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MOTIVATIONS FOR KNOWLEDGE SHARING IN VIRTUAL SOCIAL NETWORKS: A COMPARATIVE STUDY BETWEEN BRAZIL AND FRANCE

DANIEL FINAMORE MARTINS

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Dissertation presented to Escola de Administração de Empresas de São Paulo of Fundação Getulio Vargas, as a requirement to obtain the title of Master in International Management (MPGI).

Knowledge Field: Marketing

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This dissertation is dedicated to my mother Renata, my father Neto, my sister Juliana, and my grandparents Nelly, Francisco Gastão, Maria Helena and Luís Carlos (*in memoriam*), for their unconditional love and endless support.

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ABSTRACT

Post-modern societies are characterized by the transition from material to knowledge-based economies, where the humanity is facing a growing connectivity but, at the same time, the weakening of social structures that creates an increasing need for cognitive and affective bases for life (Rheingold, 1992; Wasko & Farah, 2005; Arvidsson, 2008).

In this scenario is the phenomenon of virtual social networks that is putting together millions of individuals exchanging text-based messages, images, and videos everyday (Nielsen, 2012), and organizations investing more and more to engage in those new trends (McWilliam, 2000; Reichheld & Schefter, 2000; Yoo, Suh & Lee, 2002; Arvidsson, 2008). Consequently, one of the most important questions that arises and gains importance for academics and practitioners is: why people share? (Monge, Fulk, Kalman, Flanigan, Parnassa & Rumsey, 1998; Lin, 2001)

Based on a multi case methodology approach developed in Brazil and France, this study aims to produce a significant theoretical review, bring relevant insights from different contexts, and propose a model for assessing the main motivations for knowledge sharing in virtual social networks. They were systematized in five main dimensions: structural, cognitive, and relational capital reasons, personal motivations, and monetary reasons (Nahapiet & Ghoshal, 1998; Wasko & Faraj, 2005; Chiu et al, 2006).

The findings suggest that the process of knowledge sharing in virtual networks seems to be consequence of a combination of community and self-oriented motivations that vary slightly according to different goals and contexts of these online communities, where monetary reasons seem to be secondary.

Key words

Social media, virtual social networks; knowledge sharing; social production.

RESUMO

Sociedades pós-modernas caracterizam-se pela transição de economias baseadas em ativos tangíveis para economias de conhecimento, onde indivíduos vivenciam uma imprescindível conectividade, mas ao mesmo tempo, experimentam um enfraquecimento das estruturas sociais, que tem generado uma crescente necessidade de se criar bases cognitivas e afetivas para a vida (Rheingold, 1992; Wasko & Farah, 2005; Arvidsson, 2008).

Nesse cenário se desenvolve o fenômeno das redes sociais virtuais, agregando milhões de pessoas que compartilham mensagens de texto, imagens e vídeos todos os dias (Nielsen, 2012) fazendo com que organizações privadas foquem cada vez mais seus investimentos para acompanhar as novas tendências (McWilliam, 2000; Reichheld & Schefter, 2000; Yoo, Suh & Lee, 2002; Arvidsson, 2008). Consequentemente, uma das mais importantes questões que vem ganhando importância no meio academico e entre profissionais da área é justamente: por que as pessoas compartilham conhecimento online? (Monge, Fulk, Kalman, Flanigan, Parnassa & Rumsey, 1998; Lin, 2001)

Por meio de uma metodologia de estudo de caso conduzida no Brasil e na França, este estudo objetiva produzir uma relevante revisão teórica acerca do tema, trazendo novas idéias de diferentes contextos, e propondo um modelo para avaliar as principais motivações que conduzem indivíduos a compartilhar conhecimento em redes sociais virtuais. Essas razões foram estruturadas em cinco dimensões: capital estrutural, cognitivo e relacional, motivações pessoais e razões monetárias (Nahapiet & Ghoshal, 1998; Wasko & Faraj, 2005; Chiu et al, 2006).

As evidências sugerem que o processo de participar e compartilhar conhecimento em redes sociais virtuais é resultado de uma complexa combinação de motivações de orientação pessoal e coletiva, que parecem variar pouco de acordo com os diferentes objetivos e contextos dessas comunidades, onde as razões financeiras parecem ser secundárias.

Palavras-chave

Mídia social, redes sociais virtuais; compartimento de conhecimento; produção social.

1   INTRODUCTION

1.1   Introduction

Post-modern societies are characterized by the transition from material to knowledge-based economies. Individuals live in a constant changing process with an increasing connectivity, consequence of the diffusion of information, innovative communication technologies and the advance of Internet. Conversely, social structures, identities and guidelines seem to be weakening and there is a growing necessity to produce new cognitive and affective frameworks for life (Rheingold, 1992; Wasko & Farah, 2005; Arvidsson, 2008).

In this context, it is possible to notice the unprecedented phenomenon of virtual social networks. Every day thousands of individuals join online communities and exchange billions of text-based messages, images, and videos (Nielsen, 2012). Organizations invest more and more on social media in order to reach potential customers, communicate, understand and segment them, but also to engage in the new trends of co-production (McWilliam, 2000; Reichheld & Schefter, 2000; Yoo, Suh & Lee, 2002; Arvidsson, 2008).

These virtual spaces gather millions of individuals with mutual interests, objectives or practices interacting, sharing knowledge and engaging in social relationships (Chiu, Hsu & Wang, 2006). Although these communities are usually self-organizing and voluntary spaces where individuals can easily profit from the content provided by other users they will probably never meet in real life, many virtual communities of practice have shown a great amount of knowledge shared online every day (Wasko & Faraj, 2005).

The importance of intangible assets is indubitable for private organizations nowadays (Bouty, 2000), and has been showing to be even more imperative for virtual social networks. In this context, one of the most important questions that arises and is gaining interest among academics and practitioners is: why people share? (Monge, Fulk, Kalman, Flanigan, Parnassa & Rumsey, 1998; Lin, 2001)

Although virtual social networks configure a recent phenomenon and academic studies in the field are still limited, its interest has been rising substantially in the past decade. The academic review indicates a combination of community and self-oriented reasons, besides

possible influences of the macro-environment, cultural issues and personality characteristics for knowledge sharing. However, these dimensions are not a consensus and have never been analyzed together.

Based on some previous studies, the main important motivations for knowledge sharing in the internet arena were identified and systematized in five main dimensions of motivations: (i) structural capital reasons; (ii) cognitive capital reasons; (iii) relational capital reasons, (iv) personal motivations, and (v) monetary reasons (Nahapiet & Ghoshal, 1998; Wasko & Faraj, 2005; Chiu et al, 2006).

Monetary rewards in virtual spaces have been controversy debated by academics studying social networks, electronic networks and volunteering. Interestingly, the main evidences have shown that economic reasons are secondary motivator factors for joining and participating actively in these virtual spaces (Von Hippel & von Krogh, 2003; Benkler, 2006; Briggs et al, 2010).

Owing to the relevance of the subject, the limited and sometimes controversy researches in the theme, the main purpose of this study is to identify potential dimensions explaining the process of sharing knowledge in virtual social networks, producing a significant theoretical review about this recent phenomenon; bringing insights and new contributions through an exploratory study conducted with a Brazilian (ItsNOON) and a French (Drawin) virtual networks; and testing these qualitative findings through quantitative research.

The results of this study aims to support, a multi-cultural investigation, taking into account demographic characteristics, besides the debated community and personal-oriented motivations for knowledge sharing. Although there is a long way to pursue for understanding this multifaceted subject, the findings of this study objectives to help practitioners and researchers in the field, and to foment the discussion of the reasons for knowledge sharing.

1.2   Objectives

The main purpose of this study is to identify which dimensions can explain the process of sharing knowledge in virtual social networks.

In order to accomplish the main objective, some intermediary objectives should be achieved, and they are listed below:

a.)   To produce a significant theoretical review about this recent phenomenon of virtual social networks, focusing on the main motivations for knowledge sharing previously studied by different authors;

b.)   To bring relevant insights and new contributions regarding these factors through an exploratory study of two virtual communities from different contexts and countries (Brazil and France);

c.)   To test these qualitative findings through quantitative research, and to suggest a structured model in order to help the understanding of this complex process.

1.3   Structure of this work

This work is divided into five chapters. This first one introduces the theme, its relevance and the objectives. In the second chapter, the knowledge review is presented. The third chapter presents the methodology. Afterwards, results of the first exploratory phase are presented and, in the sequence, outcomes of the quantitative research are described in the fourth chapter. Finally, in the fifth chapter the conclusions, theoretical and managerial implications are presented as well as the work limitations and proposals for future studies.

2   KNOWLEDGE REVIEW

2.1   Introduction

Social networks have been studied since the end of the XIX century (Durkheim, 1893; Simmel, 1908). In recent years the internet phenomenon has created the necessity to understand the characteristics and peculiarities of a social network in the virtual space (Wasko & Faraj, 2005; Chiu, Hsu & Wang, 2006; Arvidsson, 2008).

Virtual social networks create new kinds of relationships since they allow people to share information quickly and globally (Wasko & Faraj, 2005). In these virtual spaces one of the behaviors that draw attention for practitioners and academics is the phenomenon of knowledge sharing (Monge et al, 1998; Lin, 2001). In other words, what are the reasons for someone, without receiving any financial reward, to share information and knowledge?

Although virtual social networks configure a recent phenomenon and academic studies in the field are still limited, its interest has been growing substantially in the past decade. This theoretical review tries to summarize the main concepts and findings studied so far.

The first part conceptualizes virtual social networks, examines their main characteristics and highlights the importance of this trend. The second part focuses on the existent explanations for online knowledge sharing and its implications for practitioners and business organizations. This process has been gradually discussed in the last two decades, but conclusions are still very limited. Aiming a better understanding about the motivations for online voluntary content exchange, the main ideas previously debated will be discussed.

2.2   The phenomenon of Virtual Social Networks

The complex phenomenon of social networks has been studied for centuries and it can be defined by structured collective systems with the purpose to meet one or more participants' needs (Kadushin, 2002). In simple words, a social network is described as the minimum number of actors who, if removed from the group, would disconnect it as a whole (Moody & White, 2003).

Social networks are intrinsic related to the concept of structural cohesion that is defined as a "group property characterizing the collectivity, a positional property that situates subgroups relative to each other in a population, and individual membership properties" (Moody & White, 2003, p. 103).

The dissemination of internet access accelerated the importance and strength of social networks for two reasons. First, easier communication favored deeper interaction among members. Second, it allowed the conception of a new type of social grouping: the virtual social network (Chiu et al, 2006).

Online social networks are any kind of group associations in which "people with common interests, goals, or practices interact to share information and knowledge, and engage in social (online) interactions" (Chiu et al, 2006, p. 1873).

Besides the growing access to the virtual world, others reasons can explain the dissemination of this social phenomenon: the basic human need for personal relationships (Rheingold, 1992); the diffusion of information and new communication technologies such as new mobile services and social media platforms (Wasko & Farah, 2005); the transition from a material to a knowledge-based economy; a post-modern condition that weakened social structures, identities and guidelines (e.g. family, marriage); and an unprecedented necessity to produce a new cognitive and affective framework for life (Arvidsson, 2008).

According to Arvidsson (2008), the strength and visibility of this phenomenon is also related to an increasing activation of civil society through multiple expressions such as political activism, new social movements, increasing number of people that self-identify as artists, emerging social entrepreneurships, global solidarity movement, new forms of New Age spirituality and body practices and a host of alternative lifestyles.

Besides its importance as a social phenomenon, why virtual social networks have been increasingly highlighted in the past years? The main explanation, according to Yoo et al. (2002), is that online communities became a new market for businesses and consequently large numbers of companies have been investing on them for commercial purposes.

Due to the undeniably rising of its economic importance, the interests surpass the sphere of Social Sciences studies. Organizations have been investing on online networks to meet their customers or potential ones (Yoo et al, 2002); to enhance loyalty and brand awareness; to gather information for better segment them and direct advertisement (McWilliam, 2000; Reichheld &

Schefter, 2000); and to include consumers in the process where value is produced around products and brands (Arvidsson 2008), recently called as co-production, co-creation, or customer cooperation.

The focus of this study is the virtual "social network of practice", defined by Brown and Duguid (2001) as larger, loosely knit, and geographically distributed group of individuals engaged in a shared practice. Wasko and Faraj (2005) go beyond when defining 'electronic network of practice' as a special case of 'networks of practice', where the sharing of knowledge happens primary through computer-based communication technologies.

According to Wasko and Faraj (2005), the main characteristics of these communities are self-organizing, voluntarily choice to participate and an open activity system focused on a shared practice. Members may not know each other or expect to meet them in real life. In theory, there is no control over what is shared, and individuals can profit from the disposable knowledge without contributing for it (Wasko & Faraj, 2005).

Although there are no expectations of obligation or reciprocity and users may not know each other, many virtual communities of practice have been showing a great amount of knowledge shared among their members (Wasko & Faraj, 2005). According to Brown & Duguid (2000), when members share a common practice, knowledge readily flows and it enables individuals to create sustainable social networks to support content exchange.

For many years, authors have been emphasizing the importance of intellectual capital as a major source of competitive advantage for companies (Bouty, 2000). For social networks, and consequently for economic organizations, the role of intangible capital is even more imperative since physical assets are less relevant. Once this immaterial capital is expressed in the form of knowledge sharing, the willingness to share is probably one of the most fascinating aspect for academics and a great challenge for practitioners (Chiu et al, 2006).

2.3   Knowledge Sharing in Virtual Social Networks

The number of new virtual social networks platforms has been booming, surpassing 1.200 in 2010 in United States, a figure six times higher than in 2005 (Nowotarski, 2011). According to the "State of Social Media 2011" from The Nielsen Company (2012), for the first time in history social media has overtaken pornography as the primary activity on the web, with 81% of

American adults engaged in at least one virtual social network, accounting for 23% of all the time spent online.

The amount of content, in the form of text, images, pictures, videos, songs, etc., shared online by more than 1 billion users worldwide is even more remarkable. According to the numbers of the "Digital Brand Engagement 2011" from Omobono (2012), users share everyday more than 30 billion pieces of content on Facebook, watch 2 billion videos on YouTube, and post more than 40 million 'tweets'.

Another important trend is the fact that content in the form of images and videos has been gaining importance, growing faster than texted-based information. Image content already accounted for more than 10% of all Facebook posts in 2011, 4 million pictures were uploaded everyday on Flickr and more than 50 thousand hours of videos on YouTube (Omobono, 2011).

Content is the existence support of virtual social networks of practice, once they have limited value when they lack rich knowledge (Chiu et al 2006). On the other hand, the process of knowledge contribution is socially complex and involves a variety of actors with different needs and goals (Wasko & Faraj, 2005). Once it is absolutely hard to stimulate online sharing, the willingness to share is probably the largest challenge for practitioners and the most studied aspect for academics (Chiu et al, 2006).

According to Arvidsson (2008), the concept of social production can support the initial explanation of knowledge sharing. The author defines this process as "self-organized systems of (mostly immaterial) production that have evolved around the diffusion of networked information and communication technologies" (Arvidsson, 2008, p. 326), and manifested in the form of immaterial production (such as creativity and knowledge).

Currently, 58 to 83 percent of the population of industrial societies is engaged in some kind of social production activities, a consequence of the lack of clear structures, identities and guidelines of the Postmodern condition, that leaded societies to a context marked by both an unprecedented need and possibility to produce a new cognitive and affective framework for life (Arvidsson, 2008, p. 330). Blau (1964) postulated that only social exchange tends to engender feelings of personal obligation, gratitude, and trust, while purely economic exchange does not.

The study of knowledge sharing is also related to the concept of Ethical Economy, where "socially recognized self-expression is the main motivation" and "community contribution is the main measure of value" in social networks (Arvidsson, 2008, p. 326). From this point of view,

the significance of social networks for their users is based on recognition processes, even if individuals play a marginal role in the process of creation.

Consequently, the value of these networks relies more on the processes than on the products of interactions, evidenced by the fact that the highly valued individuals are the ones who most contribute to the strength, quality and endurance of the interaction processes by organizing social cooperation. Conversely, networks can be considered an "extension of a person's social impact, or how many people to whom he or she matters" (Arvidsson, 2008, p. 333).

Assessment of knowledge sharing

Before the discussion of the factors motivating the process of knowledge sharing, it is substantial to highlight that the definitions and measurement of what is knowledge in virtual social networks are also another central discussion. The majority of the studies measuring knowledge shared online (including this one) considered the volume, but not the quality of the content as it dependent variables due to the complexity of the definition and measurement of quality of information.

Although the focus of this study is not to discuss the measurement of knowledge sharing but its motivation, it is important to emphasize that even the assessment of the volume of knowledge sharing has been proved as an extremely complex task involving the conceptualization, categorization and selection of the content that can be considered or not as 'knowledge'.

In order to quantify knowledge, some authors as Bagozzi et al (2004) or Zhang & Hiltz (2003) used combined measures of declared participation behavior in absolute terms, such as *'How many times did you chat online with your group in the last 2 weeks?'* or *'How much time did you spend on average when you chatted with your group?'*; while others used stated measures on scales of agreement, e.g. *'For me, the site is just a place where I can get some information'*, *'I won't post anything or communicate with anyone through it'* or *'There is a great chance I can collaborate through this virtual community'*.

Few other more sophisticated combinations derived from the Factor Analyses of those types of declared questions (Butler, Gibson & Sharp, 2002). Butler et al (2002) developed an interesting framework measuring 'community building work' with 9 questions assessing what they defined as <u>content provision</u> (time spent composing and posting messages), <u>infrastructure</u>

and maintenance (time spent maintaining, posting, and publishing files), social encouragement (the type of activities members usually do inside the network), social control (social purposes of the content shared by users), external promotion (activities members do outside the network that are related to the promotion of it, e.g. posting links related to the community in another website), and audience engagement (time spent reading messages from the others).

The majority of authors that tested the motivations for knowledge sharing used simplified measures for it as the number of replies (Constant, Sproull & Kiesler, 1996), or the number of total posts excluding or not words considered irrelevant such as 'thank you', 'great' or 'ok' (Chiu et al, 2006; Wasko & Farah, 2005).

Motivations for knowledge sharing

A countless number of motivations were discussed as possible predictors of the quantity and quality of knowledge sharing in virtual communities. The first studies tested few isolated motivations and their influences on contribution online.

In 1998, using data from multiple respondents in all the business units of a large multinational electronic network, Tsai & Ghoshal (1998) proposed the categorization of social interaction ties, trust and trustworthiness, and shared vision into three respective dimensions named as 'structural, relational, and cognitive dimensions of social capital'. In 2005, Wasko & Faraj used data from a professional legal association in order to test other motivations related to those three dimensions, and to include 'reputation' and 'enjoy helping' as a fourth dimension, named 'individual motivations'. In 2006, Chiu et al constructed a model investigating motivations in the same three dimensions adding a fourth and a fifth dimensions named as 'personal outcome expectations' and 'community outcome expectations'.

Based on those previous studies (Tsai & Ghoshal, 1998; Wasko & Faraj, 2005; Chiu et al, 2006), this research structured the motivations for knowledge sharing that will be discussed bellow into five dimensions: (i) structural capital reasons; (ii) cognitive capital reasons; (iii) relational capital reasons, (iv) personal motivations and a fifth one, named as (v) monetary reasons.

Structural capital can be defined as structural links or connections between individuals or the overall pattern of connections between actors (Wasko & Faraj, 2005). Collective action is easier to achieve when there are social direct ties between members, making them also more likely to sustain contributions (Wasko & Faraj, 2005). Tie strength is "a combination of the amount of time, the emotional intensity, the intimacy or mutual confidence, and the reciprocal services which characterize the tie" (Granovetter, 1973, p. 1361).

In this dimension the most debated motivation factors are cohesion or sense of community (Chiu et al, 2006) and centrality or individual's embeddedness (Wasko & Faraj, 2005). Kadushin (2002) states that denser cohesive structures are also stimulated when costs of interaction are low and visibility is high.

Cohesion or sense of community can be described as the feeling of 'being part' of the community and explains why community ties and satisfaction with member-member and organizer-member interactions provide important conditions for content exchange (Chiu et al, 2006).

While cohesion is related to the feeling of 'being part of it', embeddedness or centrality is related to 'how deeply is the involvement'. Wasko and Faraj (2005) use the term 'centrality' to describe how central is an individual to the network through social ties. Embeddedness is a "logic of exchange that shapes motives and expectations and promoted coordinated adaptation (…) actors do not selfishly pursue immediate gains, but concentrate on cultivating long-term cooperative relationships" (Kadushin, 2002, p. 87).

