive impact on the shared codes
H12: The use of social media tools has a positive impact on the shared interests
Hypotheses between social media tools and relational dimension
H13: The use of social media tools has a positive impact on the trust
H14: The use of social media tools has a positive impact on the reciprocity

Previous research about social capital and ICT mostly conducts to investigate one particular technology, such as the Internet or e-mail. Recent findings about the impact of ICT on social capital tend to support positive relationships between the constructs by underlining the sense of community in virtual spaces and enhancing its offline relations (Hampton and Wellman, 2003). Along with these findings, it can be derived that the impact of ICT on social capital depends on the type of technology selected by individuals and tools for interaction. Yang et al., (2009) mention that results based on investigations of one particular technology cannot be generalized to other technologies without certain qualifications. Furthermore, the rapid advancements in online applications force researchers to conduct on blended use of ICT tools to facilitate knowledge sharing and creation of social capital. Without engaging in commonalities across the divergent use of ICT, it is highly difficult to comprehend the role of these technologies on social capital. Therefore, this study considers commonalities of ICT and the impact of them on the constructs of social capital dimensions.

3. Methodology

3.1. Research Design

The purpose of this study is to investigate the relationships between the constructs of online tools of ICT utilized for knowledge sharing and the constructs of social capital dimension enabling knowledge sharing in organizational context. The former constructs are selected within the basis of literature (e.g. Best and Krueger 2006; Boase et al. 2006; Pigg and Crank, 2004; Yuan et al., 2013) adapted from the study, "a dynamic theory of organizational knowledge creation", introduced by Nonaka (1994). The latter one, constructs of social capital dimensions, are selected by following the work of Nahapiet and Ghoshal (1998), "social capital, intellectual capital, and the organizational advantage", suggesting three dimensions of social capital in an organizational context. These constructs are adapted to organizational form of knowledge Exchange by following the work, "Social capital: Prospects for a new concept", introduced by Adler and Kwon (2002). For measuring the constructs this research aimed to use principal component analysis (Cudeck, 2000; Jolliffe, 2002) to identify any underlying common factors across the different questions via questionnaire mostly adapted from the previous works. Each of the constructs used in the study are measured as factor scores which are used in multiple regression analysis. The constructs of social capital are considered as dependent variables while the constructs of ICT are considered as independent variables for the model. Hypotheses of the research are tested and the results are interpreted in line with presented debates on related topics.

3.2. Sample Selection

This research is conducted within the sector of logistics and practitioners working in such departments as public relations, institutional development, human resources, operation and other departments for the particular functions.

The logistics, in its simplest definition, is the set of activities that plans and executes the delivery of goods and raw materials from suppliers to end-users (Özdemir and Darby, 2009). The

increased global exchanges and competition with the improvement of logistics infrastructure and system force logistics companies to use more advanced ICT for leveraging their supply-chain networks (Özdemir and Darby, 2009). Moreover, the countries in central position in terms of global logistics expand their online networks for ensuring effective and efficient transportation across the world. In line with these structural changes in the sector, logistics companies shift their ICT infrastructures towards advanced systems in order to improve their decision-making activities, collaborative works with their partners, communication activities with suppliers, produces, wholesalers, distributors, stores and customers. On the other hand, they utilize the advances of ICT for awareness raising, strategic alliances, learning, diffusing, informing and etc. Eliiyi (2011) underlines the situation of Turkish logistics sector as a gateway between Europe and Asia. Because of Turkey's strategic position as a hub between three continents, the effective use of advanced ICT is critically important for successful development and sustaining competitive forces. The implementation and development of ICT improves the performance of logistics companies especially by passing the information to different parties in the network and by decreasing the cost of overall system (Disney et al., 2004). Finally, utilizing the online tools of ICT which provide learning abilities, accessing faster and reliable services, increasing revenues and effective communication for the companies working in the sector (Feng and Yuan, 2006), make logistic companies to utilize of organizational learning in their global workplace organization.

Within this sector, the sample population for the study consisted of managers, vice managers, specialists, experts, officers and consultants working for logistics companies located in Istanbul which is the most populous city involving 15% of the Turkish population and 63% of foreign direct investment in the service sector (Özdemir and Darby, 2009).

The sample consists of 150 respondents and 120 of them were used for the analysis. In data collection process, the questionnaire was given to volunteer members and answers were collected by face-to-face interviews. These respondents are practitioners who are using online tools in their communities. These practitioners are engaged in learning effective ways of operations, best routing, managing human resources, monitoring operations and third parties, adapting procedures to global situations involving such challenges as green house gases, negative effects on human health, land use and resource consumption. These practitioners are also responsible for social and environmental issues by concerning their business practices to work towards corporate sustainable development and learning.

3.3. Instruments of the Study

In this study, data were collected through 39 different instruments which consisted of a questionnaire. According to Jacobs and Chase (1992), an instrument's reliability deals with the consistency of measurements. The majority of the studies assessing reliability of the instruments have done so through the standard coefficient of internal consistency, Cronbach's alpha level. It was also used to verify reliability in this study.

The sample is purposive and it consists of 30 pilot interviews and 150 main interviews executed on practitioners in logistics sector from February 2012 to June 2012. To measure the constructs of the use of ICT, all aspects of the ICT which are related with knowledge sharing activities were

used in questionnaire by mentioning initiatives such as reading, responding, posting. The possible answers on a 5 points scale are ranged from 1 (low) to 5 (high). To measure the constructs of social capital dimensions, theoretical basis in literature about the concepts, definition and measurement methodologies are used in questionnaire by collecting responses in a 5 points scale ranged from 1 (low) to 5 (high). Respondents replied questions for both individuals who they have contact face to face (location based) and only virtual (dispersed).

The questions in the survey contain the following parts and topics;

(1) Demography
Age, position and duration at latest position, department, firm and sector.

(2) The Use of ICT
Items[3] used by members for knowledge sharing. The questions which involve all the presented indicators of ICT are directed to the interviewees in the stage of pilot survey and the items got favorable response in knowledge sharing context (Andreano, 2008; Boneva et al.,2006; Blanchard, 2004; Kreijns et al., 2003; McAfee, 2006; Steinfield and Scupola, 2006; Uslaner, 2004; Vossen, 2009; Du and Wagner, 2006). Table 5 exhibits the ICT indicators in the study.

Table 5: Popular items responded by interviewees

Tools	Items
E-mail	Official mail address, gmail, hotmail and yahoo mail
Instant messaging	Skype, MSN, Facebook Messenger, iChat
Chat rooms	Web based chat rooms in community blogs
Videoconferencing	Skype, netmeeting, connect, ichat
Voice over IP	Special Softwares, Skype, GoogleTalk
Social Networking Sites	Facebook, Twitter, LinkedIn, MySpace, Google+
Wiki	Offical wikis, personal wikis, community wikis
Forum	Discussion forums, community forums for accessing software, arts and etc.
Blog	Community blogs and personal blogs

(3) Dimensions of Social Capital
This research considers social capital in three dimensions as structural, cognitive and relational (Nahapiet and Ghoshal, 1998) and its enablers for the knowledge sharing (Adler and Kwon, 2002). The structural dimension of social capital is measured by monitoring the social structure in which individuals operate. Network ties (Granovetter, 1973), position (Burt, 1992) and closeness (Bourdieu, 1985) are considered within networks to understand both the functioning and efficiency of the entire network and the range of benefits potentially available to individuals. The cognitive dimension is considered as the characteristic of shared norms linked with the level of shared codes (Ostrom, 2000) and interests (Inkpen and Tsang, 2005). Finally, the relation dimension is characterized as the composition of trust (Farrel and Knight, 2003), reciprocity (Koka and Prescott, 2002) and identity (Tsai and Ghoshal, 1998) by capturing the composition of generalized, individual and collective trust, reciprocity and identity which means belongingness of individuals to the community. Figure 1 shows constructs used in the study.

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[3] Items used in questionnaire are adapted by elaborating the some important Works such as: Partnership on Measuring ICT for Development introduced by International Telecommunication Union (ITU), European Union Surveys on ICT usage and e-Commerce in enterprises (2011), European Union Survey on ICT usage by individuals, EurobaseTableName is ISOC_BDE15CUA.
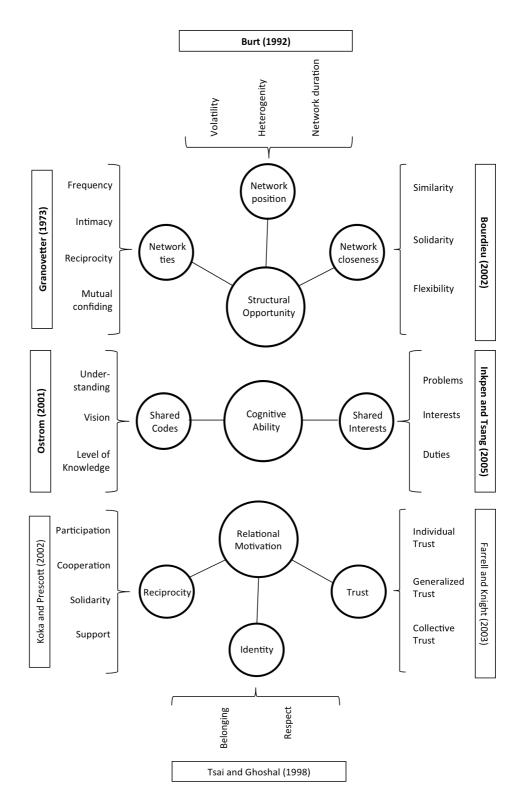
Figure 1: Dimensions and the constructs of social capital

Having conducted the quantitative research, the questionnaires were analyzed in SPSS. First, frequencies and percentages were calculated to give an overview of the results. To test the validity and reliability of scales, besides obtaining full content validity through literature analysis, this study utilizes Cronbach's α[4] to test each scale's reliability and the results show that all exceed 0.67, demonstrating that each scale in this study has good reliability. Then, Explaratory Factor Analysis (EFA) was used to deeply examine data in order to access determined constructs. The protocol adopted here for factor analysis is to use default settings initially (Principal Component Analysis - PCA) and to rotate the matrix of loadings to obtain orthogonal (independent) factors (Varimax rotation). The prime goal of factor analysis is to identify simple (items loadings >0.40 on only one factor) that are interpretable, assuming that items are factorable (the Kaiser-Meyer-Olkin measure of sampling adequacy tests whether the partial correlations among variables are small. Bartlett's test of sphericity tests whether the correlation matrix is an identity matrix, indicating that the factor model is inappropriate). Once clearly defined and interpretable factors have been identified (factor loadings =>.10 are illustrated via included tables even though only item loadings >0.45 are considered relevant to factor loadings), and responses related to these factors are saved in the form of factor scores. These Bartlett factor scores are equivalent to sub-scale or scale scores with means of zero and standard deviations of one (z-scores), and with participants credited with separate scores in relation to each identified factor. These factors are used as dependent (constructs of social capital dimension) and independent variables (constructs of ICT) in multiple regressions designed for the hypotheses offered by study. The basic regression model used in the study for the empirical analysis is as follows:

$$\gamma_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \varepsilon_i$$

γ_i present a particular construct of social capital which results from the factor scores of each respondent, *i. Xi* represents the constructs of ICT which also results from the factor scores of each respondent. The error term is represented by ε. Finally, control variables for the use of ICT constructs are used as dummy and they include age position variable for the specialists and officers who are mostly engaged in knowledge sharing activities. The next section will focus on the implementation of this methodology and main findings by using this methodology.