Cognitive capital is related to the cognitive competence to understand and apply the knowledge in the social environment (Wasko & Faraj, 2005). In order to achieve common representations, interpretations, and meaning systems some factors are critical such as shared-language and vocabulary (Chiu et al, 2006), expertise or tenure in the field (Constant, Sproull & Kiesler, 1996), and shared vision or goals (Chiu et al, 2006).

The concept of shared language is broader than language itself, relating also to shared codes, acronyms, subtleties, underlying assumptions and symbols (Chiu et al, 2006). In Chiu et al. (2006) study regarding professional electronic networks, shared language showed positive significant effects on knowledge quality, but not on quantity of sharing.

Even motivated, an individual will contribute just if the person has the required 'expertise' for it (Constant, Sproull & Kiesler, 1996). Individuals would be likely to be more motivated if they are confident in their ability to share that specific knowledge – in terms of technical skills or expertise on the field, especially in voluntary shared environments (Bandura, 1982).

Relational capital is associated to how strong and to which kind of relationships members have developed towards others through a history of interactions (Wasko & Faraj, 2005). The central factors regarding this dimension are commitment (Wasko & Faraj, 2005), norm of reciprocity (Bagozzi, Dholakia & Pearo, 2004; Kadushin, 2002), identification with the collective (Chiu et al, 2006), shared vision and trust (Kadushin, 2002; Chiu et al, 2006). In this sphere, willingness to share would be connected to the desire of developing meaningful social ties with others, what Lazzarato (1997) called *philia*.

Commitment is defined as "a sense of responsibility to help others within the collective on the basis of shared membership" and, for social networks, it is related to the willingness to give and receive content (Wasko & Faraj, 2005, p. 42). Since commitment is an "implicit or explicit pledge of relational continuity between exchange partners" (Dwyer, Schurr & Oh, 1987, p. 19), higher commitment should result in strong collaborations.

Commitment can be based on economic concerns, but also on intrinsic aspects, such as identification, social interactions and shared values (Barki, 2010) and decreases opportunistic behavior and uncertainty in networks (Shamdasani & Sheth, 1995).

Norm of reciprocity concerns what Bagozzi, Dholakia and Pearo (2004) called "group norms" that would strongly impact "we-intentions" and justify time and effort spent in contributions. Reciprocity is high when knowledge exchanges are mutual and perceived as fair by the parties (Chiu et al, 2006). According to Bouty (2000), people are willing to help those who helped them before and not repay help with harm, in other words, "if you act in a certain way towards the other, the other will in turn satisfy your needs" (Kadushin, 2002, p. 82).

Identification is a positive feeling toward the group and the sense of belonging that can also be positively correlated to the quantity and quality of sharing (Chiu et al, 2006). Bagozzi and Dholakia (2002) defined identification relating the perceptions of 'self-conception' and 'group inclusion' and it could also be related to the concept of shared vision.

Shared vision makes parties more likely to become partners and embodies the collective goals and aspirations of the whole association. This helps to integrate and combine resources, giving meaning to their contributions. Shared vision can also be classified as relational capital, once it is usually developed according to the strength of the relationships members develop (Chiu et al, 2006).

One of the main characteristics of dense social networks is the sense of trust, which is exemplified in the following passage "if you act in a certain way towards the other, the other will in turn satisfy your needs" (Kadushin, 2002, p. 82). Trust creates positive atmosphere to enhance knowledge (Chiu et al, 2006) and influences how people interact with each other once it is an optimistic view and a belief that others have the same fundamental values (Uslaner, 2000).

Personal motivations are related to the expectation of individual benefits when accessing the network, reviewing questions, choosing the ones they are able and willing to answer, and formulating their contributions (Wasko & Faraj, 2005, p. 42). People are not just looking for enrich knowledge and information, but also seeking for outcome expectations such as reputation (Butler, Gibson & Sharp, 2002), self-expression (Wasko & Faraj, 2005; Arvidsson, 2008; Briggs et al, 2010), friendship (meet people) and sense of belongingness (Chiu et al, 2006).

Although in some electronic networks of practice altruistic reasons seem to be prevalent, previous studies had confirmed that personal gains are always existent. They can be expressed as indirect career benefits, learning about one's community, expressing one's own deeply held values or moral principles, living up to the ideals of others, etc. (Briggs, Peterson & Gregory, 2010).

Reputation is connected to sense of approval and being seen as skilled, knowledge-able or respected (Butler, Gibson & Sharp, 2002). Many authors had suggested this factor as one of the primary reasons to contribute in virtual networks (Donalth, 1999; Kollock, 1999; Von Hippel & von Krogh, 2003; Wasko & Faraj, 2005). Arvidsson (2008) concluded in his study that networks are a measure of the extension of a person's social impact and reputation is a measure of the quality of this impact.

Self-expression appears as another important motivator, related to the individuals' willingness to see their efforts socially recognized as inventive, creative and beautiful (Wasko & Faraj, 2005; Arvidsson, 2008; Briggs et al, 2010). According to Weber (2004, p. 137), "open

source lets you show the world how creative you really are", what corresponds to place your finest production in a gallery.

Friendship and sense of belongingness are linked to the growing desire to build new and alternative forms of social relations, a consequence of the weakening of social structures and soaring manifestations of loneliness and alienation (Zhang & Hiltz, 2003; Chiu et al, 2005; Arvidsson, 2008).

Although Wasko and Faraj (2005) could not prove that benevolence or the feeling of enjoying helping is a significant antecedent of the volume or value of contributions, other authors stated that altruist motivations could also be relevant factors (Kollock, 1999; Ridings, Gefen & Arinze; 2002; Briggs et al; 2010). This personal characteristic tends to be more related to the feelings of 'some new value will be created' or 'worth the effort' and maybe the understanding that something is going to come back to themselves (Nahapiet & Ghoshal, 1998).

Status, formal recognition, hierarchy, public feedback and other forms of self-related motivations were considered applicable in previous studies (Von Hippel & von Krogh, 2003; Wasko and Faraj, 2005; Benkler, 2006; Arvidsson, 2008). Arvidsson (2008) proved that individuals with higher status and recognition tend to show stronger, better and more durable inputs in virtual networks.

Monetary reasons and economic rewards have been controversy discussed by academics regarding social networks, electronic networks and volunteering. Despite some conclusions that 'other-oriented' reasons seem to have more influence on pro-social attitudes than 'self-focused' ones, theorists of volunteering suggest that intrinsic and extrinsic rewards are two of the primary motives for these practices and the emerging consensus is that both altruistic and egoistic motives exist (Von Hippel & von Krogh, 2003; Benkler, 2006; Briggs et al, 2010).

The majority of surveys founded related to social production and virtual social networks shows that monetary motivation (extrinsic reward) may exist to some extent, but it has been evaluated as least important or even not treated in most of surveys, once the majority of relationships and professionals virtual networks do not reward directly individuals shared-content (Wasko & Faraj, 2005; Chiu et al, 2006; Arvidsson, 2008).

This way, monetary stimuli cannot be excluded as an important motivator (Von Hippel & von Krogh, 2003; Benkler, 2006), although it has been evaluated as less important or even not

included in most of surveys related to social production and virtual social networks (Wasko & Faraj, 2005; Chiu et al, 2006; Arvidsson, 2008).

Two probable justifications can explain why monetary rewards are usually considered less important. First, the valuable resources in social production are labor time and access to information, what is highly abundant in the virtual space because of a multitude of volunteers and once that are no distinction between labor and life. Second, there is simply too little money enrolled in social production to be a strong motivator, once it moves outside the monetary economy of capitalism (Arvidsson, 2008).

On the other hand, according to social exchange theory, behavior can be understood under rational self-interest and knowledge can be stimulated when its rewards exceed its costs (Kelley & Thibaut, 1978). According to Von Hippel & von Krogh (2003), monetary rewards in social networks can avoid free riding and enhance motivation to share knowledge.

The table 2.1 presents a summary of the main findings discussed from previous authors regarding sharing knowledge in social networks.

Table 2.1: Literature review: reasons for sharing knowledge in virtual social networks

Author(s)	Why people share?
Arvidsson, 2008	Contribution is more related to **social impact** rather than **monetary accumulation**. Main motivations for coproduction are social recognition, self-expression, self-realization, desired experience of having meaningful social ties with others (*philia*), networks, respect, and reputation.
Bagozzi, Dholakia & Pearo, 2004	**Group norms** (commitment to a set of goals, values, beliefs, and conventions shared with other group members) and **social identity** (sense of emotional involvement with the group or affective commitment) have effect on we-intentions to participate in virtual communities.
Bandura, 1982	**Competence** and **social acceptance** are more important than external rewards. Confidence in the **ability to share** that specific knowledge is another important factor for social production.
Benkler, 2006	Social production in networks is a combination of **intrinsic motivations** (come from within the person such as pleasure, self-satisfaction) and **extrinsic motivations** (money, reward, a judge for complying with, or failing to comply with, specifically prescribed behavior).
Bouty, 2000	Exchange depends on the extent of **acquaintance**, **mutual trust**, and **level of competition** with the others members. **Interpersonal relations** play an important role. Another motivation is the **access** to new information, expertise, and ideas.
Briggs et al, 2010	**Other oriented** (benevolence, value expression) and **me-oriented** (achievement, career) reasoning the attitude toward others. In volunteering pro-social attitudes, **altruistic reasons** seem to be prevalent, but **personal gains** are also important.
Butler et al, 2002	The primary reason for individuals to share knowledge is their **expectation to be seen** as skilled, knowledgeable or respected.
Chiu et al, 2006	Knowledge sharing is explained by **social capital**: a) **structural dimension**: social interaction ties; b) **relational dimension**: trust, norm of reciprocity, identification; c) **cognitive dimension**: shared vision and shared language; and **outcome expectations**: a) **community-related outcome expectations** (expectation of benefits to the virtual community) and b) **personal outcome expectations** (support, friendship, and sense of belongingness).

Constant et al, 1996	Shared knowledge depends on the **strength** (theory of 'strong weak ties') and **diversification** (different connections leads to more opportunities) **of ties**, and **motivation** and **resources** (expertise) of the individuals.
Kadushin, 2002	The motivational foundations of social networks are **cohesive and dense ties**, **sense of community,** quest for **support and comfort** (safety), and **sense of trust**. Social production is higher when the **costs of interaction** are low, **visibility** is high, and **moral obligations** are more salient. Individuals of higher **social classes** have more diverse and cohesive social networks than persons of lower social class (more geographically local cohesive networks). **Macro socio-cultural systems** also influence.
Kollock, 1999	Three factors for cooperation: **reciprocity**, **reputation** and **sense of efficacy**. The feeling of **enjoying helping** (sharing just because someone needs) can be a fourth factor; and **attachment** or **commitment** can be a fifth factor (sharing because it will be the best for the group).
Langerak et al, 2004	Satisfactions with "member-to-member", and "organizer-to-member" interactions have positive effects on participation.
Leana & van Buren, 1999	Social capital is realized through member's level of **collective goal orientation** and **shared trust**, which create value by facilitating successful collective action.
Nahapiet & Ghoshal, 1998	Classified the main motivations to share content into three categories: **structural capital**: structural links or connections between individuals; **cognitive capita**l: individuals have the cognitive capability to understand and apply the knowledge; and **relational capital**: their relationships have strong and positive characteristics.
Ridings et al, 2002	**Trust**, **ability**, **benevolence** and **integrity** are related to the desire to give and receive information.
Tsai & Ghoshal, 1998	**Structural** (social interaction ties)**, cognitive (**shared vision)**, and **relational** (trust and trustworthiness) **dimensions** of social capital have significant effects on resources exchange in social networks.
Von Hippel & von Krogh, 2003	**Monetary rewards** and **reputation** avoid free riding and enhance motivation to contribute. Collective action model helps to explain knowledge sharing emphasizing the creation of **long term relationships** and the importance of **private benefits** such credentials in the form of enhanced social relations, enhanced reputation, privileged access to social relations, etc.

Wasko & Faraj, 2005	**Structural capital** (centrality), **cognitive capital** (self-rated expertise, tenure in the field), **relational capital** (commitment, norm of reciprocity), and **personal motivations** (enjoy helping, reputation, social recognition and self-expression) are the main motivations to share content in virtual networks.
Yoo, Suh & Lee, 2002	The relation between **sense of community** and participation in virtual communities is strongly significant.
Zhang & Hiltz, 2003	**Meet other people**, **seek support** and **friendship,** and **sense of belongingness** are important reasons to develop knowledge sharing in virtual communities.

Source: Elaborated by the author

2.4   Conclusion of Knowledge Review

The literature review was segmented into two complementary parts: the discussion of virtual social network and its characteristics as an important social phenomenon of the past decades, and the theoretical review of previous studies about factors, motivations and reasons explaining knowledge sharing. The object of this study is a recent phenomenon and consequently the literature is still scarce, although has been developing in fast paces.

Despite the designation these authors gave to the factors they explored explaining knowledge sharing, three are the most relevant findings. First, they indicate that this process is undoubtedly a complex mix of collective and self-related magnitudes. Second, although the purpose of the communities of practice, their individuals' profiles and their macro-environments around can strongly differ, the motivations for sharing knowledge seem to remain around the same factors. Finally, monetary reasons may influence somehow when they are present, but appear to be less important than other strong collective and personal motivations.

Figure 2-1 summarizes the main motivations for knowledge sharing in virtual social networks discussed by previous authors and structured them into the five dimensions discussed.
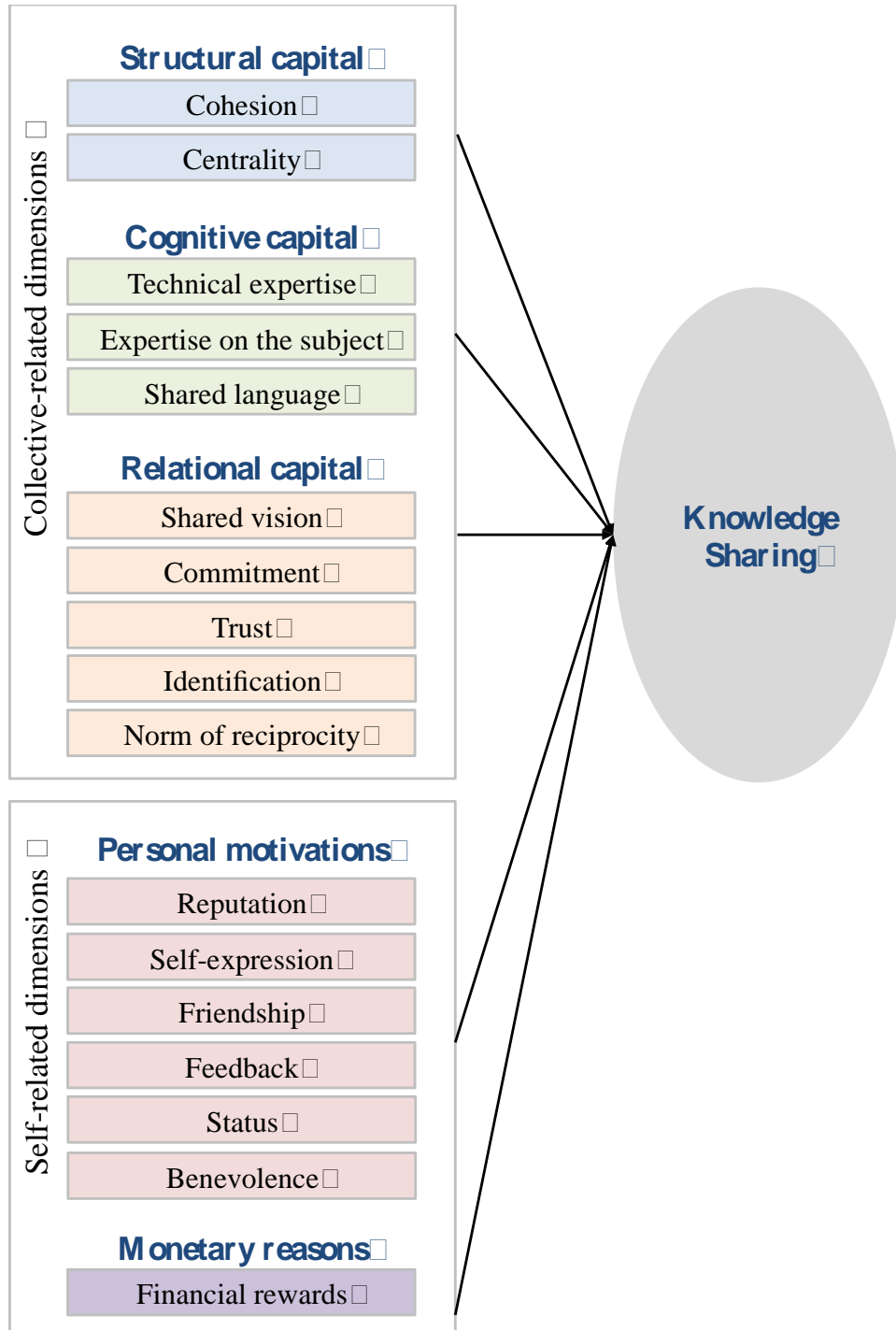
Figure 2-1: The five dimensions of knowledge sharing and selected motivations

Source: elaborated by the author.

In order to accomplish the objectives presented for this study, two research questions were established based on the model presented:

a.) **Are those motivation factors of knowledge sharing structured into coherent dimensions for assessing the willingness to share?**

b.) **Which dimensions have a significant effect on the willingness to share knowledge on virtual social networks?**

3   METHODOLGY

3.1   Introduction

In order to accomplish the objectives of this study, the methodology was divided into two distinct phases, a first and more qualitative one with the objective to explore the possible motivations that stimulate individuals to share knowledge in online social communities and provide a comparison between two different networks in diverse contexts; and the second one, more quantitative, with the aim to statistically test the importance of the dimensions identified to share knowledge in the exploratory phase and in the theoretical background, and propose a model for assessing this phenomenon.

During the first phase a multi case approach (Yin, 1994) was conducted, consisted on the selection of two comparable virtual social networks from Brazil and France; the description of their mechanisms, similarities and differences; the conduction of qualitative research in the form of focus groups, interviews and direct observation; and the discussion of the main findings regarding knowledge sharing motivations.

Based on the results of the exploratory part, the second phase involved a quantitative research through online questionnaires; the formulation of a measurement model through factorial analysis and based on the five dimensions of knowledge sharing discussed in the theoretical review; a multiple regression analysis; and the presentation of the results.

3.2   Exploratory research

After preliminary analyses of possible and comparable virtual communities in terms of characteristics, purposes and sizes, the Brazilian ItsNOON and the French Drawin were chosen to be the object of this study. The two countries were chosen by convenience, but also because they present different cultural characteristics. Another reason for the choice of these countries was because of the difference in average income of the population, which might be important when analyzing monetary rewards.

Those virtual networks present some similarities such as the number of members between 8.000 and 10.000, the age around 2-3 years since their foundation and the fact that they can be classified as electronic networks of practice (Arvidsson, 2008). Besides that, they share a common 'artistic orientated purpose' and the main content shared online is in the form of 'creations' – paintings, photographs, movies, and other variations such as compositions or sculptures. In both cases, content can be expressed in the form of software-based creations or reproductions of handmade ones.

Their online platforms also perform in a similar way, once they provide instruments to stimulate public sharing, such as 'public wall', comment boxes, and status mechanisms; and dispose tools to enhance relationships and interactions such as the friendship or 'following' systems, open and close dialogs, and forums.

Besides these similar characteristics, in both virtual spaces there is the possibility to make money: Drawin artists can sell or buy their creations through the platform without any costs; ItsNOON members can earn money according to the quality of their posted workings.

The majority of users are located in their countries of origin. Even though ItsNOON is already present in The Netherlands and South Africa, more than 95% of its members are located in Brazil. This rate is even higher when representing French users in Drawin, although it also has members from United Kingdom, Switzerland, Belgium, and other few countries.

The first phase of the qualitative research was conducted in Brazil from November 2010 to June 2011. During this period, one focus group with six active members and three in-depth interviews were performed with ItsNOON users, besides meetings with different stakeholders (founder, pedagogue, manager, client and partner). The second phase was conducted in France from January 2012 to April 2012, when seven in-depth interviews were carried out with its members, besides one with its founder.

Altogether, the research generated approximately seven hours of interviews. The interviews were conducted on users' own languages (Brazilian Portuguese and French) in order to avoid communication or interpretation issues.

Although each interview covered the same broad topics, the researcher maintained the possibility to explore areas of special significance from different interviewees. The questionnaires of these interviews and the focus groups guidelines can be seen in the

APPENDIXES 1 and 2. Interviews were conducted face to face or via Skype and all this material were recorded, transcribed, read and codified.

During this time, the author was subscribed in both networks, and also performed direct observation, studying the functioning mechanisms of both platforms, the type of interactions among their members and online discussions. During the analysis, reviews of the website, client reports, and site visits were done.

It is critical to emphasize that the author had never participated posting or commenting on these virtual communities, and has no relationship with any members of them.

3.3   Quantitative research

For the quantitative research data were collected from June to August 2012 via online questionnaire sent individually for approximately 3.500 users of ItsNOON and 2.500 users of Drawin. A rate of 3,5% of answers was obtained with 110 completed responses from the French and 102 from the Brazilian networks.

The information provided by the users was treated excluding inconsistent answers and the ones that presented more than five standard deviations from the average number of posts and comments. For the final analysis, 94 valid responses were considered for Drawin and 88 for ItsNOON.

4 RESULTS

This section is divided in two parts. The first one analyses the results of the exploratory phase, initially describing each of the cases studied and then jointly analyzing the qualitative research results. The second part analyses the results of the quantitative phase.

4.1 Exploratory Research

4.1.1 ItsNOON

Inspired on the idea of creating a virtual social community where mostly young and low-income individuals could collaboratively produce creative works about important civic and social issues, ItsNOON was founded in Bahia state in January 2010. As a private organization, the management recruits companies, government agencies and other large institutions to sponsor creative dialogs in exchange for the knowledge developed about a specific topic of interest.

Through what they named "creative calls", ItsNOON asks its users to think critically and bring artistic creations to meaningful topics developed together with its sponsors. Members express themselves in varied forms of art works such as drawings, paintings, photos, films, songs, poems and radio programs.

The process provides the sponsors a deep understanding of the themes discussed and the community itself, both through the process of creation and the content analysis, but also gives them credibility as socially responsible actors and stimulates insights for innovation. On the other hand, members develop valuable skills, earn income in form of rewards, build community ties and learn in a cooperative way.

Figure 4-1 illustrates how ItsNOON Business Model works.
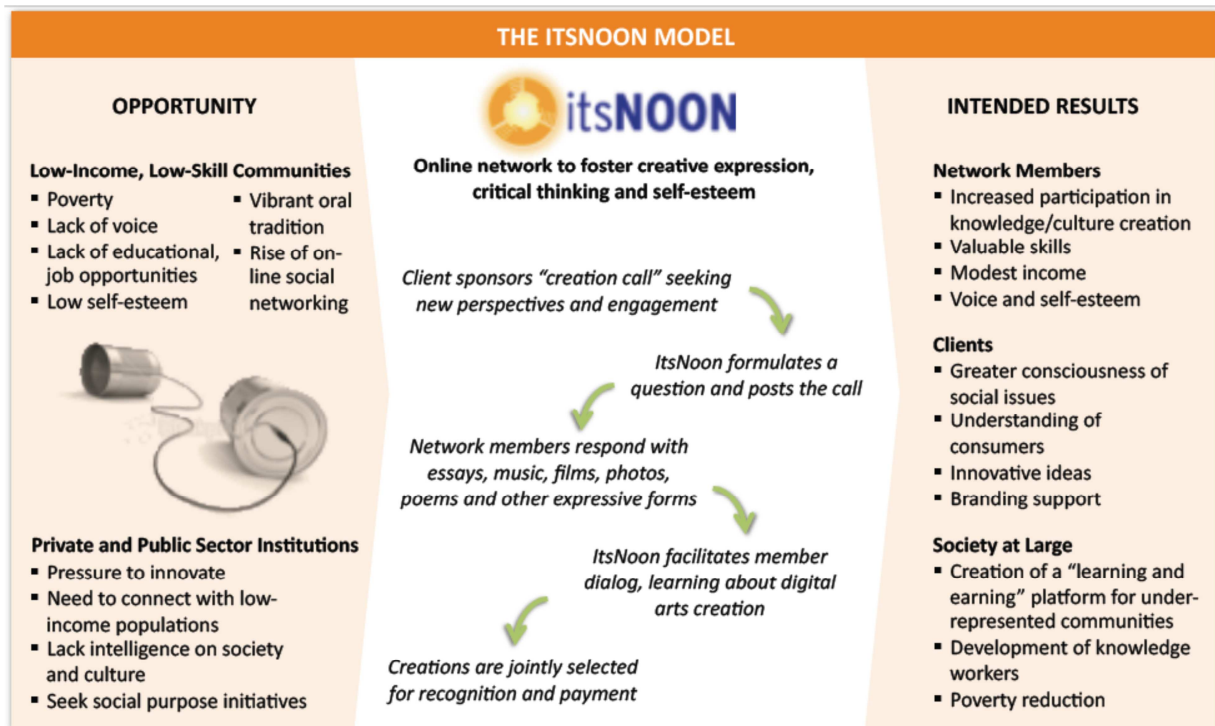
Figure 4-1: ItsNOON Business Model
Source: LaFrance, 2011.

Currently, ItsNOON has around 10.000 members most of them in Brazil, but around 700 in South Africa and in The Netherlands (less than 100 members). Almost 20.000 submissions were created until January 2011 and more than 70% of the networks' members have contributed at least one submission, compared to YouTube's 3% (LaFrance, 2011).

The functioning of the "creation calls" is simple: together with the sponsor, ItsNOON management defines the theme, formulates the appropriated question and posts it in the Internet platform. Following this launching phase, users have one or two months to generate submissions, discuss and co-create among themselves, developing a highly connected process of knowledge sharing. Through a voting process that engages the sponsor, ItsNOON management and network members, they award, in average, from R$ 100 to 300 each (from US$ 50 to 150) in cash payments for 20 to 150 contributors, depending on the duration of the 'creation call' and budget of the sponsor. Until January 2011, around 3,000 winners had been paid more than 1 million Brazilian reais (approximately US$ 500 thousands).

Important to mention is the interaction between member-organization. ItsNOON management is highly concerned to provide an open space to stimulate the learning practice, and they participate during the "creation call" process giving tips regarding possible references about the themes; indicating electronic tools to develop better creations – such as how to use photo-editing software for example; and giving feedbacks to the creators.

Members have also the possibility to share their own contents independently of the theme of the creation calls in their profiles and share "virtual values" among them – they can give 'love', 'happiness', 'inspiration', 'courage' or 'trust' for the users or creations they want; and money in the form of stimulus to the others.

4.1.2 Drawin

Drawin is a French private startup created in the middle of 2010 aiming to be a social network of art 'as complete as possible'. The idea of the founders, the brothers Jonathan and Benjamin, was to develop a web service that allows everyone to publish and share their art for free. The goal is to offer the ability to store an unlimited number of creations online, to share them with other users and to obtain feedbacks, critics and suggestions in order to evolve in his art of predilection.

Since November 2010 the social virtual network allows artists to sell their creations as a totally free-of-charge activity. The intention was to develop a real marketplace of arts and creative handmade goods. The users can exchange their works in two distinct forms: the original (the buyer and seller are in contact and the seller sends his work by traditional mail), and prints or reproductions (the buyer and seller are in contact and the work is printed and delivered through a Drawin partner).

According to the founders, in its second year of existence, Drawin had around 8.000 members, growing consistently in the past months. The amount of creations until April 2012 was more than 52.000 being traditional drawings and paintings the most common ones (70% classified in these categories), followed by "numeric" drawings (acquired, created, processed and stored as binaire1), and others such as sculptures, accessories, porcelain, origami, etc.

Many projects are underway to change the platform to meet the needs of the artists. Currently, the dynamic is simple: the most discussed works are spotlighted on the main page, and

users can see the ratings these particular pieces have attained and the discussions about them. The registration to the site is inexpensive, and once you create an account it is very easy to start sharing artwork over the web.

4.2   Results of the qualitative research

The Meaning of Internet

The empirical research supported the idea that Internet is playing an unquestionable role in terms of enhancing access to information, facilitating communication and decreasing the distance among people. When defining the meaning of Internet for their lives, members from both nationalities used the same words 'information', 'connection' and 'communication'. These convergent opinions were summarized by one of the individuals' mention, "*it is expanding our horizons in terms of contacts, ideas, people, opportunities, and trends*".

Internet has both personal and professional roles in the users' lives. For their private lives, it has become the most important way of connection to their personal network - "*thanks to Internet, I'm all the time connected to my family and friends*", and it has increasingly been part of their routine "*I never turn it off, even when I'm sleeping, in the bathroom, wherever*". Regardless of their profession, all respondents said that it has been more and more important for their professional lives to promote their work, connect with possible clients, find new opportunities, etc. One French user that is living in Indonesia said "*ten years ago I would go to Belgium, for instance, to show my work in a gallery and reach few people; now I can really go further with Internet, doesn't matter where I am*".

The Virtual Social Networks

The clearest evidence of this increasing interaction provided by the Internet is the role of virtual social networks in their lives. Users defined it as the most appropriate channel to create "interaction among individuals", "socialize", "share ideologies", "access new ideas" and "feel free to express yourself". A French user defined social network as a "magic phenomenon" that allows people with same interests to be together and share them.

It was evident the distinction between relationship-based networks such as Facebook, Twitter or Orkut and social networks of practice. Although all the respondents stated to have

Facebook accounts, they clearly see ItsNOON or Drawin with quite different goals: they have broader perspectives that go besides relationships and they used the words "culture", "creation", "art", "production", "life experience sharing" to distinguish it. A member from ItsNOON stated "*there is no space for gossip; it was created to incentive the creativity of each one, to share your way of life*". Among Drawin members the same feeling is highlighted: "*Facebook is to talk with my friends, Drawin is about art, about learning with the others*".

On the other hand, two users from France emphasized that when Drawin only places together people related to this common practice of artistic creations, it is producing a "limiting factor" in terms of user's numbers and profiles' characteristics: "*in this respect Facebook is much more powerful in terms of reaching different people while Drawin is restricted basically to creators or art lovers*".

Regarding their initial motivations to join these virtual social networks, all the active members declared the opportunity to share with the others as the main reason. The Brazilians mentioned, "*I wanted to show my work*", "*I was looking for a place where I could give and receive feedbacks*", "*I expected a place where I could exchange creations and it is amazing to have a place where people are interested on it*". The French complemented, "*I expected to find people related to arts*", or "*people with whom I could share the pleasure of arts*".

Besides the sharing practice, the chance to learn and to meet new people was observed in both networks' users as a strong motivation to join these virtual communities: "*Through ItsNOON I expected to get in contact with new ideas, to learn new ways of creating things*", "*I joined Drawin exactly to find people that are like me, that shares the same interests*".

Motivations to share

Despite the geographic and cultural differences between members of ItsNOON and Drawin, our empirical research showed that, in general, user's motivations to share knowledge online converge with the ones discussed in the theoretical review.

In relation to the **structural capital** motivations, members of both virtual networks demonstrated that they developed social ties among themselves, showing mutual confidence and emotional relationships: "*I see people in Drawin as friends, even though I never met most of*

them in real life, I want to know about their family or personal lives"; or "*ItsNOON members for me are more than Facebook friends that I add without criteria*".

It was evident that <u>sense of community</u> and <u>centrality</u> are important factors contributing to the sharing process. Active members highlighted their personal relationships stating that they are recognized as individuals on these networks: "*I feel part of ItsNOON community*", "*Drawin puts me in contact to people that are like me; and it's a pleasure to share my creations with them, they understand me, share the same values and ideals*", "*Drawin is a friend's place, it's much more personal than professional*".

For ItsNOON, not just the member-member relationship was mentioned, but also the organizer-member interaction seems to play an important role to create this cohesion: "*the difference between ItsNOON and the others virtual networks is the fact that users interact to each other, but the network* (viewed as the staff or the institution) *also interact with the users*".

This feeling of <u>cohesion</u> is prominent when they were asked if they would recommend these networks for their friends: they all agree when it comes to suggest it as a place for someone who is looking for friendship, advises, and connections, even though opinions diverge when it comes to the learning process, the possibility to enhance their reputation or the indirect economic reasons. When the interviewer used the personification technique ("define ItsNOON as a person"), ItsNOON was identified as "*a friend to present to my parents*" from one of the members.

Concerning **cognitive capital** motivations, we identified that shared language and digital access can be considered pre-requisites to be part of the network (or could be also influencing the the quality of the content shared), but not motivators to share content. One member of ItsNOON pointed, "*this network is mostly for young people that are digitally connected*", while a Drawin user said "*I would say it is restricted to French people, and they are mostly from the same generation, between their 20-30 years old*".

For both virtual networks there were no strong evidences about the importance of expertise on the type of content shared (art related or informatics), which we call "<u>technical expertise</u>". In Drawin's case a minimum expertise in some art field is required in order to share content – "*you must be an artist, but we can say that there are many beginners*", but it could also be considered as a pre-requisite for joining, once if someone is not related somehow to arts he

would probably not join. On the other hand, one of the members mentioned it would be better to have more "professional experts" to evaluate their creations, because "*sometimes the comments come from beginners, they don't know exactly what they are saying*".

For ItsNOON, although some interviewed members did not have any previous relation to any kind of art (such as photography, video or drawing), some members declared that the creation process stimulated them, once it was exactly what ItsNOON is encouraging, "*I lack knowledge about arts, image software and digital tools but something makes me have many ideas, start to think*", said one of them. "*You must go further, you must innovate with the tools you have, this is ItsNOON ideology*", "*I write what comes to my mind, I'm not a writer or a photographer, that's why is important to have the same people (from the network) evaluating the works, not specialists*", said users.

However, ItsNOON users related their motivation to post more creations to what was called as expertise on the theme or subject, in other words, the subject of the "creation call" showed to be related to their intention to create about it, "*sometimes it's hard for you to create something about a subject that you don't know or that you don't like*". This factor can be considered at the same time a barrier or a stimulus, once the effort is larger when they are not confident about specific knowledge and sometimes they just give up.

While there is no orientation or theme for Drawin's users (and "expertise on the theme" could be discarded or considered as not influencing its member's amount of content), the analysis proved that the importance of expertise on the subject seems to be more complex to explain. The contrast between two members' conditions presented can help the understanding of expertise's role as a motivator. One professional artist from Drawin considers himself older than the average in the group and pointed that he does not share the same art type orientation, "*most of them are in their twenties, I feel like the old guy in the group*", "*they are not my generation, they are the new Mangá generation*". These statements reasonable explain the fact that in the beginning he used to post many creations, "*but it seemed to be out of the trend*" and he used to interact and give feedbacks "*but I stopped just because I'm not familiar with this Mangá creations, I don't feel like contributing with them, my feedbacks are not very useful in this sense*". On the other hand, a 24 years-old that considers herself a "Mangá expert", posted more than 150 creations and declared "*I like to share my passion with other people that understand it, that share the same feelings*".

Since <u>shared vision</u> could be related to cognitive and relational capital, the discussion of the **relational capital** dimension starts with this factor that appeared as a possible motivation factor of knowledge sharing. ItsNOON users showed to have as a common orientation what they called as "willingness to share good things to the others". Moreover, it appeared as extremely relevant the awareness of ItsNOON vision, values and concerns about their "role in society". Members interviewed believed in ItsNOON main principle of "*Sevirologia*", defined by the users as "the way in which is possible for everyone to find a manner to do something cool with the resources they have".

Even though the French virtual community does not have the same symbolic statements, its users clearly mentioned, "*Drawin can put together people from different places that share the same passion: the passion for art*", and it "*facilitates the interaction*", even if "*the values of some members differ from the others, the sharing orientation and the love for creations are the same*".

<u>Commitment</u> appeared for ItsNOON as a possible motivator for the quality and quantity amount of creations posted. They mentioned that "*when you are part of it, you have the purpose to share your point of view*", "*on Facebook or YouTube there is no commitment, you can post whatever you want; on ItsNOON is different, you have responsibility to be there*" and "*you must share your ideas once you are enrolled*".

Despite the fact that there were no explicit evidences of commitment as an influencer to knowledge sharing for Drawin's users, <u>norm of reciprocity</u> appeared to be positively related to the amount of contribution, "*we are artists, we need to help each other*" or "*being part of it means that others expect you to contribute, the problem is that there are people that doesn't contribute, that never express themselves*".

For ItsNOON members, it seems to be even more important. Respondents frequently mentioned, "*What we have in common is the collective conscience, we think about the other*", "*we need to be always learning and teaching others, we believe that we can be better*". This factor was mentioned also as a differentiation between ItsNOON and other virtual networks once "*the difference is exactly that we learn with each other, we exchange, we share*". For ItsNOON, interviewed users pointed the desire of face-to-face interactions and real meetings among users that could be promoted by the network staff.

The role of reciprocity appears to be stronger in the Brazilian network, and was reinforced many times when members mentioned the concerns about "*how can I cheer up someone that is*

down?" or "*how can I give them strength?*" and because they see each other as a connected entity "*you must take care of others*", "*what makes the creations better is the sum*", "*you want to move forward and you want others to move with you*". French artists showed to share "we" intentions and concerns about each other in a more implicit way. "*I considered some of them as close friends, even though I've never met them, for example, I know that user had a baby, I want to know if she is fine*". Two possible hypotheses can explain this difference: either norm of reciprocity is actually stronger among Brazilians, indicating a cultural difference, or ItsNOON members expressed it in a deeper manner, being just a methodology bias.

The factor <u>trust</u> was mentioned once by one Drawin's user when she explained that her initial expectations were satisfied in the sense she could "*find friendly people that I can trust, give advises, feedbacks*". Although any member of ItsNOON did not explicitly mention it, the relation between trust and shared content cannot be discard. When describing ItsNOON as a person, one respondent said, "*Another user is someone that you want to take home*".

Another implicit evidence is the fact that one of the French artists mentioned the use of "avatars" as a very negative issue in terms of developing relationships inside the virtual space. In his opinion, the fact that "*sometimes you don't know if this avatar is a guy or a girl, you don't know his name, how he looks like*" affects negatively the process of interaction among them, "*it's really bad in my opinion, how can I comment or discuss with someone that I don't know the real name?*".

Personal motivations showed to hold probable stronger factors related to the creation of content online. The most prominent factor, unanimously cited by all the users from both countries was the <u>self-expression</u> motivation. When they were asked to explain the reasons to post their creations in a public space, the same comments were frequently repeated, "*because I want to express myself*", "*this is the space I have to show my work, to show what I know*", "I *post it for being know*", "*to make other people know about your ideas, your creativity, you creations*", "*what motivates me is the willingness to show my work*".

Self-expression appears as a considerable motivation for knowledge sharing intentions in both contexts, but the reasons behind it can have more than one cause. The willingness to use the network as a platform to join their works and to make their "portfolio" and at the same time, to "be known as an artist" could be identified in the two examples. One ItsNOON user said, "*I have*

a blog, but nobody sees, on ItsNOON people always see, post, discuss and share the meaning it has for them", while a Drawin artist stated "*Drawin is a channel to promote my creations and make people visit my website where I have my whole portfolio*".

Still on this field, when it is related to <u>self-esteem</u> and <u>self-confidence</u>, members of both countries showed positive consequences of the sharing process, "*Drawing played a very important role in my life in terms of giving me confidence*" and "*ItsNOON impacted my self-esteem, I feel more creative, I know that I can*". Other extracts from ItsNOON's members can support this hypothesis, for instance, "*there is this feeling of comfort, recognition, to be valued*", "*I can share my ideas, incentive others, be investigated (…) everything we do in life we have the vanity to see if someone liked, if incentives anyone else*", or "*you feel as you are a writer when you win, it's extremely exciting*".

The importance of self-esteem can also be related to the lower disposable income. Previous studies showed that individuals from poor communities tend to have fewer opportunities to be heard due to less access to educational and work opportunities that develop critical thinking and expressive skills (LaFrance, 2011).

<u>Reputation</u> appeared to be another substantial potential stimulus for participating, either to enhance their personal self-image, either to promote their awareness as professional artists. On ItsNOON side, members mentioned the good feeling when they are seen as "good" writers or photographers, and others pointed "*the best feeling is when you post something and someone publicly comments good things about you, praises and recognizes you*" or "*in my street there is not this culture of art, I brought it to others to show them what I was doing, to promote it there, to bring beauty*". The same was confirmed among Drawin's creators "*it's always very important to show what you do, because it goes around, even though you don't sell it*".

Finally, all the users declared that <u>feedback</u> is an undeniably important motivator for the continuity of their participation. Brazilian creators declared that "*just the feedbacks I receive from the others and from ItsNOON (staff) worth the effort*", "*it's even better when feedback comes from someone that you don't know*", "*it's different than Facebook comments as 'cool' or 'beautiful', the feedback on ItsNOON are constructive, sincere and valid*". All the respondents seem to be satisfied with the process and value of the feedback they receive in ItsNOON virtual space (although the same does not occur regarding the financial rewarding system). Again comes

the question of low self-esteem and inferiority complex of low-income individuals, discussed before.

Drawin's users also agree about the importance of feedback as a stimulus for sharing, "*I want to receive feedback to be better*", "*I like to show what is my expertise, but at the same time, I want to learn what I don't know*". However, they appear to have contradictory opinions about the personal gains of this process in Drawin network. Some users affirmed that the feedbacks are useful and constructive, comes from people that understand about what they are saying, and helps them to learn with their mistakes.