4. Findings

This section presents the findings of the study concerning the research questions and each sub-question stated formerly. It starts with descriptive statistics aiming to define practitioners interacting via online ICT tools for knowledge sharing. Position of the practitioners, their ages and their duration at the latest position, company and sector are presented to define sample in order to give some clues about the level of social capital they have or do not have. Cross tabulations between age and position, age and permanency for work and sector and finally, position and permanency for work and sector are also given here to have insight about the situation of practitioners in the network. Then, each of the component used in study are defined

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[4] Cronbach's alpha scores range from 0 to 1. The closer the score gets to 1, the better the internal reliability of the construct is. Authors researching Cronbach's alpha do not always agree on the minimum outcome of the alpha score for it to be reliable, but it can be generally assumed that a score of at least 0.6 makes a construct considered to be reliable (Hair et al., 2006)

by giving observed variables as predictors. The way of extracting these components is presented by exhibiting the results of Exploratory Factor Analysis. Reliability statistics of the measures are added to each result of analysis. These results are interpreted by referring to literature and expectation. Finally, given hypotheses are tested by regressing the factor score of each component to another in line with the purpose of the study. Results of the regression are printed and interpreted.

4.1. Descriptive Results for the Sample Demography

The results of the questionnaire revealed 96 (80%) individuals in the community are working as full time practitioners while 24 (20%) individuals are engaged in managerial and consultancy activities in parallel with their daily practices. Managers in organizations are mostly engaged in communication between organization and board members or owners. They are also working as executives for the relationship between organization and other business parties, organizations and state. Nine managers are observed in this study and they have overall responsibility for managing both productivity and cost elements of departments as well as the balance between income and outcome. They are also empowered for decision-making and using initiatives. Vice-managers follow daily operations such as planning, delegating, coordinating, organizing and limited decision-making for an organization. They are responsible for setting up linkages between other business parties and enabling cooperation between organizations. 40 experts are observed for this research and they are engaged in knowledge-intensive activities in particular fields such as planning and developing strategies, cooperating with other experts to develop new processes and products. Experts also deal with analyses and forecast economic, consumer, agency, media and market trends and developments for selected regions around the world. Additionally, they prepare charts, tables and commentary for reports and contribute to team discussions on the findings and recommendations. 56 officers are engaged in preparing and supervising the production of publicity brochures, handouts, direct mail leaflets, promotional videos, photographs, films and multimedia programs. They are also responsible for organizing events including press conferences, exhibitions, open days and press tours and fostering community relations through events such as open days and through involvement in community initiatives. Finally, eight consultants participated in this research. Their duties in organization involves research and preparing media landscape and country overviews, including economic and other statistical data, media legislation and trends and agency developments for selected regions. They collect data from clients, clean and verify the data and prepare it for analysis using standard database software. Table 6, 7, 8, 9 show frequencies about the sample.

While demographic information has no impact on the level of analysis in this research, this reporting provides a generalized view in terms of distributions among age, position, permanency at work. Table 10 shows that the sample is made up of mostly 28 years old or older respondents, experts, and officers. While the group of experts, officer and vice managers involve members who are between 28-48 years old (85.7% for vice managers, 92.5% for experts and 67.8% for officers), the managers and consultants mostly involve members who are older than 48 years old (100% for managers and 87.5% for consultants). The group of officers involve relatively young members who are younger than 38 (89.2%). This may indicate that the respondents who belong

to same generations relatively extend social capital if they share common platform or history (Alwin and McCammon, 2007). Robinson and Jackson's (2001) findings suggest that social capital has declined across generations. On this basis, it is expected that especially cognitive and relational dimension of social capital may emerge in the both location-based and dispersed community.

Table 6: Position (title) in organizations

	Frequency	Percent	Valid Percent	Cumulative Percent
Manager	9	7,5	7,5	7,5
Vice Manager	7	5,8	5,8	13,3
Expert	40	33,3	33,3	46,7
Officer	56	46,7	46,7	93,3
Consultant	8	6,7	6,7	100,0
Total	120	100,0	100,0	

Table 7: Age

	Frequency	Percent	Valid Percent	Cumulative Percent
18 – 27	19	15,8	15,8	15,8
28 – 37	50	41,7	41,7	57,5
38 – 47	37	30,8	30,8	88,3
More than 48	14	11,7	11,7	100,0
Total	120	100,0	100,0	

Table 8: Permanency at work in the same company

	Frequency	Percent	Valid Percent	Cumulative Percent
More than 1 year	53	44,2	44,2	44,2
More than 3 years	57	47,5	47,5	91,7
More than 5 years	6	5,0	5,0	96,7
More than 10 years	4	3,3	3,3	100,0
Total	120	100,0	100,0	

Table 9: Permanency at work in the same sector

	Frequency	Percent	Valid Percent	Cumulative Percent
More than 1 year	21	17,5	17,5	17,5
More than 3 years	42	35,0	35,0	52,5
More than 5 years	51	42,5	42,5	95,0
More than 10 years	6	5,0	5,0	100,0
Total	120	100,0	100,0	

Table 10: Cross tabulation between age of respondents and their positions

			Position					
			Manager	Vice Manager	Expert	Officer	Consultant	Total
Age	18 - 27	Count	0	0	0	18	1	19
		% within Position	0,0%	0,0%	0,0%	32,1%	12,5%	15,8%
	28 - 37	Count	0	2	16	32	0	50
		% within Position	0,0%	28,6%	40,0%	57,1%	0,0%	41,7%
	38 - 47	Count	2	4	21	6	4	37
		% within Position	22,2%	57,1%	52,5%	10,7%	50,0%	30,8%
	More than 48	Count	7	1	3	0	3	14
		% within Position	77,8%	14,3%	7,5%	0,0%	37,5%	11,7%
Total		Count	9	7	40	56	8	120
		% within Position	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Position in organization is critical for having social capital and it depends on the network position Ability to coordinate members, ability to identify opportunities in terms of getting right members together is a managerial activity in organizations (Burt, 1997). In this sense, relatively older and experienced managers in organization may indicate the existence of structural dimension. In terms of the positions of respondents who are older than 48 years old, 77.8% of the members are working as managers and 14.3% is vice manager. Moreover, many of these members have minimum 5 years work experience in the same organization while they have 10 years or more experience in the sector. Table 11 and Table 12 demonstrate related frequencies of distribution. Table 13 and Table 14 shows parallel frequencies for the sector.