On the other hand, two of them criticized the approach other members give to the feedback process in Drawin: "*they are usually close friends that know each other a lot what makes it difficult to give proper feedbacks, or to really criticize it*"; "*if you start to criticize, giving technical advices or pointing mistakes, for instance you're not well seen in the network*". Interesting to mention is the fact that these users were the only ones to use "they" instead of "we", and are the same ones that didn't share the sense of community discussed before.

Our empirical evidences are not clear regarding **financial rewards** as a promising motivator of knowledge sharing. According to Brazilians creators, the financial reward is not the primary factor to share their works, but "*it is a strong motivator*". Many users mentioned that they do not share with the expectation to win, but "*everybody needs money, it always helps*".

The financial reward appears to have two distinctive meanings for ItsNOON associates. The money can be seen as a symbol of "recognition", but is also an "opportunity to begin". According to ItsNOON management, the financial reward is a "*chance they have to invest in themselves to increase their performance in the network*". Users usually buy photo cameras, image software or even computer hardware.

Some practical evidences support the relative importance of this financial reward mechanism for ItsNOON. First, the organizers performed few non-financial rewarded creative calls and the number of posts were usually lower in these cases. Second, ItsNOON number of users and number of posts' growth rates in the Netherlands, a developed economy and a high threshold for escaping poverty, are much lower than in Brazil and South Africa, what could be related to lower impact of the modest payments for winning creative submissions in higher-income networks. However, deeper research should be done about this issue, once many other

variables may influence the development of ItsNOON in different countries, such as leadership and staff, for example.

Drawin does not have personal rewards mechanisms such as ItsNOON, but the website has a sales tool and, in theory, there is the possibility to earn money inside the community. Nevertheless, according to Drawin's' followers, the website offers the sales tool, but it "*does not seem to work in reality yet*". For the non-professional ones, it has no importance at all. Among the professional ones, none had used it before and in general, they see it as a future opportunity, although many critics were cited. The common explanation for this disappointment is a simple problem of offer and demand: artists that are sellers, not buyers, constitute this virtual community – the network lacks buyers to work as brokers.

The French users, agreeing with the Brazilian's opinion, stressed the economic reasons as being secondary "*it's not the reason I'm here, but of course it could also serve as a sales channel*", and it was marked that even though they are not selling through Drawin's platform, it helps them in terms of reaching potential customers - "*it plays a role indirectly*", "*the other artists can promote it to their clients*", "*you can be found by someone that can help to promote your creations, maybe facilitate to get in contact with galleries*".

The main findings regarding the qualitative research and the motivations for knowledge sharing are summarized in the Figure 4-2.

Dimension	Empirical Evidence

Collective-related dimensions

Structural capital Cohesion Centrality	• Strong social ties • Emotional intensity • Feeling "part of it"
Cognitive capital Technical expertise Expertise on the subject	• Shared language and digital access as pre-requisits • Controversial results on expertise
Relational capital Shared vision Commitment Trust Norm of reciprocity	• Common vision, values or expectations • Feeling of a connected entity or purpose • "We" intentions • Collective conscience • Perception of "sum"

Self-related dimensions

Personal motivations Reputation Self-expression Friendship Feedback	• Personal meaning attributions to collective • Feeling of comfort and to be "heard" • Importance of being recognized • Self-esteem enhancement
Rewards Monetary rewards	• Not clear results: could have indirect influences

Figure 4-2: Empirical evidences regarding the five dimensions of knowledge sharing
Source: Elaborated by the author.

4.3   Results of the Quantitative Research

The results of the qualitative phase were aligned with the theoretical review and provided interesting insights for the study of knowledge sharing in virtual communities. They supported our research questions offering some evidences that this process can be explained by a complex combination of social and self-oriented motivations, and monetary reasons appeared to play a secondary role. Besides that, no considerable differences were revealed between the two different contexts.

Nevertheless, the exploratory research is not sufficient to make substantial conclusions regarding the proposed structure of motivations into the five dimensions and the significance of their relations with knowledge sharing. In order to achieve this goal, the second phase was designed to test the main factors investigated during the previous phase.

The next sections are structured with the objective to present the formulation of a measurement model through factorial analysis and the results of the regression analysis.

4.3.1   Measures

Based on the theoretical review and the qualitative research results, thirteen central factors explaining knowledge sharing were selected to compose the survey (centrality, cohesion, technical expertise, expertise on the subject, shared vision, commitment, trust, norm of reciprocity, reputation, self-expression, friendship, feedback, and monetary rewards). For which factor, three questions were selected from previously published studies in order to formulate the survey measures.

The questionnaires consisted in four parts: 14 questions regarding the motivations the users had at the moment they joined the social network, 39 questions concerning their currently relation with the network and the other members (measuring the 13 factors selected to compose the independent variables), 6 general questions (measuring the number of months enrolled in the network, number of friends, and four others selected to compose the dependent variable), and personal information (gender, city of residence, age, profession, educational level, and monthly income.

All the questions were translated to French and Brazilian Portuguese and revised by native speakers. The questionnaires had the same structure, sequence and questions, and are presented in the APPENDIXES 3 and 4. For the measurement of the 13 factors chosen, survey respondents were asked to indicate their answers in a scale from 1 (strongly disagree) to 7 (strongly agree) in each of the statements.

Structural capital dimension was measured assessing cohesion and centrality. Another way of measuring centrality is by assessing the number of social ties an individual has within the networks members, for what the number of friends was also considered. The scales measuring **cognitive capital** tried to asses both technical expertise (in terms of specific, artistic and informatics competences) and expertise on the subject. According to the literature, the time engaged in the social network could also be an important measure. For the **relational capital** dimension the questions cover shared vision, commitment, trust, and norm of reciprocity. **Self-related dimensions** were represented by reputation, self-expression, friendship, and feedback.

Table 4.1 presents examples of measures from which the questions of the surveys were based.

Table 4.1: Measures of motivational factors for knowledge sharing in virtual social networks

Dimension	Factor	Adapted from:	Example of measures
Structural Capital	*Cohesion*	Bagozzi & Dholakia, 2002; Chiu et al, 2006; Grootaert et al 2004; Nahapiet and Ghoshal,1998	*I maintain close social relationships with some members in the community…* *I have some members in the community on a personal level…* *I feel a sense of belonging towards the virtual community…* *I have the feeling of togetherness or closeness in the community…* *I am an important and valuable member of the community…* *I am a valuable member of the group…*
	Centrality	Ahuja et al, 2003; Bagozzi, Dholakia & Pearo, 2004; Chiu et al, 2006; Wasko & Faraj, 2005	*I have a number of friends or followers superior than the average…* *I spend a lot of time interacting with some members…* *I have frequent communication with some members in the community…* Number of social ties in the network (friends, followers, etc.) Frequency of interaction and extension of it (different people)
Cognitive Capital	**Expertise**	Bagozzi, Dholakia & Pearo, 2004; Wasko & Faraj, 2005	*I considered I have enough competences to contribute positively...* *I considered I have enough technical skills to contribute positively...* *I contribute more when I know about the subject…* Number of months engaged in the social network
Relational Capital	**Shared vision**	Chiu et al 2006; Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998	*Members in the community share the same vision of…* *Members in the community share the same goal of learning from each other…* *Members in the community share the same values of…*
	Commitment	Bagozzi et al, 2004; Bock & Kim, 2002; Chiu et al, 2006; Kolekofski & Heminger, 2003; Wasko & Faraj, 2005	*I feel responsible to help other members of the community…* *I feel great deal of loyalty to the community…* *I would feel a loss if the community were no longer available…* *I really care about the fate of the community…* *Sharing my knowledge will be helpful to the successful functioning of the community…* *Sharing my knowledge would help the community to continue its operation in the future…* *Sharing my knowledge would help the community to grow and accumulate knowledge…*
	Trust	Chiu et al, 2006; McKnight et al, 2002; Ridings et al, 2002; Tsai & Ghoshal, 1998	*Members will not take advantage of others even if the opportunity arises…* *Members of the community will keep promises they make to one another…* *Members of the community are truthful in dealing with one another…* *Members of the community behave in a consistent manner...*
	Norm of reciprocity	Chiu et al, 2006; Wasko and Faraj, 2005	*I trust that someone would help me if I were in a similar situation…* *I know that other members will help me, so it's fair to help others…* *Sharing my knowledge will enable me to gain better cooperation from the outstanding members…*
Personal Motivations	**Reputation / Status**	Chiu et al. 2006; Constant, Sproull & Kiesler, 1996; Wasko & Faraj, 2005	*I earn respect from others by participating…* *I participate in the community to improve my reputation…* *Sharing content can build up my image…* *I feel that participation improves my status…* *I would participate more if I had the opportunity to be in a differentiated position the network…* *I like the idea of hierarchy recognition in the network…*
	Self-Expression	Chiu et al. 2006; Clary et al, 1998	*The community gives me the opportunity to express myself to others...* *Showing my knowledge to other members gives me a feeling of happiness...* *Having a space to show my creations and share my opinion is important for me…*
	Friendship	Bock and Kim, 2002; Chiu et al, 2006; Hendriks, 1999	*Sharing my knowledge will help me to make friends with other members in the community…* *When I participate in the community I can know new people and make friends…* *Sharing my knowledge will strengthen the tie between other members and me…*
	Feedback	Hiltz et al, 1999	*Receiving feedback from the other members increases my confidence in expressing ideas…* *Others' point of view stimulates me to do a better work…* *The community gives me the opportunity to improve my knowledge through the interaction from other members…*
Monetary reasons	**Money-related measures**	Constant, Sproull & Kiesler, 1996	*The opportunity to earn money in this community is important for me…* *I would participate more if I had the opportunity to earn more money…* *I would participate less if the monetary rewards were lower…*

Source: elaborated by the author.

The dependent variable in this study is the willingness to share knowledge. Aligned with the majority of the authors that measured knowledge sharing, the decision for this study was to

examine only the volume of contribution, ignoring its quality or helpfulness. The reasons are mainly the complexity and subjectivity of assessing the quality of the content shared.

The assessment of the volume of contribution was based on Bagozzi et al. (2004), Constant et al. (1996), Chiu et al. (2006), Tsai & Ghoshal (1998), and Wasko & Faraj (2005). In order to achieve a reliable measure of the volume of contribution, the amount of posts started by the member (understood as all the creations in the form of picture, movie, poem, song, etc. for ItsNOON or picture, photography, sculpture, etc. for Drawin) and the volume of commentaries shared were considered. Few previous researches adopted different approaches regarding the composition of the dependent variable (using only posts, commentaries or a mix of them) and concerning the measuring the volume of contribution (assessing it directly from the virtual platforms or asking it).

The number of posts was measured by asking directly the interviewees once this information is available in individual's profiles in both virtual networks. To measure the amount of commentaries, the number of hours the member declared to spend interacting constructively with the others in the network (giving feedbacks, opinions, etc.) were considered.

4.3.2   Descriptive analysis

4.3.2.1 Respondents profile

The total of female respondents was 52 percent considering all the answers, although the virtual networks presented a significant different gender profile: 62% of the respondents of Drawin were women while only 42% of ItsNOON.

Drawin and ItsNOON users presented a similar young age profile, being 66% of the first one and 85% of the second one users between 18 to 35 years-old, while only 21% of the total respondents were over 36 years-old.

Table 4.2: Age profile of respondents

Age (years-old)	Respondents		
	All	Drawin	ItsNOON
Less than 18	4%	6%	2%
18 to 25	47%	**45%**	**50%**
26 to 35	28%	**21%**	**35%**
36 to 45	13%	16%	9%
More than 46	8%	12%	3%

Source: Elaborated by the author.

Both virtual networks can be considered essentially national since only 2% of the respondent users live outside the networks' country. Regarding their occupations, the presence of students is substantially high in both situations, helping to explain the age profile: 35% of Drawin's users and 22% of ItsNOON users.

Among the non-students, it is interesting to highlight the number of users which jobs are related to arts (considering artists, photographers, painters, designers, arts or music professors, compositors and musicians, restaurateurs, moviemakers, illustrators, and cartoonists), which is the main purpose of both social networks. For ItsNOON, 61% of non-students members have occupations related to arts, and 43% for Drawin.

Regarding their educational profile, considering the non-students, 55% of ItsNOON members declared to have completed Superior Education (from bachelor's degree), against 41% of Drawin members.

Declared income was measured in local currencies according to minimum salaries range. The intention of this measurement was to test if this variable could impact on the knowledge sharing behavior, especially when monetary reasons were considered. Important to emphasize that the effects of income level is not the focus of this study and important factors such as the purchase power parity are not being considered.

Although not the focus of the study, it is possible to underline that ItsNOON presents a more diversified profile of users in terms of economic situation if compared to Drawin. In contrast to ItsNOON founder's initial intention of developing a social network for lower income population, comparing the income profile of ItsNOON to the average of Brazilian population, the

social network users have an outlined better economic situation. Users are mainly concentrated in the social classes B and C, and 16% can be considered as middle-high classes.

Table 4.3: Income distribution of respondents

Salary Range	
ItsNOON	%
Until 680 reais	5%
From 681 to 1.360 reais	19%
From 1.361 to 2.139 reais	22%
From 2.140 to 3.400 reais	18%
From 3.401 to 6.796 reais	20%
More than 6.797 reais	16%
%	Drawin
Until 1.425 euros	31%
From 1.426 to 2.850 euros	43%
From 2.851 to 4.275 euros	17%
From 4.276 to 7.125 euros	6%
From 7.126 to 14.250 euros	3%
Over 14.250 euros	0%

Source: Elaborated by the author.

4.3.2.2 Reasons to join the social virtual networks

The reasons to join the social networks were also addressed during the quantitative phase in order to validate the findings of the qualitative phase and the theoretical review. The questions to assess the main motivations at the time users decided to join these communities were also measured on a scale from 1 (not important at all) to 7 (extremely important) and adapted from motivations tested by Dholakia et al (2004) and the "measures of community benefit expectations" examined by Butler et al (2002).

Aligned with the qualitative research results when users declared they joined these networks because they wanted to have the opportunity to share their creations and express their ideas and feelings, in both networks the main reason to join was declared to be "to express my ideas, feelings, etc." with average of 6.0 for Drawin and 6.1 for ItsNOON.

Another mentioned reason during the first phase was the opportunity to give and receive feedbacks, that was among the five most important factors for joining in both cases, average scored in 4,4 for Drawin and 4,6 for ItsNOON, without significant differences between the countries.

For the French users, the other three main motivations were: to pass the time (4,9), to get in touch with different people (4,8), and to provide others with knowledge (4,6). For ItsNOON users, the following main reasons were: professional purposes (5,2), to provide others with knowledge (4,8), and to learn and get knowledge (4,6).

The results from the different countries suggested that the motivations to join virtual social networks are also both self-oriented and collective-related. In general, the results indicated similarity in terms of the reasons to join both virtual spaces, which may indicate that cultural and contextual differences are also less relevant for this issue, although further research would be indicated, once this was not the focus of this study.

The most important differences appeared in the professional purposes (5,2 for ItsNOON users and 2,6 for Drawin's), even though Drawin was mentioned as a space for artists to share their portfolios; and the reason of earning money (4,2 for Brazilians and 2,2 for French). This might be explained by the different value propositions of the networks, since Drawin's platform for selling/buying creations are still not working properly while ItsNOON's payments are a fact. Moreover the difference of the average income of the countries might be an explanation for these results.

Other minor differences that also might be explained by the business models defined by the organizations were "learn and get knowledge", which appeared to be more important for ItsNOON and entertainment reasons, which seemed higher for Drawin members.

Figure 4-3 summarized the average results of the measured reasons to join the virtual communities and Table 4.4 presents the results of Paired Samples Statistics Tests, showing the factors with significant differences between the networks.

Figure 4-3: Average results of measured reasons for joining the virtual social networks
Source: Elaborated by the author.

Table 4.4: Results of measured reasons for joining the virtual social networks

Paired Samples Statistics Test	Drawin		ItsNOON		Tests	
	Mean	SD	Mean	SD	t	Sig.
Purposive value						
Learn and get knowledge	3,8	2,0	4,6	1,8	-3,0	0,004*
To provide others with knowledge	4,6	1,7	4,8	1,6	-0,8	0,414
To get someone to do something for me	2,8	2,0	2,4	1,8	1,9	0,056
To receive feedback	4,4	2,1	4,6	2,0	-1,0	0,330
To earn Money	2,2	2,0	4,2	2,3	-6,9	0,000*
For professional purposes	2,6	2,2	5,2	2,0	-9,0	0,000*
Self-discovery value						
To learn about myself and others	4,1	1,8	4,5	1,9	-1,5	0,144
Interpersonal interconnectivity						
To make friends	3,9	2,0	4,0	2,0	-0,4	0,693
To get in touch with people like me	4,3	2,1	4,5	2,0	-0,7	0,493
To get in touch with different people	4,8	2,0	4,3	2,0	1,8	0,071
Social enhancement value						
To express my ideas, feelings, etc.	6,0	1,4	6,1	1,6	-0,2	0,880
To feel important	2,7	1,8	3,2	2,0	-1,8	0,069
Entertainment value						
To relax	4,0	2,0	3,6	2,0	1,9	0,067
To pass the time	4,9	1,9	3,9	2,2	3,3	0,001*

* p-value $< 0,05$.

Source: Elaborated by the author.

4.3.2.3 Descriptive analysis of the model variables

Before presenting the factorial analysis and the proposed model for measuring shared knowledge according to the 5 dimensions discussed before, a descriptive analysis of the variables was conducted grouping the 39 questions into the 13 factors according to the theoretical reference. This possibility of grouping the variables into 13 factors was also tested through a factorial analysis, and with reasonable results that are presented in the APPENDIXES 5 and 6.

Important to emphasize here that differently from the motivations for joining, these questions were actually 39 statements about members' relation with the networks and other members, and they were not related to the volume of contributions, measured separately.

The highest scores in both virtual networks were self-expression, feedback and expertise on the subject, presenting results of 5,7, 5,7 and 5,1 for ItsNOON and 5,6, 5,5 and 4,9 for Drawin. Significant differences were identified in terms of technical expertise (5,1 for ItsNOON and 4,1 for Drawin), reputation (4,7 for ItsNOON and 3,7 for Drawin) and Monetary reasons (4,7 for ItsNOON and 2,5 for Drawin).