Table 11: Cross tabulation between age and permanency at work in the same organization

			Permanency at work in the same company				
			More than 1 year	More than 3 years	More than 5 years	More than 10 years	Total
Age	18 - 27	Count	10	9	0	0	**19**
		%	18,9%	15,8%	0,0%	0,0%	**15,8%**
	28 - 37	Count	21	29	0	0	**50**
		%	39,6%	50,9%	0,0%	0,0%	**41,7%**
	38 - 47	Count	18	16	1	2	**37**
		%	34,0%	28,1%	16,7%	50,0%	**30,8%**
	More than 48	Count	4	3	5	2	**14**
		%	**7,5%**	**5,3%**	**83,3%**	**50,0%**	**11,7%**
Total		Count	**53**	**57**	**6**	**4**	**120**
		%	100,0%	100,0%	100,0%	100,0%	100,0%

Table 12:Cross tabulation between position and permanency at work in the same organization

			Permanency at work in the same company				
			More than 1 year	More than 3 years	More than 5 years	More than 10 years	Total
Position	Manager	Count	0	0	5	4	**9**
		%	0,0%	0,0%	83,3%	100,0%	**7,5%**
	Vice Manager	Count	3	3	1	0	**7**
		%	5,7%	5,3%	16,7%	0,0%	**5,8%**
	Expert	Count	14	26	0	0	**40**
		%	26,4%	45,6%	0,0%	0,0%	**33,3%**
	Officer	Count	29	27	0	0	**56**
		%	54,7%	47,4%	0,0%	0,0%	**46,7%**
	Consultant	Count	7	1	0	0	**8**
		%	**13,2%**	**1,8%**	**0,0%**	**0,0%**	**6,7%**
Total		Count	**53**	**57**	**6**	**4**	**120**
		%	100,0%	100,0%	100,0%	100,0%	100,0%

Table 13: Cross tabulation between age and permanency at work in the sector

			Permanency at work in the same sector				
			More than 1 year	More than 3 years	More than 5 years	More than 10 years	Total
Age	18 - 27	Count	7	4	8	0	**19**
		%	33,3%	9,5%	15,7%	0,0%	**15,8%**
	28 - 37	Count	12	23	15	0	**50**
		%	57,1%	54,8%	29,4%	0,0%	**41,7%**
	38 - 47	Count	2	14	21	0	**37**
		%	9,5%	33,3%	41,2%	0,0%	**30,8%**
	More than 48	Count	0	1	7	6	**14**
		%	0,0%	2,4%	13,7%	100,0%	**11,7%**
Total		Count	**21**	**42**	**51**	**6**	120
		%	**100,0%**	**100,0%**	**100,0%**	**100,0%**	100,0%

Table 14: Cross tabulation between position and permanency at work in the sector

			Permanency at work in the same sector				
			More than 1 year	More than 3 years	More than 5 years	More than 10 years	Total
Position	Manager	Count	0	0	3	6	**9**
		%	0,0%	0,0%	5,9%	100,0%	**7,5%**
	Vice Manager	Count	0	4	3	0	**7**
		%	0,0%	9,5%	5,9%	0,0%	**5,8%**
	Expert	Count	0	22	18	0	**40**
		%	0,0%	52,4%	35,3%	0,0%	**33,3%**
	Officer	Count	21	16	19	0	**56**
		%	100,0%	38,1%	37,3%	0,0%	**46,7%**
	Consultant	Count	0	0	8	0	**8**
		%	0,0%	0,0%	15,7%	0,0%	**6,7%**
Total		Count	**21**	**42**	**51**	**6**	120
		%	100,0%	100,0%	100,0%	100,0%	100,0%

4.2. Results of Exploratory Factor Analysis

Factor analysis used in this research describes the covariance relationships among observed variables in terms of a smaller number of unobserved latent variables, called factors. Implementation of the principal component factor analysis method in the estimation of the factor loadings and communalities uses the square multiple correlations as estimates of the communalities to compute the factor loadings. This procedure drops factors with eigenvalues below 1,00. Reliability of the questionnaire is presented by giving Cronbach's Alpha which is the estimated reliability of the whole items as 0.804 for ICT and 0.789 for social capital found in the location-based community while it is 0.680 for the dispersed community. After factor rotation was inspected, the number of items for ICT is reduced to 8 while items of social capital are reduced to 25 for each community. All of the factors yielded good reliability estimates ranging from 0.52 to 0.94 (Table 15). The factorability of the intercorrelation matrix is measured by two tests: Kaiser-Meyer-Olkin test of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity. The results obtained from the two tests revealed that the factor models are appropriate. Table 16 shows the factorability of the intercorrelation matrix.