Figure 4-4 summarized the average results of the measured 13 factors and Table 4.5 presents the results of Paired Samples Statistics Tests, showing the factors with significant differences between the networks.
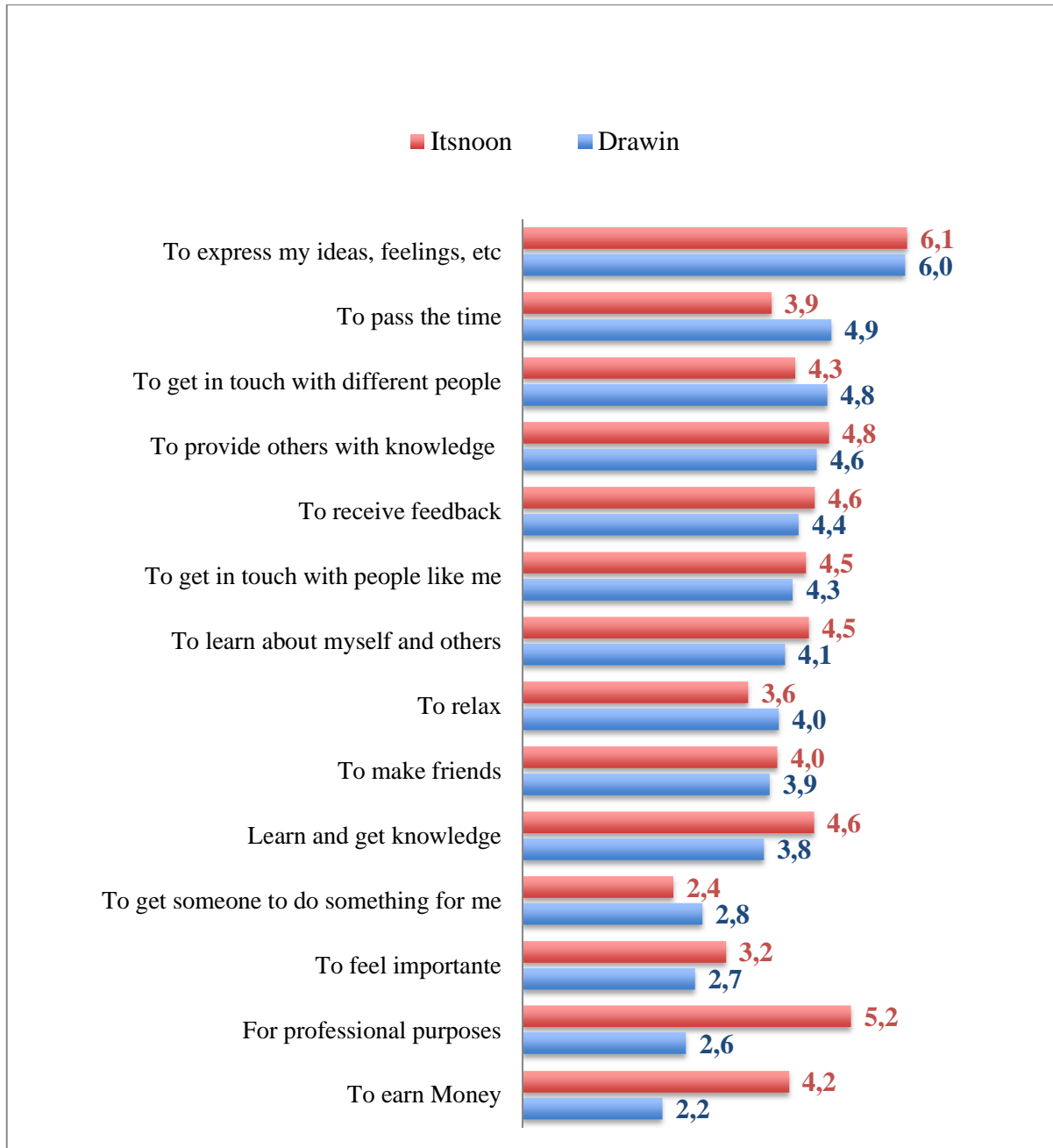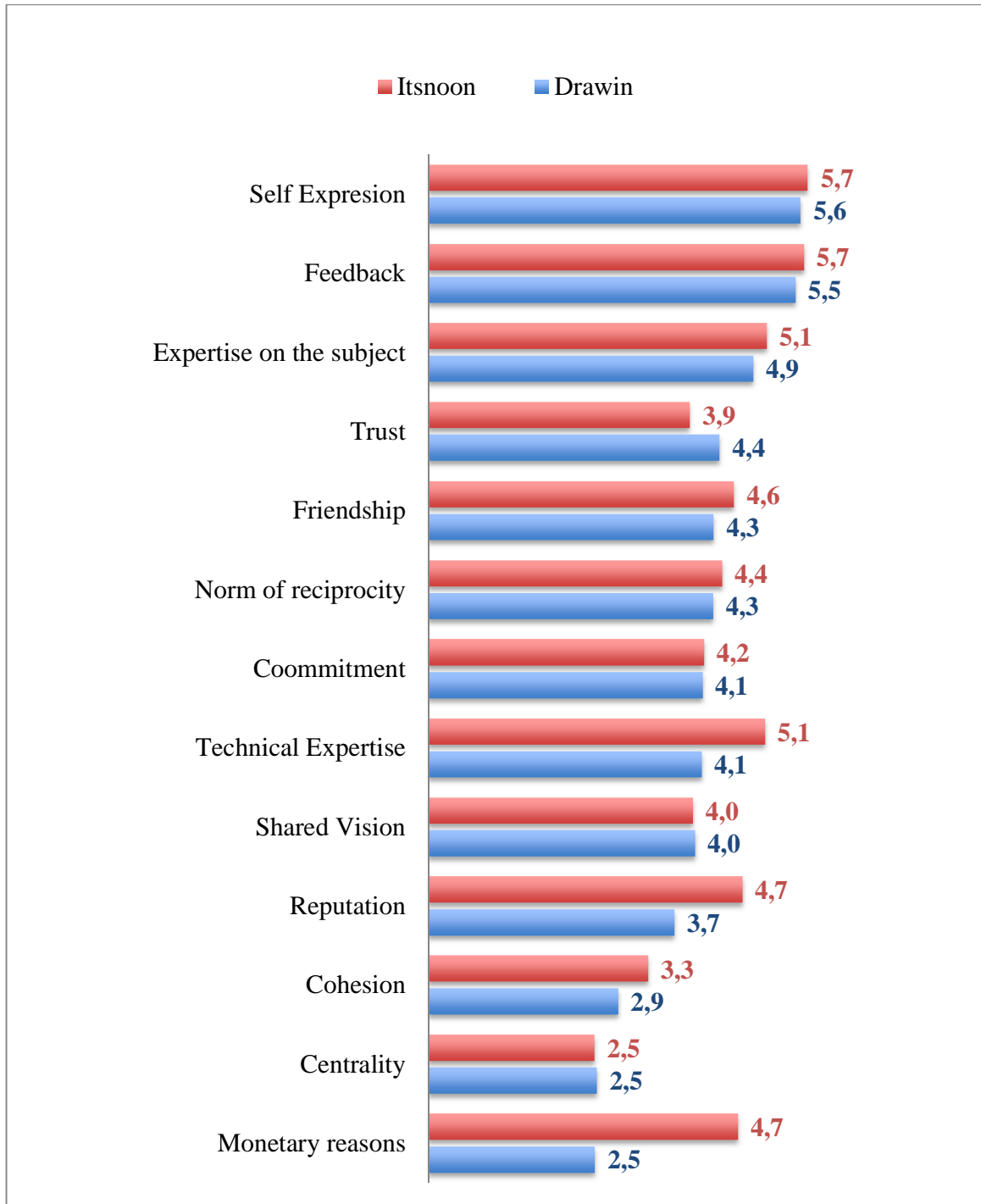
Figure 4-4: Average results of measured 13 factors for both virtual networks
Source: Elaborated by the author.

Table 4.5: Average results of the measured factors explaining knowledge sharing in virtual social networks and the possible dependent variables

	TOTAL		DRAWIN		ITSNOON		TESTS DRAWIN x ITSNOON	
	AVG	SD	AVG	SD	AVG	SD	t	Sig.
Independent Variables								
Cohesion	3,1	1,6	2,9	1,6	3,3	1,7	-2,2	0,0300
Centrality	2,5	1,4	2,5	1,4	2,5	1,4	0,1	0,9160
Shared Vision	4,0	1,2	4,0	1,2	4,0	1,2	0,2	0,8250
Technical Expertise	4,8	1,6	4,1	1,3	5,1	1,6	-4,9	0,0000
Expertise on the subject	5,0	1,4	4,9	1,3	5,1	1,5	-2,0	0,0460
Coommitment	4,2	1,6	4,1	1,5	4,2	1,6	-0,8	0,4010
Trust	4,2	1,3	4,4	1,4	3,9	1,2	1,5	0,1510
Norm of reciprocity	4,3	1,4	4,3	1,4	4,4	1,3	-0,4	0,6890
Reputation	4,2	1,6	3,7	1,6	4,7	1,5	-4,2	0,0000
Self Expresion	5,6	1,3	5,6	1,2	5,7	1,4	-1,1	0,2670
Friendship	4,5	1,6	4,3	1,6	4,6	1,7	-1,4	0,1670
Feedback	5,6	1,2	5,5	1,2	5,7	1,3	-0,7	0,5070
Monetary reasons	3,6	1,9	2,5	1,6	4,7	1,6	-8,5	0,0000
Number of friends	43,6	73,9	50,5	78,3	36,3	68,7	1,328	0,1880
Time in months	13,6	11,4	18,0	10,6	8,8	10,2	5,851	0,0000
Dependent Variables								
Average posts / person / year	41,3	49,6	47,4	51,8	34,7	46,6	1,522	0,1320
Average time spent in comments / person / year	194,9	361,8	228,1	436,7	159,4	257,0	1,192	0,2370

Source: Elaborated by the author.

Table 4.5 also shows that the average time in months that users are enrolled in ItsNOON (8,8 months) is significantly different than Drawin's members (18,0 months). The average number of friends (considering also followers) was 51 for Drawin and 36 for ItsNOON individuals.

Regarding the amount of posts started by the member (understood as all the creations in the form of picture, movie, poem, song, etc. for ItsNOON or picture, photography, sculpture, etc. for Drawin), there was no significant difference although they should not be comparable in reality, once they are represented by distinct types of contents.

Finally, the average time (annualized) spent per each individual commenting and interacting constructively with other members within the network was 228h for Drawin and 159h for ItsNOON members.

Figures 4-5 and 4-6 present the dispersion graphics of each dimension, number of friends, and time enrolled (*X* axis) and the possible dependent variables annual number of posts, comments and the combined variable for Drawin and ItsNOON respectively. In most of the cases, the dependent variable shows to increase with higher values in the X axis, except in the case of monetary rewards and time enrolled.
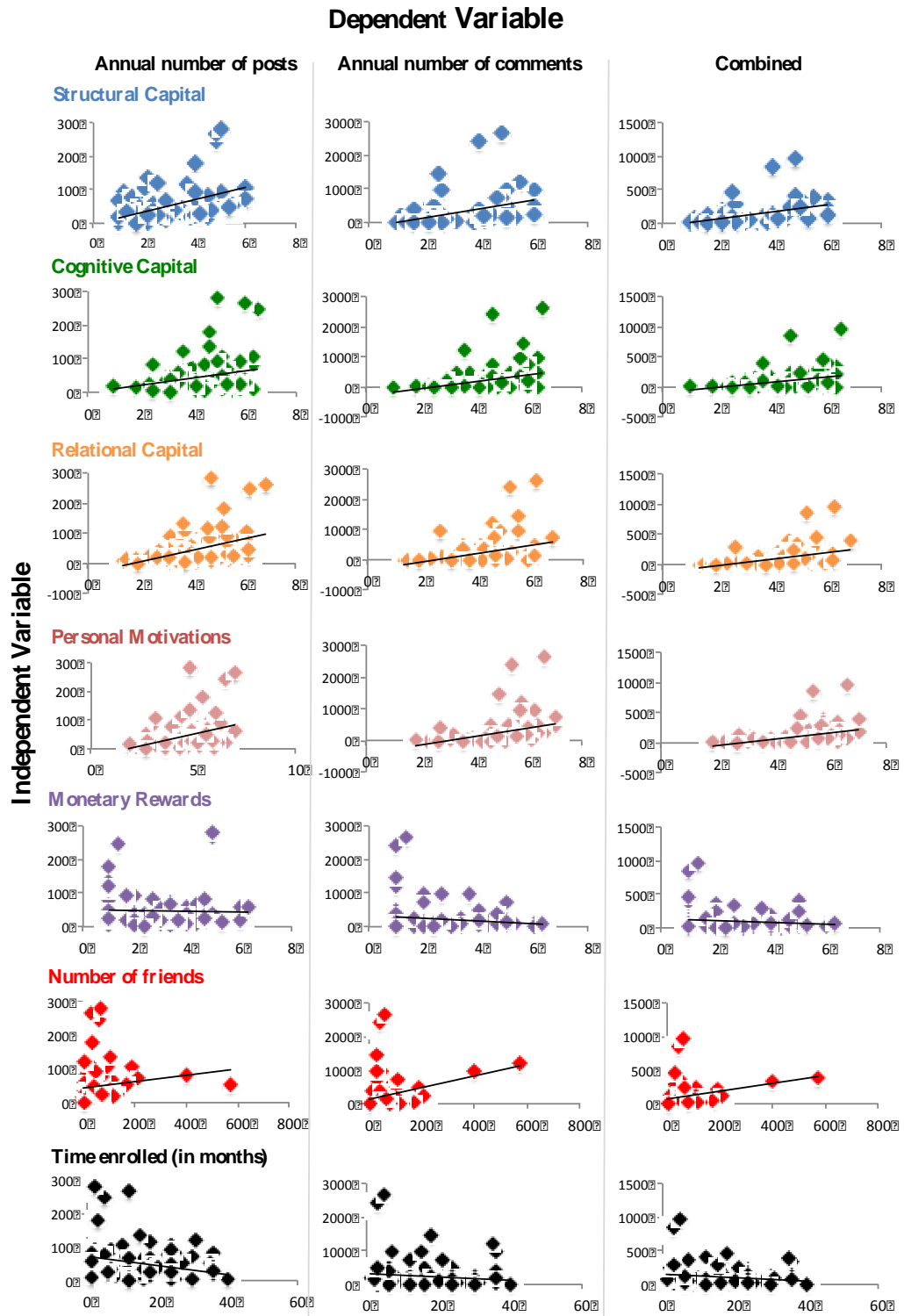
Figure 4-5: Drawin - Dispersion graphics of the variables measured
Source: Elaborated by the author.
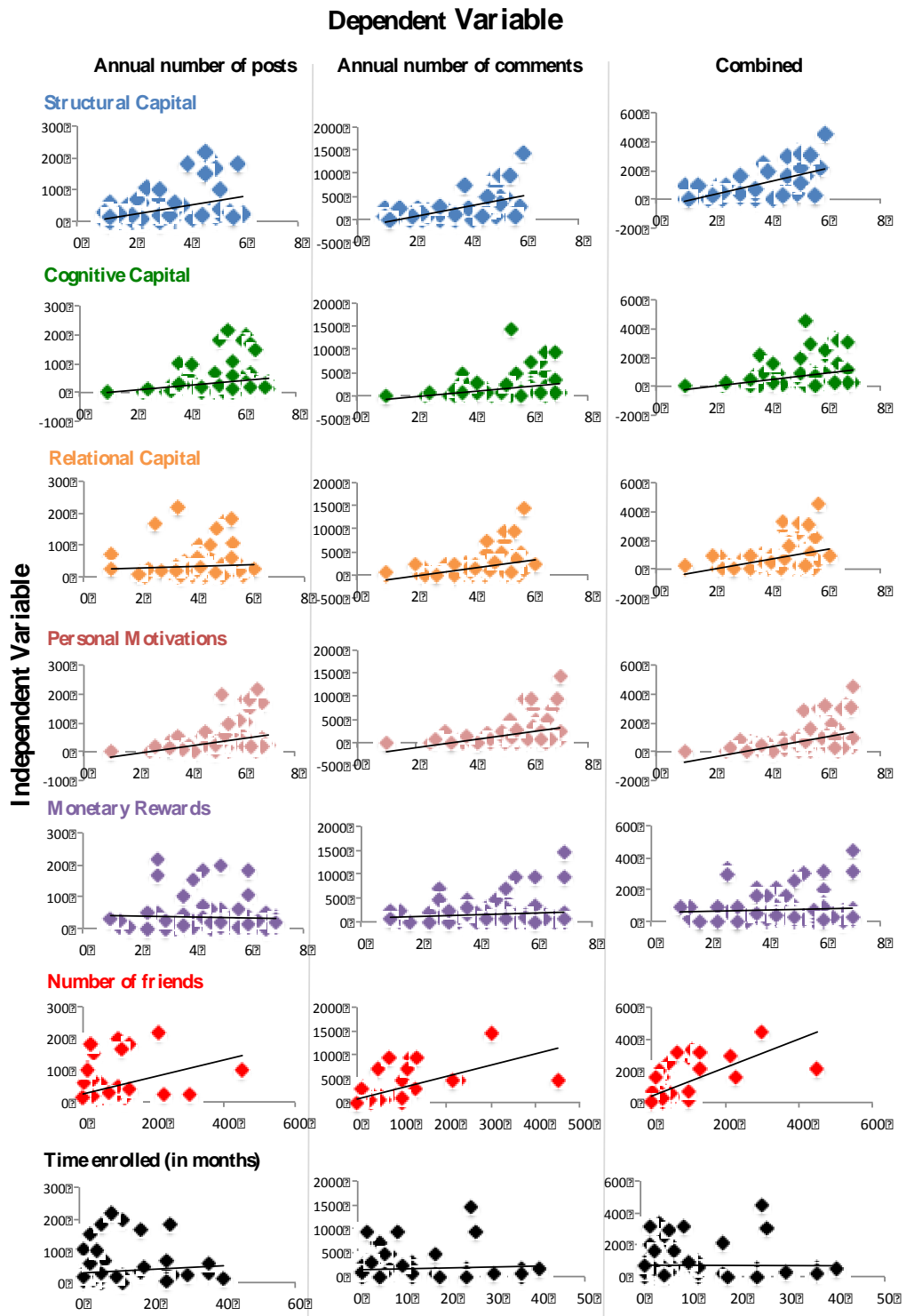
Figure 4-6: ItsNOON - Dispersion graphics of the variables measured

Source: Elaborated by the author.

4.3.3   The measurement model

In order to assess the validity of the constructs, the 39 questions regarding the motivations for knowledge sharing were submitted to a reliability analysis presenting satisfactory results for the whole data and for the networks separated. All the Cronbach's Alfa for each dimension were over 0,85 in both cases.

After the reliability tests, data were submitted to a Factor Analysis, in order to reduce the 39 questions into the 13 constructs or 5 dimensions discussed theoretically and tested during the qualitative phase. The results of Kaiser-Meyer-Olkin measure of sampling adequacy were significant in both cases, with results of 0,818 for Drawin and 0,859 for ItsNOON, as well as the Barttlet's Test of Sphericity (<0,001).

A Principal Component analysis with varimax rotation was conducted to reduce the questions into 13 (the individual constructs) and 5 components (the dimensions Structural, Cognitive, and Relational Capital, Personal Motivations and Monetary Reasons). In both cases the results were according to the expected theoretical aggrupation.

Since the results of the Factorial Analysis with 5 components showed better results in terms of theoretical congruence and the cumulative percentage of the total variance accounted for the 5 components were over 60%, this aggrupation was chosen to formulate the measurement model used to test knowledge sharing motivations.

The detailed results for the Principal Component analysis with varimax rotation in the case of the 5 dimensions are detailed in the sequence (for the same analysis in the case of 13 constructs, see APPENDIXES 5 and 6). Table 4.6 presents the percentages of the total variance explained by each component and the cumulative percentages of the 5 dimensions.

Table 4.6: Total Variance Explained

Component	Total Variance Explained					
	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Drawin	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Structural Capital	13,262	34,006	34,006	6,440	16,512	16,512
Relative Capital	3,267	8,376	42,383	6,101	15,644	32,156
Personal Motivations	2,880	7,384	49,767	5,090	13,050	45,206
Monetary Reasons	2,302	5,903	55,670	3,131	8,027	53,233
Cognitive Capital	1,732	4,441	60,111	2,683	6,879	60,111
Itsnoon						
Personal Motivations	14,867	38,120	38,120	8,233	21,110	21,110
Relative Capital	3,206	8,220	46,340	5,250	13,462	34,572
Structural Capital	2,600	6,667	53,006	4,801	12,310	46,882
Cognitive Capital	2,016	5,169	58,176	3,400	8,718	55,601
Monetary Reasons	1,734	4,446	62,622	2,738	7,021	62,622

Source: Elaborated by the author, based on the results of SPSS Factor Analysis.

Tables 4.7 and 4.8 show the results of the Principal Component analysis with varimax rotation for Drawin and ItsNOON respectively converting the 39 questions into the five theoretical dimensions of shared knowledge.

Table 4.7: Drawin Factor analysis and the five theoretical dimensions of shared knowledge - Rotated Component Matrix

Drawin - Factor analysis and the five theoretical dimensions of shared knowledge Rotated Component Matrix						
		Component				
Questions	Factor	Structural Capital	Cognitive Capital	Relative Capital	Personal motivations	Monetary Rewards
I have some members of the community on a personal level	Cohesion	0,636				
I have the feeling of togetherness or closeness in the community		0,761				
I am a valuable and important member of the community		0,805				
I have frequent communication with other members	Centrality	0,748				
I have a number of friends/followers superior than the average		0,810				
I spend a lot of time interacting with some members		0,857				
I believe to have sufficient competences to contribute	Technical expertise	0,566	0,436			
It is important to have artistical competences to contribute			0,817			
It is important to have informatical competences to contribute			0,660			
I feel motivated because I know the subjects discussed	Expertise on the subject		0,525			
Sometimes some subjects discussed are not interesting for me			0,507			
I participate more when the subject interests me			0,420			
In general, I share the same vision with other members	Shared Vision			0,657		
Other members, like me, have the goal to learn				0,633		
In general, I share the same values with other members				0,645		
I feel responsible to help other members	Commitment	0,646				
I really care about the future of the network		0,53				
Sharing my knowledge would help the community to continue its operation in the future						
Members are truthful in dealing with one another	Trust			0,727		
Members will keep promises they make to one another				0,631		
Members will not take advantage of others even if the opportunity arises				0,703		
I trust that someone would help me if I need	Norm of reciprocity			0,669		
I help the others because I believe they would do the same with me				0,733		
To contribute with others helps me to gain better cooperation from important members of the community				0,542		
When I participate I increase my reputation	Reputation and Status					0,484
I feel that when I participate I increase my status					0,418	0,573
To contribute in the network helps me to build my image						0,511
The network gives me the opportunity to express my self to others	Self-expression				0,614	
Showing my knowledge and creations gives me a feeling of happiness					0,795	
Having a space to show my creations and share my opinion is important for me					0,778	
Sharing my knowledge helps me to make friends	Friendship			0,458	0,414	
Sharing my knowledge strengthens my tie with others					0,579	
When I share my knowledge I meet new people				0,491	0,446	
Others' point of view stimulates me to do a better work	Feedback				0,679	
Receiving feedback from the other members increases my confidence in expressing idea					0,578	
The interaction with other opinions, comments and ideas is extremelly important for me					0,676	
The opportunity to earn money in this community is important for me…	Monetary rewards					0,848
I would participate more if I had the opportunity to earn more money…						0,785
I would participate less if the monetary rewards were lower…						0,774

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 9 iterations.
Excluded items under 0,4

Source: Elaborated by the author, based on the results of SPSS Factor Analysis.