Table 15: Reliability of Factors

Factors	Cronbach's Alpha		N of Items	
Information and Communication Technologies				
Factor 1	,748		4	
Factor 2	,847		4	
Overall Reliability	**,804**		**8**	
Social Capital				
	Location-Based	Dispersed	Location-Based	Dispersed
Factor 1	,941	,894	4	4
Factor 2	,895	,857	4	4
Factor 3	,830	,931	4	3
Factor 4	,891	,803	3	4
Factor 5	,847	,841	3	3
Factor 6	,797	,780	2	3
Factor 7	,584	,986	3	2
Factor 8	,525	,682	2	2
Overall Reliability	**,789**	**,680**	**25**	**25**

Table 16: KMO and Bartlett's Test results

	ICT	Social Capital	
		Location Based	Dispersed
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0,725	0,725	0,668
Bartlett's Test of Sphericity Approx. Chi-Square	2016,566	1976,413	2203,501
Degrees of Freedom	325	300	300
Significant	0	0	0

4.2.1. Components of ICT

Table 17 presents total variance explained by two factors of ICT questionnaire. One of the items, e-mail, is not appropriate for any factor (Factor loadings for this factor are 0,323 for the first component and 0,304 for the second component). For that reason it is reduced from the analysis of construct validation and the analysis is repeated again without this item. After the rotation, the results can be seen at Table 18.

Table 17: Total Variance Explained for the 8 items of ICT

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,45	43,124	43,124	3,45	43,124	43,124	2,786	34,831	34,831
2	1,759	21,992	65,116	1,759	21,992	65,116	2,423	30,286	65,116
3	0,856	10,697	75,813						
4	0,625	7,813	83,626						
5	0,544	6,802	90,428						
6	0,473	5,915	96,343						
7	0,165	2,06	98,403						
8	0,128	1,597	100						

Extraction Method: Principal Component Analysis.

Table 18: Rotated Component Matrix for the 8 items of ICT

	Components	
	1	2
Forum	,917	
Blogs	,873	
SNS	,791	
Wiki	,685	
Videoconferencing		,919
Chat Rooms		,868
Voice over IP		,707
Instant Message		,473

The results indicated that the both factors consist of 4 agents: Forum, Blog, SNS and Wiki are associated with the first factor (Factor1) named as "Social Media Tools" while Videoconferencing, Chat Rooms, Voice over IP, and Instant Message are associated with the second factor named as "Communication Tools".

4.2.2. Components of Social Capital

For location based community, 26 agents are measured in this study for accessing the components of social capital dimensions. However, one of these agents (How would you characterize your community, in terms of shared vision?) is not eligible since it has provided similar loading to two different factors. Then this agent is omitted and the analysis is repeated with the remaining agents. Table 19 and 20 present how total variance and factor loadings. Results for dispersed communities are at Tables 21-22.

Table 19: Total Variance Explained for the 25 Factors of Social Capital in a Location-based Community

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,405	21,620	21,620	5,405	21,620	21,620	3,577	14,307	14,307
2	4,213	16,852	38,472	4,213	16,852	38,472	3,163	12,651	26,958
3	2,914	11,654	50,126	2,914	11,654	50,126	2,874	11,498	38,456
4	1,780	7,119	57,246	1,780	7,119	57,246	2,654	10,617	49,073
5	1,569	6,277	63,523	1,569	6,277	63,523	2,501	10,005	59,078
6	1,309	5,236	68,759	1,309	5,236	68,759	1,759	7,036	66,115
7	1,225	4,900	73,660	1,225	4,900	73,660	1,689	6,757	72,871
8	1,070	4,282	77,941	1,070	4,282	77,941	1,268	5,070	77,941
9	,815	3,260	81,201						
10	,665	2,658	83,860						
11	,577	2,307	86,166						
12	,521	2,083	88,249						
13	,414	1,655	89,904						
14	,392	1,567	91,471						
15	,327	1,309	92,780						
16	,306	1,226	94,006						
17	,292	1,168	95,174						
18	,250	1,001	96,174						
19	,215	,861	97,035						
20	,191	,766	97,801						
21	,180	,720	98,521						
22	,161	,642	99,163						
23	,122	,488	99,651						
24	,057	,229	99,880						
25	,030	,120	100,000						

Extraction Method: Principal Component Analysis.

Table 20: Rotated Component Matrix for the 25 Factors of Social Capital in a Location-based Community

	Component							
	1	2	3	4	5	6	7	8
How many people, if any, are there with whom you can discuss intimate and personal matters?	,928							
Would you say that members of the community are mostly looking out for themselves?	,888							
Mutual confiding is one of the values among network members.	,886							
How often do you interact with other members?	,755			,455				
There are unwritten rules.		,861						
Similarity is one of the factors getting people together in the community.		,847		,347				
The rules are flexible.		,838						
Do members of this community typically assist one another in times of need?		,828						
What characteristics are most valued among community members? Support			,848					
What characteristics are most valued among community members? Solidarity			,816					
What characteristics are most valued among community members? Participation			,796					
What characteristics are most valued among community members? Cooperation			,723					
Rate the level of duration of your contacts in the community.				,904				
How socially heterogeneous is the community?				,841				
Rate the level of volatility of the members in the community.	,317			,755				
How would you characterize your community, in terms of addressing your interests?					,843			
How would you characterize your community, in terms of addressing your problems?		,304			,840			
How would you characterize your community, in terms of addressing your duties?				,327	,710			
Do you consider yourself as belonging to your community?						,929		
How much respect do you have for the community?						,888		
How much confidence do you have for the members of the community?							,798	
Do you think that in this community generally trust each other in matters of any conflict?			-,304				,730	
Generally speaking, do you believe that most members can be trusted?			,314				,639	
How would you characterize your community, in terms of shared level of knowledge?								,799
How would you characterize your community, in terms of shared understanding?					-,303			,753

Extraction Method: Principal Component Analysis.