Table 4.8: ItsNOON Factor analysis and the five theoretical dimensions of shared knowledge - Rotated Component Matrix

Itsnoon - Factor analysis and the five theoretical dimensions of shared knowledge Rotated Component Matrix						
		Component				
Questions	Constructs	Structural Capital	Cognitive Capital	Relative Capital	Personal motivations	Monetary Rewards
I have some members of the community on a personal level	Cohesion	0,524				
I have the feeling of togetherness or closeness in the community		0,631				
I am a valuable and important member of the community		0,714				
I have frequent communication with other members	Centrality	0,687				
I have a number of friends/followers superior than the average		0,754				
I spend a lot of time interacting with some members		0,734				
I believe to have sufficient competences to contribute	Technical expertise		0,578			
It is important to have artistical competences to contribute			0,470			
It is important to have informatical competences to contribute						
I feel motivated because I know the subjects discussed	Expertise on the subject		0,660			
Sometimes some subjects discussed are not interesting for me			0,660			
I participate more when the subject interests me			0,780			
In general, I share the same vision with other members	Shared Vision			0,552		
Other members, like me, have the goal to learn				0,526	0,459	
In general, I share the same values with other members				0,711		
I feel responsible to help other members	Commitment			0,523		
I really care about the future of the network				0,485		
Sharing my knowledge would help the community to continue its operation in the future		0,548				
Members are truthful in dealing with one another	Trust			0,760		
Members will keep promises they make to one another				0,666		
arises				0,795		
I trust that someone would help me if I need	Norm of reciprocity			0,497	0,456	
I help the others because I believe they would do the same with me				0,549	0,454	
important members of the community				0,458	0,593	
When I participate I increase my reputation	Reputation and Status				0,690	
I feel that when I participate I increase my status					0,710	
To contribute in the network helps me to build my image					0,715	
The network gives me the opportunity to express my self to others	Self-expression				0,549	
Showing my knowledge and creations gives me a feeling of happiness					0,599	
Having a space to show my creations and share my opinion is important for me					0,690	
Sharing my knowledge helps me to make friends	Friendship				0,777	
Sharing my knowledge strengthens my tie with others					0,789	
When I share my knowledge I meet new people					0,679	
Others' point of view stimulates me to do a better work	Feedback				0,635	
Receiving feedback from the other members increases my confidence in expressing idea					0,773	
The interaction with other opinions, comments and ideas is extremely important for me					0,636	
The opportunity to earn money in this community is important for me…	Monetary rewards					0,653
I would participate more if I had the opportunity to earn more money…						0,814
I would participate less if the monetary rewards were lower…						0,735

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 9 iterations.
Excluded items under 0,45

Source: Elaborated by the author, based on the results of SPSS Factor Analysis.

Finally, table 4.9 shows the communalities of each question, in other words, the proportion of each question's variance that can be explained by the principal components. Almost all the questions presented values over 0,7, meaning they are well represented in the common factor space.

Table 4.9: Communalities

Question	Factor	Communalities			
		Drawin		Itsoon	
		Initial	Extraction	Initial	Extraction
I have some members of the community on a personal level	Cohesion	1	0,692	1	0,704
I have the feeling of togetherness or closeness in the community		1	0,812	1	0,833
I am a valuable and important member of the community		1	0,763	1	0,834
I have frequent communication with other members	Centrality	1	0,686	1	0,656
I have a number of friends/followers superior than the average		1	0,709	1	0,656
I spend a lot of time interacting with some members		1	0,764	1	0,671
I believe to have sufficient competences to contribute	Technical expertise	1	0,647	1	0,683
It is important to have artistical competences to contribute		1	0,807	1	0,650
It is important to have informatical competences to contribute		1	0,737	1	0,744
I feel motivated because I know the subjects discussed	Expertise on the subject	1	0,714	1	0,706
Sometimes some subjects discussed are not interesting for me		1	0,819	1	0,815
I participate more when the subject interests me		1	0,839	1	0,814
In general, I share the same vision with other members	Shared Vision	1	0,738	1	0,743
Other members, like me, have the goal to learn		1	0,575	1	0,570
In general, I share the same values with other members		1	0,668	1	0,747
I feel responsible to help other members	Commitment	1	0,702	1	0,750
I really care about the future of the network		1	0,755	1	0,750
Sharing my knowledge would help the community to continue its operation in the future		1	0,545	1	0,621
Members are truthful in dealing with one another	Trust	1	0,664	1	0,742
Members will keep promises they make to one another		1	0,657	1	0,683
Members will not take advantage of others even if the opportunity arises		1	0,770	1	0,817
I trust that someone would help me if I need	Norm of reciprocity	1	0,699	1	0,662
I help the others because I believe they would do the same with me		1	0,730	1	0,673
To contribute with others helps me to gain better cooperation from important members of the community		1	0,584	1	0,713
When I participate I increase my reputation	Reputation and Status	1	0,758	1	0,756
I feel that when I participate I increase my status		1	0,880	1	0,709
To contribute in the network helps me to build my image		1	0,791	1	0,787
The network gives me the opportunity to express my self to others	Self-expression	1	0,714	1	0,696
Showing my knowledge and creations gives me a feeling of happiness		1	0,813	1	0,730
Having a space to show my creations and share my opinion is important for me		1	0,759	1	0,780
Sharing my knowledge helps me to make friends	Friendship	1	0,775	1	0,844
Sharing my knowledge strengthens my tie with others		1	0,815	1	0,843
When I share my knowledge I meet new people		1	0,732	1	0,779
Others' point of view stimulates me to do a better work	Feedback	1	0,681	1	0,705
Receiving feedback from the other members increases my confidence in expressing idea		1	0,654	1	0,820
The interaction with other opinions, comments and ideas is extremely important for me		1	0,712	1	0,677
The opportunity to earn money in this community is important for me…	Monetary rewards	1	0,903	1	0,588
I would participate more if I had the opportunity to earn more money…		1	0,819	1	0,760
I would participate less if the monetary rewards were lower…		1	0,802	1	0,723

Extraction Method: Principal Component Analysis.

Source: Elaborated by the author, based on the results of SPSS Factor Analysis.

The results of the Factorial Analysis evidenced that the selection of the 39 questions to generate the measures for the proposed five dimensions related to the motivations to share knowledge online was accurate and according to the theoretical discussion.

In the case of Drawin, the questions measuring 'commitment' were excluded from the Relational Capital dimension because they presented low correlations to the whole construct and the first two questions showed higher correlations to Structural Capital (0,6 and 0,5 respectively). The measurement of commitment proved to be very complex and it has been well discussed in the last decades without a convergent agreement among academics (Goffin & Gellatly, 2001; Morrow & McElroy, 1986).

Although not very significant, the first and the third questions measuring 'friendship' also presented correlations with the Relational Capital dimension (0,46 and 0,49) besides Personal Motivations in the case of the French network. 'Reputation' measures indicated correlations to the Monetary Rewards dimension (0,48, 0,57, 0,51).

In the case of ItsNOON, the questions assessing Norm of Reciprocity presented correlations with Relational Capital and Personal Motivations. In this case, the last question measuring 'commitment' was also excluded from the model.

In order to accomplish the objectives of this research, five sub-hypothesis were established in order to test the relationship of each construct with the willingness to share:

H_a: Structural capital reasons will be positively associated with knowledge sharing.

H_b: Cognitive capital reasons will be positively associated with knowledge sharing.

H_c: Relational capital reasons will be positively associated with knowledge sharing.

H_d: Personal motivations will be positively associated with knowledge sharing.

H_e: Monetary rewards will be positively associated with knowledge sharing.

The proposed model explaining the willingness to share knowledge (measured in terms of volume shared) is illustrated bellow in Figure 4-5, establishing the 5 sub-hypothesis presented for each construct, being H_a, H_b, Hc collective-related dimensions while H_d and H_e self-oriented dimensions.
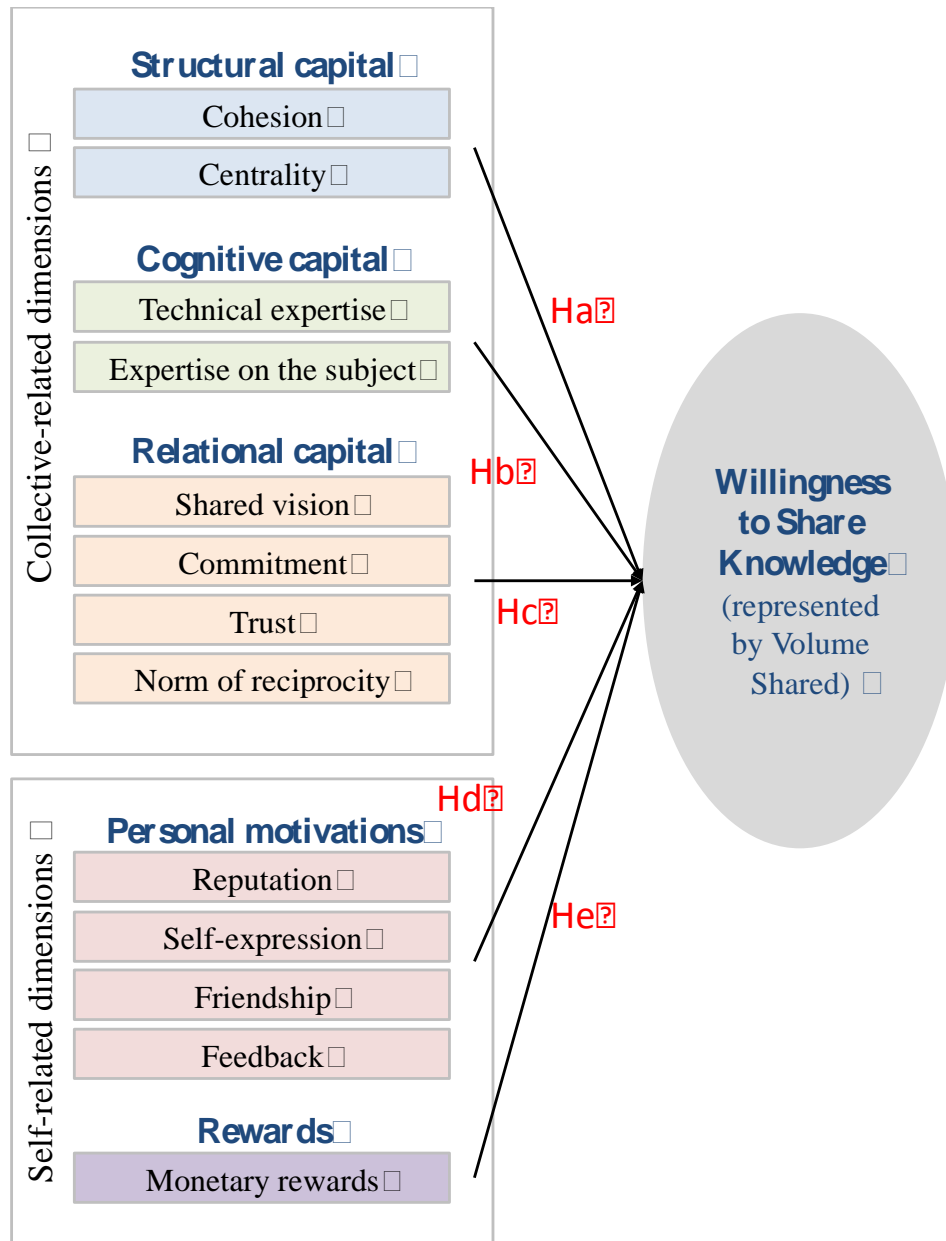

Figure 4-7: Proposed measurement model for knowledge sharing
Source: Elaborated by the author.

4.3.4   Multiple Regression Analysis

The theoretical model and hypothesized relationships were submitted to stepwise Multiple Regression Analyses individually run for each virtual social network, using the scores of the Factorial Analysis as independent variables for each of the five dimensions. The same analysis was conducted for the data from both virtual social networks grouped together but it was decided to present the results of the analyses separately for two reasons: first, conceptually the dependents variables are different (posts from ItsNOON are different in terms of content to posts from Drawin); second, the results of the integrated data (including the consideration of the virtual social network enrolled as a *dummy* variable) did not showed distinctive results.

Besides the five dimensions of motivations, time enrolled (in number of months), number of friends, and personal (demographic) information were also tested as independent variables. In the case of personal information, *dummy* variables were established in order to test the influence of gender, age, income and educational levels, the fact of being a student or not, and a professional related to arts or not.

The dependent variable explaining the volume of knowledge sharing was tested using the amount of posts generated by the individual, and the time spent interacting and commenting with the others. Since few studies can be found measuring knowledge sharing in virtual communities, a mix of both measures were also tested as the dependent variable: the weight of 70% was attributed to the number of posts generated by the individuals in the format of non-texted content (posts), while for the time spent interacting in the form of comments about the creations the weight of 30% was given.

The intention was not to give more importance to the post, but to establish a variable that could combine the "creation of rich content" (in terms of non-texted based and for what the user need to put some effort) with the process of co-creation (the comments around it), that is also considered extremely important.

Results

The explanatory power of the proposed models was evaluated by looking at the adjusted R^2 value in the final dependent construct. These results were also considered optimistic if compared to the previous studies analyzed (with adjusted R^2 between 17% to 26%). Because the knowledge contribution was measured in three ways, we present three sets of results, one for each dependent variable in Table 4.10.

Table 4.10: Model Summary

Model Summary			
Drawin	Y POSTS	Y COMMENTS	YCOMBINED
R	61,9%	51,1%	58,4%
R Square	38,3%	26,1%	34,1%
Adjusted R Square	**35,6%**	**23,7%**	**31,2%**
Std. Error of the Estimate	41,5	381,6	126,7
ItsNOON			
R	53,9%	73,9%	78,1%
R Square	29,1%	54,6%	61,1%
Adjusted R Square	**26,6%**	**52,9%**	**59,6%**
Std. Error of the Estimate	40,0	176,3	59,5

Source: Elaborated by the author, based on the results of SPSS Regression Analyses.

For all the six different Multiple Regression Analyses the results of the Analysis of Variance were significant with p-values under 0,0001, presented in table 4.11. The coefficients and the t-tests are presented in the sequence, in Table 4.12.

Table 4.11: ANOVA

ANOVA						
Drawin						
Model		Sum of Squares	df	Mean Square	F	Sig.
Y POSTS	Regression	95454	4	23863	13,83	0,0000
	Residual	153584	89	1726		
	Total	249037	93			
Y COMMENTS	Regression	4588033	3	1529344	10,50	0,0000
	Residual	12957646	89	145592		
	Total	17545678	92			
YCOMBINED	Regression	732757	4	183189	11,41	0,0000
	Residual	1413204	88	16059		
	Total	2145961	92			
ItsNOON						
Model		Sum of Squares	df	Mean Square	F	Sig.
Y POSTS	Regression	55028	3	18343	11,49	0,0000
	Residual	134156	84	1597		
	Total	189185	87			
Y COMMENTS	Regression	3099521	3	1033174	33,24	0,0000
	Residual	2579812	83	31082		
	Total	5679334	86			
YCOMBINED	Regression	469413	4	117353	34,53	0,0000
	Residual	275250	81	3398		
	Total	744663	85			

Source: Elaborated by the author, based on the results of SPSS Regression Analyses.

Table 4.12: Coefficients

Coefficients								
Drawin		Unstandardized Coefficients		Standardized Coefficients		Sig.	95.0% Confidence Interval for B	
Model		B	Std. Error	Beta	t		Lower Bound	Upper Bound
Y POSTS	(Constant)	76,8	8,5		9,02	0,0000	60	94
	STRUCTURAL_CAP	22,7	4,3	0,437	5,22	0,0000	14	31
	TIME_MONTHS	-1,6	0,4	-0,327	-3,91	0,0000	-2	-1
	RELATIONAL_CAP	14,6	4,2	0,290	3,48	0,0010	6	23
	PERSONAL_CAP	9,4	4,4	0,176	2,11	0,0380	1	18
Y COMMENTS	(Constant)	159,5	49,1		3,25	0,0020	62	257
	STRUCTURAL_CAP	154,3	39,7	0,355	3,89	0,0000	75	233
	RELATIONAL_CAP	106,7	39,0	0,251	2,74	0,0080	29	184
	STUDENT_DUMMY	209,0	83,9	0,229	2,49	0,0150	42	376
YCOMBINED	(Constant)	138,9	27,4		5,07	0,0000	84	193
	STRUCTURAL_CAP	64,5	13,2	0,424	4,87	0,0000	38	91
	RELATIONAL_CAP	42,6	13,0	0,286	3,29	0,0010	17	68
	TIME_MONTHS	-3,1	1,2	-0,218	-2,51	0,0140	-6	-1
	STUDENT_DUMMY	60,0	27,9	0,188	2,15	0,0340	5	115
ItsNOON		Unstandardized Coefficients		Standardized Coefficients		Sig.	95.0% Confidence Interval for B	
Model		B	Std. Error	Beta	t		Lower Bound	Upper Bound
Y POSTS	(Constant)	39,2	6,0		6,51	0,0000	27	51
	NUMB_FRIENDS	0,2	0,1	0,353	3,30	0,0010	0	0
	TIME_MONTHS	-1,5	0,4	-0,325	-3,46	0,0010	-2	-1
	STRUCTURAL_CAP	10,6	4,9	0,228	2,16	0,0340	1	20
Y COMMENTS	(Constant)	105,8	22,3		4,74	0,0000	61	150
	NUMB_FRIENDS	1,5	0,3	0,401	4,57	0,0000	1	2
	STRUCTURAL_CAP	100,0	21,8	0,393	4,58	0,0000	57	143
	PERSONAL_CAP	50,5	18,2	0,212	2,77	0,0070	14	87
YCOMBINED	(Constant)	62,1	8,9		6,99	0,0000	44	80
	NUMB_FRIENDS	0,6	0,1	0,447	5,47	0,0000	0	1
	STRUCTURAL_CAP	38,7	7,3	0,414	5,31	0,0000	24	53
	PERSONAL_CAP	19,6	6,1	0,226	3,19	0,0020	7	32
	TIME_MONTHS	-1,3	0,6	-0,146	-2,08	0,0400	-3	0

Source: Elaborated by the author, based on the results of SPSS Regression Analyses.

For all the cases, the results indicate that a significant predictor of individual knowledge contribution is the **structural capital** dimension (all p-values under 0,05). In accordance with previous studies and the results of the qualitative phase, the dimension combining cohesion and centrality measures showed evidences to be the predictor with strongest coefficients. Previous studies had already pointed that individuals who are central to the network are more likely to contribute (Nahapiet & Ghoshal, 1998; Wasko & Faraj, 2005; Chiu et al, 2006).

Another variable some authors used to compose centrality was the number of social ties individuals establish within the networks. In the case of our networks, the number of friends was also tested and presented significant results for ItsNOON (p < 0,05).

The dimension measuring **cognitive capital** reasons was not significant for both cases. In accordance with the results of the qualitative research, one possible explanation for this result could be the fact that technical expertise showed to be irrelevant for the participation in both virtual networks, once ItsNOON stimulates people without previous experience in arts or informatics to learn about it and there are "many beginners" in the case of Drawin as well. On the side of the expertise on the subject, another possible explanation in the case of ItsNOON could be the fact that the themes of the creation calls could be positively or negatively influencing the willingness to share, depending on the member's affinity with the subject.

Still related to cognitive capital sphere, the fact of being a professional related to arts did not show significant correlations to the amount of contributions, discarding the hypothesis that higher the expertise, higher would be the expected participation.

Some other authors tested the time enrolled as a possible predictor of expertise. In the case of both networks, time enrolled showed significant results considering the number of posts and the combined dependent variable. However, the coefficients were negative, showing that the longer is the time enrolled in the network; the lower would be the contribution per year. A possible explanation for this result comes from the answers many users gave when they decided to not answer the questionnaire or they left on the open space for observations "I don't know if I should answer because I used to contribute but I haven't been participating anymore" or "I participated a lot in the beginning but then I stopped", suggesting that other factors could also be affecting negatively the volume of contributions along time.