The first component (Factor 1) consisted of 4 questions associated with the structural dimension of social capital. These questions mention 4 items namely: intimacy, reciprocity, mutual confiding and frequency. These items are supposed to measure one of the constructs of structural dimension of social capital: <u>network ties</u>. **The second component** (Factor 2) consisted of 4 questions associated with the structural dimension of social capital. These questions are called as flexibility (rules and norms), similarity, and solidarity. These agents are supposed to measure one of the constructs of structural dimension of social capital: <u>network closeness</u>. **The third component** (Factor 3) consisted of 4 questions associated with the relational dimension of social capital. These questions mention 4 items as support, solidarity, reciprocity and cooperation. These agents are supposed to measure one of the constructs of relational dimension of social capital: <u>reciprocity</u>. **The fourth component** (Factor 4) consisted of 3 questions associated with the structural dimension of social capital: network duration, heterogeneity and volatility. These items are supposed to measure one of the constructs of structural dimension of social capital: <u>network position.</u>

Table 21: Total Variance Explained for the 25 Factors of Social Capital in a Dispersed Community

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,769	19,074	19,074	4,769	19,074	19,074	3,184	12,735	12,735
2	3,271	13,083	32,157	3,271	13,083	32,157	2,932	11,729	24,464
3	2,790	11,160	43,317	2,790	11,160	43,317	2,730	10,920	35,384
4	2,519	10,076	53,393	2,519	10,076	53,393	2,656	10,622	46,006
5	1,986	7,946	61,339	1,986	7,946	61,339	2,376	9,504	55,511
6	1,732	6,930	68,268	1,732	6,930	68,268	2,335	9,340	64,851
7	1,419	5,675	73,943	1,419	5,675	73,943	1,995	7,982	72,833
8	1,293	5,171	79,114	1,293	5,171	79,114	1,570	6,282	79,114
9	,791	3,164	82,278						
10	,740	2,960	85,238						
11	,563	2,252	87,490						
12	,516	2,065	89,555						
13	,413	1,654	91,209						
14	,399	1,595	92,804						
15	,327	1,310	94,113						
16	,287	1,149	95,262						
17	,254	1,015	96,277						
18	,225	,899	97,176						
19	,192	,767	97,943						
20	,159	,637	98,580						
21	,131	,523	99,103						
22	,105	,421	99,524						
23	,062	,247	99,771						
24	,039	,155	99,926						
25	,019	,074	100,000						

Extraction Method: Principal Component Analysis.

The fifth component (Factor 5) consisted of 3 questions associated with the cognitive dimension of social capital. These questions mention 3 agents as interests, problems and duties. These items are supposed to measure one of the constructs of the cognitive dimension of social capital: shared interests. **The sixth component** (Factor 6) consisted of 2 questions associated with the relational dimension of social capital. These questions mention 2 agents: respect and identity. These items are supposed to measure one of the constructs of the relational dimension of social capital: identity. **The seventh component** (Factor 7) consisted of 3 questions associated with the relational dimension of social capital. These questions mention 3 agents namely generalized trust, individual trust and collective trust. These items are supposed to measure one of the constructs of the relational dimension of social capital: trust. Finally**, the last component** (Factor 8) consisted of 3 questions associated with the relational dimension of social capital. They mention 2 agents as the level of knowledge, and understanding. The question associated with vision is omitted because of the inappropriate results of PCA. The items evaluated in this study are supposed to measure one of the constructs of the relational dimension of social capital: shared codes.

Table 22: Rotated Component Matrix for the 25 Factors of Social Capital in a Dispersed Community

	Component							
	1	2	3	4	5	6	7	8
How often do you interact with other members?	,949							
Would you say that members of the community are mostly looking out for themselves?	,932							
How many people, if any, are there with whom you can discuss intimate and personal matters?	,895							
Mutual confiding is one of the values among network members.	,677					,332		
What characteristics are most valued among community members? Cooperation		,923						
What characteristics are most valued among community members? Solidarity		,900						
What characteristics are most valued among community members? Participation		,873						
What characteristics are most valued among community members? Support		,609						
Do you think that in this community generally trust each other in matters of any conflict?			,963					
Generally speaking, do you believe that most members can be trusted?			,942					
How much confidence do you have for the members of the community?			,902					
Do members of this community typically assist one another in times of need?				,884				
The rules are flexible.				,834				
Similarity is one of the factors getting people together in the community.				,830				
There are unwritten rules.				,601			-,336	
How would you characterize your community, in terms of shared level of knowledge?					,912			
How would you characterize your community, in terms of shared vision?					,898			
How would you characterize your community, in terms of shared understanding?					,775			
How would you characterize your community, in terms of addressing your interests?						,833		
How would you characterize your community, in terms of addressing your problems?						,789		
How would you characterize your community, in terms of addressing your duties?						,730		
Rate level of volatility of the members in the community							,925	
How socially heterogeneous is the community?							,919	
How much respect do you have for the community?								,869
Do you consider yourself as belonging to your community?								,864

Extraction Method: Principal Component Analysis.

For dispersed community, **the first component** (Factor 1) consisted of 4 questions associated with the structural dimension of social capital. These questions mention 4 items namely: intimacy, reciprocity, mutual confiding and frequency. These items are supposed to measure one of the constructs of structural dimension of social capital: <u>network ties</u>. **The second component** (Factor 2) consisted of 4 questions associated with the relational dimension of social capital. These questions mention 4 agents; cooperation, solidarity, participation and support. These items are supposed to measure one of the constructs of the relational dimension of social capital: <u>reciprocity</u>. **The third component** (Factor 3) consisted of 3 questions associated with the relational dimension of social capital. These questions mention 3 agents as generalized trust, individual trust, collective trust. These agents are supposed to measure one of the constructs of the relational dimension of social capital: <u>trust</u>. **The fourth component** (Factor 4) consisted of 4 questions associated with the structural dimension of social capital. These questions mention 4 agents; solidarity, flexibility (rules and norms) and similarity. These items are supposed to measure one of the constructs of the structural dimension of social capital: <u>network closeness</u>. **The fifth component** (Factor 5) consisted of 3 questions associated with the cognitive dimension of social capital. These questions mention 3 agents, namely, the level of knowledge, vision and understanding. These agents are supposed to measure one of the constructs of cognitive dimension of social capital: <u>shared codes</u>. **The sixth factor** (Factor 6) consisted of 3 questions

associated with the cognitive dimension of social capital. These questions mention 3 agents as interests, problems, duties. These agents are supposed to measure one of the constructs of the cognitive dimension of social capital: <u>shared interests</u>. **The seventh component** (Factor 7) consisted of 3 questions associated with the structural dimension of social capital. These questions mention 2 items as volatility and heterogeneity. The question associated with the network duration is omitted because of the inappropriate results of PCA. The items evaluated in this study are supposed to measure one of the constructs of the structural dimension of social capital: network position. Finally, **the last component** (Factor 8) consisted of 2 questions associated with the relational dimension of social capital. These questions mention 2 agents, namely, respect and identity. These agents are supposed to measure one of the constructs of the relational dimension of social capital: <u>identity</u>.

Table 23: Factors associated with the Constructs of Social Capital

Location Based Community		Dispersed Community	
Factor	Name	Factor	Name
Structural dimension of social capital			
Factor 1	Network ties	Factor 1	Network ties
Factor 2	Network closeness	Factor 4	Network closeness
Factor 4	Network position	Factor 7	Network position
Cognitive dimension of social capital			
Factor 5	Shared interests	Factor 6	Shared interests
Factor 8	Shared codes	Factor 5	Shared codes
Relational dimension of social capital			
Factor 3	Reciprocity	Factor 2	Reciprocity
Factor 6	Identity	Factor 8	Identity
Factor 7	Trust	Factor 3	Trust

4.3. Regression Results

This section introduces the interpretation of the relationships between the constructs of ICT and the constructs of social capital. The simple regression model is used to predict these relationships. Ordinary least squares are employed to estimate parameters and ANOVA is used to identify the significance of the attributes associated with simple linear regression on the predictors on dependent variables. The list of dependent and independent variables is given at Table 24. Moreover, control variables were also measured by the questionnaire and also added.

Table 24: The List of Variables

Independent Variables		Dependent Variables	
Name	**Label**	**Name**	**Label**
ICT_ComT	Communication tools	Ssc_Nt	Network ties
ICT_SmT	Social Media tools	Ssc_Nc	Network closeness
		Ssc_Np	Network position
		Csc_Si	Shared interests
		Csc_Sc	Shared codes
		Rsc_Rc	Reciprocity
		Rsc_Id	Identity
		Rsc_Tr	Trust
Control Variables			
Specialist	Specialist		
Officer	Officer		

4.3.1. The Impact of ICT on the Structural Dimension of Social Capital

For the location-based community, among three constructs representing structural dimension of social capital, network ties and network position are significantly and positively impacted by the use of social media tool. There is no significant impact of both constructs of ICT on network closeness in location based community. Thus there is a partial evidence to support H8, H9 and H10 while H1, H2 and H3 are rejected. Among three constructs representing cognitive dimension, the construct of shared interests is significantly and positively impacted by the use of social media tool. There is no significant impact of communication tools, the other construct of ICT, on shared interests and shared codes. Thus there is a partial evidence to support H5 and H12 while H4 and H11 are rejected. Finally, among three constructs representing relational dimension of social capital, the construct, named trust, is significantly and positively impacted by the use of both social media tools and communication tools. There is no significant impact of communication tools, on reciprocity while it is impacted by social media tools. Thus there is a partial evidence to support H6 and H13 while H7 and H14 are rejected. The results of the linear regression can be seen at Table 25. Control variables (specialist and officer) do not change the significances of these relationships. Table 26 presents same relations among these networks together with the effect of specialist and officer.

Table 25: Regression Results between ICT and Dimensions of Social Capital (Location-based Community)

	Ssc_Nt	Ssc_Np	Ssc_Nc	Csc_SI	Csc_Sc	Rsc_Rc	Rsc_Id	Rsc_Tr
Constant	0,252	1,29	-2,45	-9,068	0,018	-0,825	4,766	-7,444
ICT_ComT	0,043	-0,04	0,022	0,186 **	0,168	0,181	-0,022	-0,04
ICT_SMT	0,335 ***	0,291 **	0,223 **	0,551 ***	-0,011	-0,143	0,174	0,231 *
R Square	0,11	0,09	0,05	0,33	0,028	0,025	0,031	0,055
F Statistic	7,535 **	7,537 **	3,116 *	29,914 ***	1,169	1,524	1,85	3,388 *

*** p < 0,01 ** p<0,05 * p<0,1

Table 26: Regression Results between ICT and Cognitive Dimension and Control Variables (Location-based Community)

	Ssc_Nt	Ssc_Np	Ssc_Nc	Csc_SI	Csc_Sc	Rsc_Rc	Rsc_Id	Rsc_Tr
Constant	0,119	-1,217	-0,4	-1,238 ***	-0,246	-0,825 *	-0,206	-0,101
ICT_ComT	0,136	0,049	-0,108	0,028	0,164 **	0,181 **	0,036 **	0,019 ***
ICT_SMT	0,386 ***	0,197 **	0,058 *	0,047 ***	-0,111	0,403 **	0,256 **	0,191 **
Specialist	0,599 ***	0,728 **	0,005 *	2,041 ***	0,259	1,006 **	0,065	0,011
Officer	0,173	2,089 ***	0,483	1,195 ***	0,343	1,005 ***	0,175 ***	0,222 ***
R Square	0,22	0,57	0,23	0,58	0,035	0,21	0,24	0,33
F Statistic	8,286 ***	39,136 ***	8,855 *	40,758 ***	4,841 **	10,439 ***	12,321 ***	19,774 ***

*** p < 0,01 ** p<0,05 * p<0,1

For the dispersed community, among three constructs representing structural dimension of social capital, network closeness is significantly and positively impacted by the use of communication tools. There is no significant impact of this tool on network ties and network position. On the other hand, the use of social media tools has significant and positive impact on all three constructs of social capital: network ties, network position and network closeness. Thus, there is a partial evidence to support H2, H8, H9 and H10 while H1 and H3 are rejected. For cognitive dimension in dispersed community, except the impact of the use of social media tools on the construct of cognitive dimension of social capital, named shared interests; there is no significant and positive impact. In relational dimension for the dispersed community, the only significant and positive impact is found. It is the impact of communication tools on the construct named trust. There is no significant impact of communication tools or social media tools on the other constructs of relational dimension of social capital. Thus there is a partial evidence to support H6 and H14 while H7 and H13 are rejected. Table 27 presents the results of linear regression model. Same regressions are repeated by adding control variable and results are given at Table 28. Adding control variables to the model did not affect the positive relations between the constructs.