In the case of Drawin, the example of the user that was disappointed with the fact that he was not "feeling part of the new Mangá generation" and stopped to participate frequently could

be a possible explanation: users join the network with some expectations and sharing with higher frequency, but then, when they realized they do not share the same goals or do not feel 'part of it' they stop sharing.

Another possible explanation for the negative impact of time in the case of ItsNOON is that some members were disappointed with the changes the virtual network has been doing (e.g. ranking the members by punctuation according to their participation), or with the behavior of certain members (members creating fake or duplicated profiles).

According to the results of the qualitative phase, **relational capital** appeared as a significant predictor of the amount of contribution in the case of Drawin regardless the variable considered as the volume of knowledge shared with p-values under 0,05.

However, the same could not be proved in the case of ItsNOON. Again, one potential explanation could also be related to these "disappointed" members that 'lost' their trust or commitment as consequence of members behavior of changes the network has been adopting. One member (that preferred not to answer the questionnaire) stated that "*I used to participate a lot, but now, I cannot hear about this network anymore because I am very disappointed with the system of evaluation*".

Personal motivations appeared as significant predictors of knowledge sharing for Drawin (p < 0,05) in the model considering the amount of posts as the dependent variable and for ItsNOON using the time spent on comments and the combined dependent variable (p < 0,05). In the case of ItsNOON, this dimension also showed a p-value under 0,1 in the case of posts as the dependent variable.

Monetary rewards did not showed evidences to be a predictor of the amount of contributions in any virtual spaces. This result was expected according to the qualitative research, although some previous studies were controversial. In the case of Drawin, one could say that it is not a motivator because it does not work effectively, but the same result was obtained for ItsNOON.

The demographic data did not presented significant results, except the *dummy* classifying users as student or not in the case of Drawin for the models tested with commentaries as the dependent variable and the combined one. Although we do not have theoretical bases or previous results, it could be related to the time those users have available to spend in the network.

Table 4.13 shows the summary of the coefficients and the t-tests for each one of the dimensions and figure 4-6 the results of the five hypotheses of the measurement model tested.

Table 4.13: The five dimensions of knowledge sharing

		Drawin						Itsnoon					
		POSTS		COMMENTS		COMBINED		POSTS		COMMENTS		COMBINED	
		Beta	t	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t
Structural Capital	Ha	0,44	5,2	0,36	3,9	0,42	4,9	0,23	2,2	0,39	4,6	0,41	5,3
Cognitive Capital	Hb	0,06	0,7	0,09	1,0	0,10	1,2	0,11	1,2	0,07	1,0	0,10	1,5
Relational Capital	Hc	0,29	3,5	0,25	2,7	0,29	3,3	0,05	0,5	-0,10	-1,4	-0,97	0,3
Personal Motivations	Hd	0,18	2,1	0,06	0,7	0,10	1,2	**0,16**	**1,7***	0,21	2,8	0,23	3,2
Monetary Resasons	He	-0,07	-0,8	-0,09	-0,9	-0,14	-1,5	-0,09	-0,9	0,08	1,1	0,04	0,5

Green values: $p<0,05$, except * $p<0,1$ / Red values: $p>0,1$

Source: Elaborated by the author, based on the results of SPSS Regression Analyses.

Residual analyses were also performed in order to identify potential problems with the models and are presented in the APPENDIX VII and VIII for all the six cases tested. In all the cases the residuals presented normal distribution, and the residual errors did not presented any patterns, except in the case of ItsNOON regression with the number of posts as the dependent variable, where the errors appear to be increasing with higher values of independent variables.
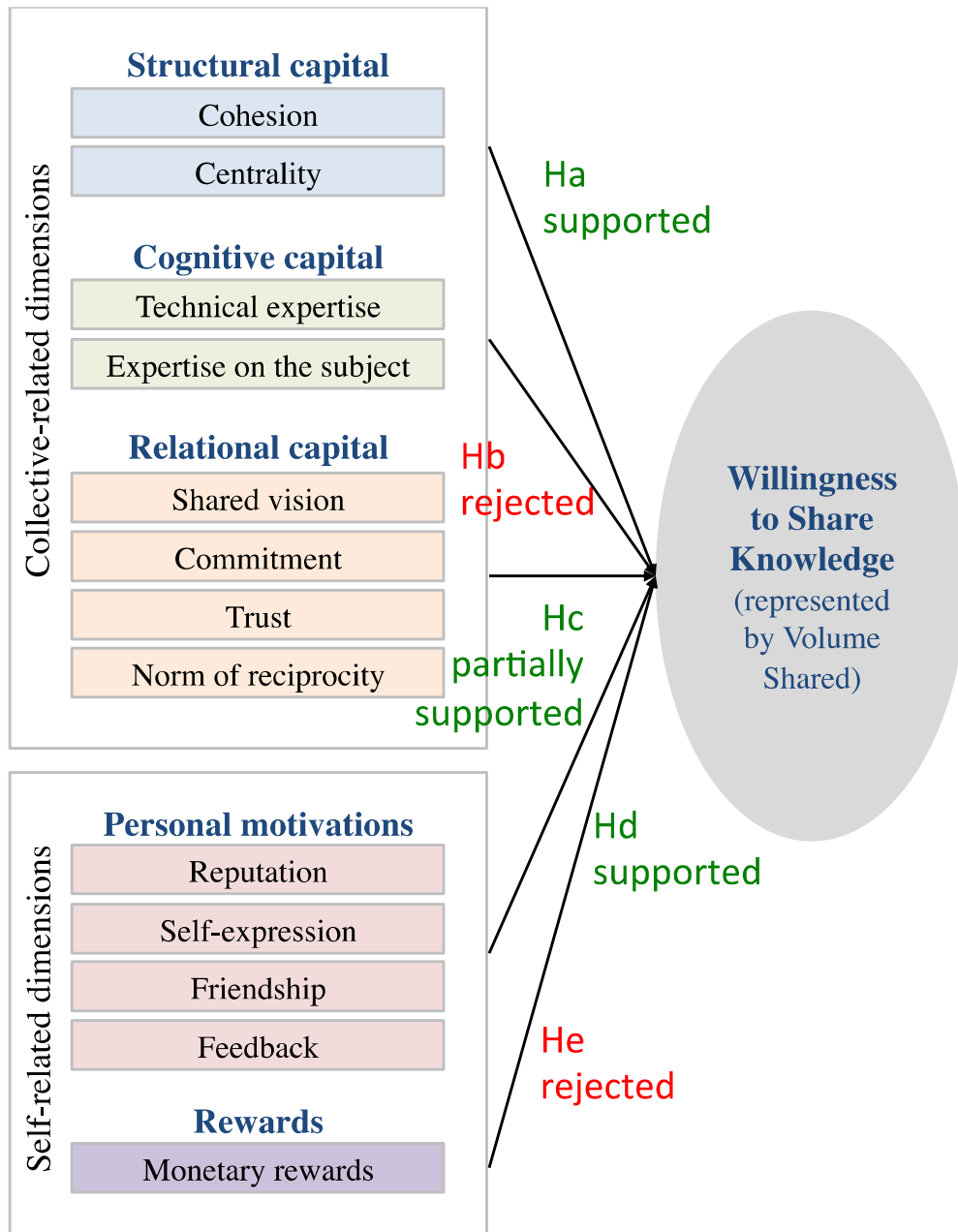
Figure 4-8: Results of the five hypotheses of the measurement model tested
Source: Elaborated by the author.

5   DISCUSSION AND FINAL CONSIDERATIONS

5.1   Discussion of the Results

Knowledge sharing is undeniably a vital driver determining the success of virtual social networks in the long-run and is gaining importance in a paradoxical context of high interactivity and lack of affection that have been putting together millions of individuals in the "magic phenomenon" of virtual social networks.

This study reached its objectives producing a significant theoretical review of the main motivations for knowledge sharing, bringing relevant insights from different contexts and countries, and proposing a model for assessing and testing them through statistical analysis. Three main findings of this research can be summarized in the following statements:

i)   *Knowledge sharing in virtual social networks is consequence of a complex combination of community-oriented and self-interest motivations;*

ii)   *Knowledge sharing motivations vary slightly according to different goals and contexts of virtual social networks;*

iii)   *Monetary reasons seem to be secondary.*

The five dimensions structured based on the literature review (i) structural capital; (ii) cognitive capital; (iii) relational capital, (iv) personal motivations and (v) monetary rewards could be observed in the two distinct phases of this research, although only structural capital, relational capital and personal motivations showed significant influence according to our analyses.

According to previous studies (Chiu et al, 2006, Tsai & Ghoshal, 1998; Wasko & Faraj, 2005), **structural capital** motivations appeared to be the dimension with the highest influence on knowledge sharing. In both contexts, the importance of developing strong ties, named as *philia* by Lazzarato (1997), revealed to be fundamental.

The importance of centrality and cohesion is undoubted and are reflected in the conceptualization of 'social network' itself, defining the establishment, intensity and the extension of social ties and proving to be extremely significant motivators for knowledge sharing

in virtual social networks, in the words of one interviewee "*this social network is where I can attribute my meaning for something collective*".

Social ties are also theoretically related to the time, emotional intensity, intimacy and confidence of the relationships established within the community. This way, **relational capital** appears to be important as well, although this research could not present significant influences on knowledge sharing, in the case of Itsnoon. On the other hand, the fact that one possible explanation for this result could be related to disappointments members had in the sphere of relationships, enhances the idea that this dimension could not be excluded.

Another important observation from the qualitative research (and discussed by Chiu et al in 2005) is that commitment and norm of reciprocity could be much more related to the quality than to the quantity of knowledge shared, once they increase the expectations and responsibility of members when they participate. On the other hand, it could also support the idea that individuals contribute with knowledge (in terms of volume) regardless their sense of responsibility or exchange expectations. Chiu et al (2006) suggested that possible explanations are due to the fact that interactions in virtual communities are dispersed instead of one-to-one, demanding less commitment or norm of reciprocity.

The role of trust should also not be discard and some other factors could have impacted this feeling among members of the virtual spaces analyzed (e.g. fake profiles), revealed during the qualitative phase and the interaction with members during questionnaires submission. Chiu et al (2006) also discussed that trust may not be significant in terms of contribution volume because it may not be crucial for low risk relationships and individuals can contribute for other reasons even if they not trust each other.

Aligned with previous studies, **cognitive capital** dimensions did not appear as a significant dimension for the volume of contributions, although the findings suggest that they may influence as pre-requisites for participating or on the quality of the content. In the cases studied, technical expertise appeared to be secondary, and expertise on the theme could have controversial effects already discussed. Nevertheless, the assessment of these factors through simple self-evaluation could have reflected in weak measures and a focused study of this dimension could bring new insights.

The negative coefficients of time enrolled when measuring the volume of posts in both cases can be seen as a warning for practitioners, though conclusions can be pre-mature. It might

indicate that, as the majority of the virtual networks, Itsnoon and Drawin have a challenge in the long run to maintain active their members. However, other variables (e.g. trust or commitment) can be influencing the effect of time and require further investigations.

Evidences of this examination also suggested the influence of **personal motivations** in concordance with former studies. Results are still immature to discuss the strength of this dimension on knowledge sharing because many other self-related variables could have been included here (e.g. feeling of "enjoy helping" or "indirect career benefits") and the influence of them on each other were not tested. Self-expression and feedback revealed evidences to be relevant for both joining and contributing in terms of volume and quality.

Regarding **monetary rewards**, conclusions would be premature, but evidences in both research phases and different contexts (including the income control variable) did not suggest them as motivators for knowledge sharing. According to the qualitative phase, monetary rewards resemble to exist, even though they can be considered secondary, as predicted by other authors. Besides that, monetary reasons could also influence excluding free riders from this process or on the quality of the content shared as discussed in the theoretical review, what requires further investigation.

Two other observations about this dimension should be stressed: first, the self-assessment of this measures may have been biased due to the lack of theoretical references which indicates the need to create a new scale for this dimension; second, members from those virtual networks do not depend on this money for living, and in general it can reflect a very small proportion of their total income. Indeed, in the Brazilian network, monetary rewards were indicated to be relevant during the qualitative phase, which can be due to the network characteristic or the environment context of lower disposable income. However, there were no significant evidences to support the influence of them.

In conclusion, the discussion of the five dimensions indicates the idea that knowledge sharing in virtual social networks is consequence of a complex combination of community-oriented reasons (analyzed by the three first dimensions) and self-oriented motivations (assessed by the last two dimensions).

Besides the dimensions discussed, the results of the factorial and the regression analyses suggest that the predictors of knowledge sharing in virtual social networks tend to vary slightly according to different goals and contexts of virtual social networks, although this study was not

able to conclude the influence of additional environmental variables, such as cultural particularities and economic situation, for instance. Evidences also suggested that other personal factors such as educational or income level and demographics (such as age, profession or gender) appeared to be secondary.

Finally, one important finding is that the shared content itself may be the main asset for social networks owners, but definitely not for their users. For them, the processes that allow the development of social ties, relationships, and social recognition are imperatively essential for their active involvement.

5.2   Managerial Implications

The number of new virtual social networks registered in the web has been impressively growing in the last years, as consequence of companies developing their own platform for customers, employees and other stakeholders, but also of thousands innovative entrepreneurs launching new ideas on the web (Nowotarski, 2011). The challenge for them are undeniably the sustainability of those networks in the long run, that must be able to foster a substantial number of users sharing rich content and maintaining active their platforms.

Practitioners must take into account the antecedents discussed here in order to create a most appropriate environment to stimulate knowledge creation: attract the right potential users according to the profile of the cyberspace, and address their expectations in the long-run, stimulating involvement in order to enhance structural, cognitive, and relational capital motivations, besides individuals' personal reasons.

This study, as most of the previous ones, indicated strong evidences that **structural capital dimension** should be a priority for practitioners. Technically, they must invest on virtual tools that reduce the costs of interaction and increase visibility: the common and private exchange can be enhanced adopting techniques that facilitate interaction, and consequently the development of social ties. Strategically, they need to ensure that key members feel 'part' of those communities in order to create positive environments for contributions.

Some possible actions for enhancing structural capital dimension in social networks could be: easy-to-use and understandable systems of communication and 'friendship' or 'following' relations; multivariate forms of interaction spaces (public walls, groups of interests, forums,

private messages); organizer-member contact in the form of personal messages or alliance programs; or even more sophisticated forms of empowering members, giving them opportunity to participate in key decisions regarding the future of the network (e.g. voting processes, quests, members' presence in the decision board, etc.).

Smith (2002) pointed that techniques used to identify individuals' centrality will also increase **relational capital**. For example, when members can assess the personal information from others (such as number of contributions, evaluations from others, number of friends, or time engaged), the reliability of the content shared rises, and the overall trust is enhanced. At the same time, these techniques can contribute with individual's public recognition, enhancing **personal motivators** such as self-expression and reputation (von Hippel & von Krogh, 2003; Wasko & Farah, 2005).

Besides trust, our findings suggested that **relational capital** can be stimulated creating a shared vision among members (e.g. communicating common practices, visions and values), enhancing commitment (e.g. giving members responsibility for decisions within the network – for instance, evaluating others' creations, or promoting face-to-face meetings), and norm of reciprocity (e.g. providing the opportunity to donate value-added points or 'values' for each for knowledge contributors as return of favors).

Important to emphasize in the relational capital sphere that these actions should facilitate the development of relationships within the network, but this process must occur naturally, and practitioners must be cautious when creating tools that can also have negative effects over part of their members (e.g.: specific visions that could exclude part of the community, certain values that could cause controversies, promotion of ideas that can only speak to specific sub-groups, or evaluation systems that can be seen as unfair and damage trust).

Although **cognitive capital** did not showed significant evidences in this study, we reinforce that shared language in the form of common codes, symbols and vocabulary can be important pre-requisites for knowledge sharing, and although expertise is not required for participation in some platforms, the set of pre-established themes must be done with prudence. In the same vein, practitioners should give attention for particular **individuals' interests**, establishing tools that facilitate self-expression and feedback in order to create a healthful environment for constructive interactions and learning, but avoiding the development of competitive behavior.

The use of rewards techniques should also be carefully studied before applied, especially in the form of public hierarchy or evaluations. Ranking systems of individuals according to cumulative points as consequence of their contributions can enhance their sense of recognition but, at the same time, de-stimulate the others that can see themselves 'far away'. Chiu et al (2005) proposed one possible alternative for cumulative punctuations that is the case of monthly lists of main contributors.

Although the use of **monetary rewards** still requires further investigations, the networks adopting forms of economic paybacks must certify that their evaluation systems are done in the most impartial way, avoiding feelings of unfairness.

In summary, five fundamental issues arose as fundamental for creating and developing a positive environment for contributions in virtual social networks:

1. ***Importance of a positive environment to attract users***: willingness to join and stay active can be achieved through high visibility ('If the other has, I want to have') and low transaction costs ('worth the effort').

2. ***Easy and understandable 'cyber space':*** common and simple language and codes are very relevant, as well as the possibility of an easy communication, and content must be frequently renewed through diversified subjects (not restricting segments or being perceived as repetitive).

3. ***Involvement with the organization:*** common vision, clear goals and shared values play an important role to differentiate a particular network from the others, and organization-member relationship can help to increase users' participation.

4. ***Involvement within the network:*** an interactive place might allow the development of trust, identification, reciprocity and commitment to increase co-creation.

5. ***Personal benefits:*** friendship, reputation, learning and self-expression (self-esteem issue).

5.3   Theoretical Implications

This article contributes to the emerging literature about virtual social networks providing a theoretical review that identified, conceptualized and discussed potential motivators or reasons

for knowledge sharing besides enriching the discussion of this increasingly important phenomenon taking into account different geographic and cultural contexts.

The findings of the qualitative phase can support next studies to structure their research questions and objectives, to choose their variables and to guide them in the construction of future models of investigation.

The quantitative phase offered a structured model for the study of knowledge sharing in virtual social networks and provided interesting insights for further investigations.

Ultimately, it is essential to emphasize that the intention of this study was not to bring concrete conclusions, but to foment further discussion about this complex and growing phenomenon that will be undoubtedly object of study of vast academic researchers in the nearly future.

5.4 Limitations and Future Researches

There are several limitations to this study and issues requiring further examination and additional research.

The first potential limitation is the sample of only two virtual social networks, which are in a certain way, related to arts. Consequently, the generalizing power of this study is uncertain and networks with different orientations could bring new ideas and possibilities.

Second, the qualitative research could have been impacted by self-selection bias, once it was performed only with active participants. We also did not explore members that participate to receive knowledge but do not share ('free riders'), what could also be object of further investigations.

As suggested before, further researches could include macro environmental and cultural factors as variables, as well as personality characteristics that were not considered in the presented model. In the same vein, the influences of each dimension on each other (e.g. relational capital and structural capital) could be the object of further research. For instance, relational capital can be related to structural capital and the influence of economic rewards could also present indirect effects on relational capital (e.g. increasing commitment or norm of reciprocity) or personal motivations (e.g. enhancing recognition, and consequently, reputation or self-expression.

Another possible hypothesis that the exploratory study brought, combined to the descriptive results of the quantitative questions regarding the motivations for joining, is the fact that initial expectations and motivations to join social networks may differ from the ones explaining knowledge sharing, even though they seem to be among the same factors discussed. An interesting object of further research could be the comparison of these motivations and their comportment along the time.

The measurement of the volume of knowledge sharing could have been enhanced assessing multiple dimensions of users contributions, what can be done in the future through the use of multiple questions submitted to factorial analysis, for example.

Finally, the richness of virtual social networks relies also (and probably much more) on the quality of the content generated, not on its volume. Further studies should bring new ideas regarding the assessment of wealth of contributions in those virtual spaces, as well as compare the factors influencing volume and quality of knowledge sharing.

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APPENDIX

APPENDIX I – Qualitative Research –Individual Interviews Guidelines - Drawin

Introduction
- Présentation
- L'utilisateur
- Relation avec l'Internet
- Les réseaux sociaux

Part I. Motivations pour avoir enregistrés dans Drawin

- Qu'avez-vous pense du réseau Drawin?
- Quelles ont été vos motivations à rejoindre le réseau Drawin?
- Quelles étaient vos attentes initiales?
- Ces attentes ont-elles été satisfaites? Oui / Non => Pourquoi ?
- Connaissez-vous un autre réseau similaire à l'Drawin? Quelles sont les différences?

Part II. Motivations pour partager les créations sur Drawin

- Créez-vous et publiez-vous des œuvres sur le réseau Drawin?
- Quel genre de travail créez-vous?
- Combien de créations avez-vous posté ? (Sorte de)
- Pourquoi publiez-vous sur le réseau social ? Quelles sont les principales motivations pour partager avec les autres membres ?
- Quels sont les avantages pour vous de publier ?
- Qu'est ce qui est important pour vous lorsque vous partagez une œuvre en ligne?
  - Les relations
  - Les possibilités de gagner de l'argent
  - Réputation
  - Rétroaction (feedback)
  - Possibilité de s'exprimer / se faire entendre
- Quelles sont, selon vous, la signification et les valeurs de l'acte de partage?