Table 27: Regression Results between ICT and Dimensions of Social Capital (Dispersed Community)

	Ssc_Nt		Ssc_Np		Ssc_Nc		Csc_SI		Csc_Sc		Rsc_Rc		Rsc_Id		Rsc_Tr	
Constant	-1,36		-4,96		9,044		-1,47		-7,234		1,544		3,429		-8,051	
ICT_ComT	0,08		0,291	**	0,138		0,054		-0,02		-0,029		0,081		0,031	
ICT_SMT	0,252	**	0,267	**	0,166	*	0,578	***	0,052		0,26	*	0,015		0,026	
R Square	0,07		0,15		0,047		0,33		0,03		0,069		0,07		0,02	
F Statistic	4,394	**	10,793	***	2,854	*	29,676	***	0,181		4,308	**	0,399		0,095	

*** p < 0,01   ** p<0,05   * p<0,1

Table 28: Regression Results between ICT and Cognitive Dimension and Control Variables (Dispersed Community)

	Ssc_Nt		Ssc_Np		Ssc_Nc		Csc_SI		Csc_Sc		Rsc_Rc		Rsc_Id		Rsc_Tr	
Constant	0,034		-0,66		-0,277		-1,173	***	0,215		-0,685	**	0,065		-0,298	
ICT_ComT	0,093		0,271	***	0,101		0,004		-0,022		-0,032		0,092		0,003	**
ICT_SMT	0,266	**	0,24	**	0,205	**	0,103	***	0,139		0,537	***	0,042		0,095	
Specialist	0,102	***	0,17		0,284		1,454	***	0,2		0,689		-0,123		0,208	
Officer	0,726	***	0,19		0,483	**	1,476	***	-0,318		0,976	**	-0,052		0,163	**
R Square	0,32		0,18		0,15		0,45		0,01		0,35		0,08		0,11	
F Statistic	13,042	***	5,782	***	3,467	**	23,969	***	0,884		4,165	**	0,232		7,326	**

*** p < 0,01   ** p<0,05   * p<0,1

5. Conclusion

The causes inferred from the results in this section listed as follows. First; communication tools has a significant and positive impact on trust for both communities while they have a significant impact on network closeness in a location-based community. As explored and presented before, network closeness was a factor derived from flexible rules, unwritten rules, solidarity and similarity in the community. Thus, the intention to use instant communication tools may rely upon the beliefs (Magni and Pennerola, 2008) of individuals who have strong social relations instead of strong requirements. In parallel, individual motivations may play an important role in the act of knowledge sharing. For instance, direct interaction between two users may not be associated with established rules. However, rules are generally associated with the users interacting with community instead of a person (Wasko and Faraj,2005). On the other hand, if individuals have social support in the community, their network ties would be strong (Granovetter, 1985) and they facilitate solidarity and raise similarity in time (Granovetter, 1985). It seems that this statement works well for the members in online communities. Moreover, users tend to have trust and social support (Lin, 2011) before they meet other users via communication tools instead of social media. Finally, it should be noted that literature regards the use of these synchronous communication tools as associated with the belief of the user. For instance, Bryant et al., (2006) stated that communication tools provide availability and more importantly reinforce users to have new friends (Bryant et al., 2006) to have variety of social support.

One other inference from the results might be as follows. Interaction among members in traditional communities helps to build shared norms among individuals who already contain shared interests (Nahapiet and Ghoshal, 1998). In this case, interacting via communication tools in both location-based and dispersed communities may minimize the social differences between users because of the absence of community-based norms arising from the isolation of individuals (Treem and Leonardi, 2012) when they have bilateral interaction. Finally, many researchers suggest that trust is a key aspect of relational social capital and facilitator of collective action (Coleman, 1990). Trust is associated with others' ability and integrity and is related to the desire to give and receive information (Ridings et al. 2002). In traditional communities, members trust that their knowledge contribution effort is reciprocated thereby rewarding individual efforts and ensuring ongoing contribution. On the basis of empirical results, it can be stated that online community has its own characteristics and mechanisms. Even though the community has members who come together in online networks to learn from each other by sharing knowledge and experiences about the activities in which they are engaged in, there are such specific individual behaviors shifting traditional social capital theories towards different new dimensions. Compared statistics between location-based communities and dispersed communities makes these differences more clear. For instance, identity as an important attribute for successful interaction is challenged online, particularly in text-based platforms. Without any emotional support, developing thick trust and empathy may be difficult and complex. However, the structural dimensions of social capital offer valuable and significant aspects by enabling the productive utilization of the network position in both communities.

The other components in structural social capital "strength of ties" and "network closure" rely on specific relationship between members. In an online community, users tend to minimize the expected level of social capital in terms of cognitive dimension. Thus, this minimization causes higher level of volatility in an online network by utilizing the benefits of network position. For that reason, in order to develop the relational dimension of social capital, members do not have enough time and sustainable interaction with the same individuals. In this scope, the trust between members is mostly based on institutional trust emerging from the community providing reciprocal sharing among members instead of between individuals.

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