Part III. Motivations pour partager les expériences

- Pourquoi les membres partager des informations?
  - Quelles sont les motivations pour aider les autres? Les gens regardent Drawin comme un espace professionnel?
  - Quel est le sens de l'aide?
  - Quel est le sentiment d'être aidé?
  - Les valeurs personnelles

Part IV. Différences Drawin x réseau social commun

- Quel est le rôle de Drawin dans votre vie?
- Quelles sont les valeurs des membres de Drawin ? Ils sont similaires à vos valeurs ?
- Pourquoi êtes-vous un membre de ce réseau?
- Si le réseau social Drawin était une personne, comment serait-il?
- Souhaitez-vous recommander le réseau Drawin à un ami? Oui / Non => Pourquoi?

Part V. Drawin opération

- Quelle est la perception par rapport à l'opération Drawin
- Améliorations
- Quelles sont les valeurs des membres de Drawin?
- Si les membres étaient d'une personnalité, quelle serait-elle?

Conclusions

- Quelles sont les améliorations que Drawin pourrait effectuer?
- Comment voyez-vous l'avenir de l'Drawin? Selon vous, que va-t-il se passer sur le réseau? Et comment va évoluer votre relation avec ce dernier?

APPENDIX II – Qualitative Research – Focus Groups and Individual Interviews Guidelines - ItsNOON

Introdução
- Apresentações individuais

Part I. Motivações para ter se cadastrado na ItsNOON

- Como ficou conhecendo a ItsNOON?
- Por que entrou na rede? Quais motivações?
- Qual foi a percepção da rede no início?

Part II. Motivações para postar criações na ItsNOON

- Já tinha criado algo antes?
- Por que cria?
- Porque posta criações?
  - Remuneração e chances de ganhar
  - Relacionamento
  - Reputação
  - Feedback dos gestores da ItsNOON
  - Feedback da própria rede

Part III. Motivações para compartilhar experiências

- Por que os membros compartilham informações?
  - Quais as motivações para ajudar os outros? As pessoas encaram a ItsNOON como um concurso?
  - Qual a sensação de ajudar?
  - Qual a sensação de ser ajudado?
  - Valores pessoais

Part IV. Diferenças rede social comum

- Qual o papel da ItsNOON na vida?
- Quais são os valores dos membros da ItsNOON? Se fosse uma personalidade qual seria?
- Diferença entre rede social normal – Orkut, Facebook, etc.
  - Remuneração
  - Relacionamento
  - Feedback
- Lealdade à rede (força do vínculo): o que faz manter-se conectado à rede?

Part V. Operação da ItsNOON

- Qual a percepção em relação à Operação da ItsNOON
- Na visão deles o que aconteceria se a ItsNOON parasse de pagar pelas criações.
- Quais são os valores dos membros da ItsNOON?
- Se os membros fossem uma personalidade, qual seria?

Conclusões

- Pontos fortes e fracos da ItsNOON (o que mais gosta e o que menos gosta)
- O que a ItsNOON poderia fazer para melhorar

APPENDIX III – Questionnaire – Quantitative Research - Drawin

Questionnaire pour les membres du réseau social Drawin
Cette enquête est utilisée à des fins académiques et les données seront traitées de manière confidentielle. Votre participation est très importante pour nous.

Part I. Raisons d'inscription au réseau social Drawin
Quand avez-vous décidé de créer votre profil dans le réseau social Drawin, quelles étaient vos motivations initiales?

Veuillez évaluer les raisons suivantes, de 1 (moins important) à 7 (très important). Veuillez prendre en compte les motivations au moment où vous avez décidé de joindre Drawin.

- Apprendre et acquérir des connaissances
- Partager mes connaissances avec les autres
- Trouver quelqu'un qui peut faire quelque chose pour moi
- Recevoir feedback des autres
- Gagner de l'argent
- Raisons professionnelles
- Apprendre à mieux connaitre les autres et moi-même
- Me faire des nouveaux amis
- Trouver des personnes qui me ressemblent
- Rencontrer des personnes différentes
- Exprimer mes idées, mes créations et mes sentiments
- Me sentir important
- Me relaxer
- Me distraire

Part II. Les prochaines questions portent sur votre relation actuelle avec le réseau Drawin et ses membres.

Évaluez chaque énoncé ci-dessous sur une échelle de:
    1 - Fortement en désaccord
    2 - En désaccord
    3 - En partie désaccord
    4 - Ni d'accord ni en désaccord
    5 - Partiellement d'accord
    6 - D'accord
    7 - Fortement d'accord

Cohesion
- Certains membres de Drawin sont importants dans ma vie personnelle
- Je sens que j'appartiens à la communauté Drawin et je suis proche de ses membres
- Je me sens un membre important et précieux de Drawin

Centrality
- Je communique souvent avec d'autres membres du réseau
- J'ai un nombre d'amis (les gens qui me suivent ou "followers") supérieur à la moyenne dans Drawin
- Le temps que je consacre à interagir dans le réseau est relativement plus élevé que celui des autres membres

Technical Expertise
- Je crois que je possède les compétences nécessaires pour contribuer de manière positive au réseau
- Maîtriser des techniques de l'art (dessin, photographie, peinture, etc.) est importante pour ma participation à Drawin
- Maitriser des techniques informatiques est important pour ma participation à Drawin

Expertise on the subject
- Le fait de bien connaitre le sujet discuté me motive à plus contribuer
- Certains sujets ne sont pas intéressants pour moi
- Je participe plus si le sujet est important pour moi

Shared Vision
- En général, je partage la même vision des choses que les autres membres de Drawin
- Les autres membres de Drawin ont les mêmes objectifs d'apprentissage que moi
- En général, je partage les mêmes valeurs que les autres membres de Drawin

Commitment
- Je me sens responsable d'aider les autres membres de Drawin
- Je me soucie du futur de Drawin
- Contribuer au réseau avec mes connaissances aide Drawin à continuer d'exister

Trust
- Les membres du réseau sont dignes de confiance
- Les membres de Drawin tiennent les promesses qu'ils se font entre eux
- Même si l'opportunité se présentait, je ne pense pas que les membres de Drawin tireraient profit les uns des autres

Norm of reciprocity
- Je pense que les membres de Drawin m'aideraient si j'en avais besoin
- J'aide les autres membres car je pense qu'ils m'aideraient aussi en cas de besoin
- Contribuer m'aide à gagner la coopération des membres importants de Drawin

Reputation
- Quand je participe à Drawin, j'améliore ma réputation
- Je pense que participer au réseau Drawin contribue à améliorer mon statut social
- Contribuer à Drawin m'aide à construire mon image

Self-expression

- Drawin me donne l'opportunité de m'exprimer envers les autres
- Montrer mes ouvres et opinions me donne un sentiment de bonheur
- Avoir un espace pour montrer mes ouvres et opinions est important pour moi

Friendship
- Contribuer à Darwin m'aide à me faire des nouveaux amis
- Contribuer à Drawin m'aide à renforcer les liens avec les autres membres
- Quand je contribue à Drawin, je rencontre de nouvelles personnes

Feedback
- L'opinion des autres me stimule à faire un meilleur travail
- Recevoir un feedback des autres membres augmente ma confiance dans le fait d'exprimer mes idées
- L'interaction avec d'autres opinions, commentaires et idées est extrêmement important pour moi

Monetary Reasons
- L'opportunité de gagner de l'argent dans le réseau est importante pour moi
- Je participerais plus dans le réseau si j'avais la possibilité de gagner plus d'argent
- Je participerais moins dans le réseau si je n'avais pas la possibilité de vendre

Part III. Questions générales

a) Combien d'amis (es) vous avez, environ, à Drawin? Considérez toutes les personnes que vous suivez / "followers"

b) Depuis combien de mois avez-vous créé votre compte / profil à Drawin? Entrez le nombre approximatif de mois depuis que vous avez créé votre compte

c) Combien d'œuvres avez-vous partagé au réseau Drawin? Considérez tous les créations publiées

d) Pendant une semaine, combien de commentaires constructifs et critiques vous apportez à d'autres membres du réseau? Considérez le nombre approximatif de commentaires, critiques, postes pertinents, conseils, etc.

e) Considérant le volume de feedback, conseils, opinions et critiques pertinentes, vous croyez que votre participation à Drawin est:
- Beaucoup plus petite que les autres membres
- Relativement plus petite que les autres membres
- Moyenne
- Relativement plus élevée que les autres membres
- Beaucoup plus élevée que les autres membres
- Cliquez pour ajouter une option

f) Combien de temps (en heures) passez-vous, en moyenne par semaine, à commenter ou interagir avec les autres membres de Drawin? Considérez tous les commentaires, critiques, postes pertinents, conseils, feedbacks, etc.

Part III. Les données personnelles

a) Nom dans le réseau (pseudo / avatar / nickname) (Optionnelle)

b) Sexe (Masculin / Féminin)

c) Ville de résidence

d) Âge
- Moins de 18 ans
- 18 - 25 ans
- 26 - 35 ans
- 36 - 45 ans
- 46 - 55 ans
- Plus de 56 ans

e) Profession

f) Scolarité
- Enseignement élémentaire
- Enseignement secondaire
- Enseignement supérieur incomplet
- Enseignement supérieur terminée
- Maîtrise / Doctorat

g) Quel est le revenu salarial brut mensuel moyen de votre famille? Considérez tous les membres de la famille qui vivent avec vous
- Jusqu'à 1.425 euros
- De 1.426 à 2.850 euros
- De 2.851 à 4.275 euros
- De 4.276 à 7.125 euros
- De 7.126 à 14.250 euros
- Plus que 14.251 euros

Je vous remercie pour votre participation!
Nous vous soulignons que les données sont confidentielles et ont été recueillies dans un but purement académique.
Merci beaucoup!
Si recevoir les résultats de cette enquête vous intéresse, merci de laisser votre adresse email dans le cadre ci-dessous.

APPENDIX IV – Questionnaire – Quantitative Research - ItsNOON

Pesquisa com membros da rede ItsNOON
Esta pesquisa tem finalidade acadêmica e os dados serão tratados de forma confidencial.
A sua participação é muito importante para nós!

Part I. Razões para fazer parte da rede ItsNOON
Quando você decidiu criar seu perfil na rede social ItsNOON, quais foram as suas motivações iniciais?

Avalie cada razão abaixo, sendo 1 (pouco importante) até 7 (muito importante), lembrando do momento em que você decidiu fazer parte da rede.

- Aprender e adquirir conhecimento
- Contribuir com meu conhecimento para os outros membros
- Encontrar alguém para fazer algo por mim
- Receber feedback de outros membros
- Ganhar dinheiro
- Razões profissionais
- Aprender sobre mim mesmo e sobre os outros
- Fazer amigos
- Entrar em contato com pessoas iguais a mim
- Entrar em contato com pessoas diferentes de mim
- Expressar minhas idéias, criações, sentimentos
- Me sentir importante
- Relaxar
- Me distrair

Part II. As próximas perguntas são referentes à sua relação atual com a rede ItsNOON e seus membros.

Avalie cada afirmação abaixo numa escala de:
1 - Discordo totalmente
2 - Discordo
3 - Discordo parcialmente
4 - Não concordo nem discordo
5 - Concordo parcialmente
6 - Concordo
 - Concordo totalmente

Cohesion
- Alguns membros da ItsNOON são importantes para minha vida pessoal
- Eu sinto que pertenço e sou próximo da comunidade ItsNOON
- Eu me sinto um membro importante e valioso da ItsNOON

Centrality
- Eu me comunico frequentemente com outros membros da rede
- Eu tenho um número de amigos (pessoas que me acompanham / seguidores) superior que a média na ItsNOON
- Eu gasto um tempo relativamente maior que outros membros interagindo na rede

Technical Expertise
- Eu acredito ter habilidades suficientes para contribuir positivamente com a rede
- Dominar técnicas relativas à arte (desenho, fotografia, pintura, etc.) é importante para minha participação na ItsNOON
- Dominar técnicas relativas à informática é importante para minha participação na ItsNOON

Expertise on the subject

- Eu me sinto motivado quando conheço bem o assunto da chamada criativa
- Alguns temas das chamadas criativas não são interessantes para mim
- Eu participo quando o assunto da chamada criativa é importante para mim

Shared Vision
- Em geral, eu compartilho da mesma visão que os membros da ItsNOON
- Os membros da ItsNOON, assim como eu, tem o mesmo objetivo de aprender
- Em geral, eu compartilho dos mesmos valores que os membros da ItsNOON

Commitment
- Eu me sinto responsável por ajudar os outros membros da comunidade
- Eu realmente me preocupo com o futuro da ItsNOON
- Contribuir com meu conhecimento ajuda a ItsNOON a continuar existindo

Trust
- Membros da ItsNOON são confiáveis uns com os outros
- Membros da ItsNOON mantêm as promessas que fazem uns para os outros
- Mesmo havendo oportunidade, eu NÃO acredito que os membros da ItsNOON tirariam vantagem dos outros

Norm of reciprocity
- Eu acredito que os membros da rede me ajudariam se eu precisasse
- Eu contribuo com outros membros porque acredito que eles farão o mesmo comigo
- Contribuir com os outros me ajuda a ganhar cooperação de importantes membros da ItsNOON

Reputation
- Quando eu participo na ItsNOON eu aumento minha reputação
- Eu sinto que ao participar eu aumento meu status na ItsNOON
- Contribuir na ItsNOON me ajuda a construir minha imagem

Self-expression
- A ItsNOON me dá a oportunidade de me expressar para os outros
- Mostrar minhas criações e opiniões para os outros me dá um sentimento de felicidade
- Ter um espaço para mostrar minhas criações e dividr opiniões é importante para mim

Friendship
- Contribuir com a ItsNOON me ajuda a fazer novos amigos
- Contribuir com a ItsNOON me ajuda a fortalecer laços com outros membros
- Ao contribuir com a ItsNOON eu conheço novas pessoas

Feedback
- O ponto de vista dos outros me estimula a fazer um trabalho melhor
- Receber feedback dos outros membros aumenta minha confiança em expressar minhas idéias
- A interação com outras opiniões, comentários e idéias é extremamente importante para mim

Monetary Reasons
- A oportunidade de ganhar dinheiro na rede é importante para mim
- Eu participaria mais se tivesse chances de ganhar mais dinheiro na ItsNOON
- Eu participaria menos se os valores dos prêmios em dinheiro fossem reduzidos

Part III. Questões gerais

a) Quantos amigos(as) você tem, aproximadamente, na rede ItsNOON? Considerar todas as pessoas que você acompanha / que te acompanham

b) Há quantos meses você criou sua conta / seu perfil na ItsNOON? Por favor digite o número de meses aproximado que você faz parte da rede

c) Com quantas criações você já contribuiu na rede ItsNOON? Considerar todas as criações postadas

d) Por semana, quantos comentários construtivos e críticas você faz à outros membros da rede? Considerar o número aproximado de comentários relevantes, críticas, opiniões, posts relevantes, dicas, etc.

e) Considerando o volume de feedbacks, dicas, opiniões e críticas relevantes, você acredita que sua participação na ItsNOON é:
- Muito menor que dos outros membros em geral
- Relativamente menor que de outros membros em geral
- Na média
- Relativamente maior que de outros membros em geral
- Muito maior que de outros membros em geral

f) Quanto tempo (em horas) você gasta, em média por semana, comentando ou interagindo com outros membros da ItsNOON? Novamente considerar feedbacks, opiniões, dicas e críticas relevantes

Part IV. Dados pessoais

a) Apelido na rede (Opcional)

b) Sexo (Masculino / Feminino)
c) Cidade de residência

d) Faixa etária
- Menos de 18 anos
- 18 - 25 anos
- 26 - 35 anos
- 36 - 45 anos
- 46 - 55 anos
- Mais de 56 anos

e) Profissão
- Grau de escolaridade
- Ensino Fundamental
- Ensino Médio
- Ensino Superior Incompleto
- Ensino Superior Completo
- Pós-Graduação

f) Qual a renda salarial mensal média da sua família? Considerar pessoas que moram com você
- Até R$ 680,00
- De R$ 681,00 a R$ 1360,00
- De R$ 1.361,00 a R$ 2.139,00
- De R$ 2.140,00 a R$ 3.400,00
- De R$ 3.401,00 a R$ 6.796,00
- Acima de R$ 6.797,00

Muito obrigado pela sua participação!!!
Reforçamos que os dados são confidenciais e foram coletados com finalidade acadêmica.
Obrigado!!!
Se você estiver interessado em receber os resultados dessa pesquisa, deixe seu email no espaço abaixo.

APPENDIX V – Drawin - Results of Factorial analysis grouping the 39 questions into 13 constructs

Drawin - Factor analysis results for the 13 constructs of shared knowledge - Rotated Component Matrix														
Questions	Factor	Component												
		1	2	3	4	5	6	7	8	9	10	11	12	13
I have some members of the community on a personal level	Cohesion	0,691												
I have the feeling of togetherness or closeness in the community		0,781												
I am a valuable and important member of the community		0,780												
I have frequent communication with other members	Centrality		0,765											
I have a number of friends/followers superior than the average			0,812											
I spend a lot of time interacting with some members			0,801											
In general, I share the same vision with other members	Shared Vision			0,641										
Other members, like me, have the goal to learn				0,833										
In general, I share the same values with other members				0,801										
I believe to have sufficient competences to contribute	Technical expertise													
It is important to have artistical competences to contribute					0,826									
It is important to have informatical competences to contribute					0,900									
I feel motivated because I know the subjects discussed	Expertise on the subject					0,747								
Sometimes some subjects discussed are not interesting for me														
I participate more when the subject interests me						0,892								
I feel responsible to help other members	Commitment						0,636							
I really care about the future of the network							0,544							
Sharing my knowledge would help the community to continue its operation in the future														
Members are truthful in dealing with one another	Trust							0,610						
Members will keep promises they make to one another								0,628						
Members will not take advantage of others even if the opportunity arises								0,581						
I trust that someone would help me if I need	Norm of reciprocity								0,689					
I help the others because I believe they would do the same with me									0,753					
To contribute with others helps me to gain better cooperation from important members of the community									0,554					
When I participate I increase my reputation	Reputation and Status									0,839				
I feel that when I participate I increase my status										0,823				
To contribute in the network helps me to build my image										0,771				
The network gives me the opportunity to express my self to others	Self-expression										0,548			
Showing my knowledge and creations gives me a feeling of happiness											0,830			
Having a space to show my creations and share my opinion is important for me											0,835			
Sharing my knowledge helps me to make friends	Friendship											0,648		
Sharing my knowledge strengthens my tie with others												0,570		
When I share my knowledge I meet new people												0,680		
Others' point of view stimulates me to do a better work	Feedback												0,473	
Receiving feedback from the other members increases my confidence in expressing idea													0,765	
The interaction with other opinions, comments and ideas is extremely important for me													0,545	
The opportunity to earn money in this community is important for me…	Monetary rewards													0,934
I would participate more if I had the opportunity to earn more money…														0,839
I would participate less if the monetary rewards were lower…														0,845

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.a
a Rotation converged in 13 iterations.

APPENDIX VI – ItsNOON - Results of Factorial analysis grouping the 39 questions into 13 constructs

Itsnoon - Factor analysis results for the 13 constructs of shared knowledge - Rotated Component Matrix														
Questions	Factor	Component												
		1	2	3	4	5	6	7	8	9	10	11	12	13
I have some members of the community on a personal level	Cohesion	0,701												
I have the feeling of togetherness or closeness in the community		0,637												
I am a valuable and important member of the community		0,599												
I have frequent communication with other members	Centrality	0,567	0,450											
I have a number of friends/followers superior than the average			0,812											
I spend a lot of time interacting with some members			0,789											
In general, I share the same vision with other members	Shared Vision			0,768										
Other members, like me, have the goal to learn				0,452										
In general, I share the same values with other members				0,674										
I believe to have sufficient competences to contribute	Technical expertise													
It is important to have artistical competences to contribute					0,684									
It is important to have informatical competences to contribute					0,860									
I feel motivated because I know the subjects discussed	Expertise on the subject													
Sometimes some subjects discussed are not interesting for me						0,856								
I participate more when the subject interests me						0,757								
I feel responsible to help other members	Commitment						0,424							
I really care about the future of the network														
Sharing my knowledge would help the community to continue its operation in the future							0,656							
Members are truthful in dealing with one another	Trust							0,444						
Members will keep promises they make to one another								0,825						
Members will not take advantage of others even if the opportunity arises								0,731						
I trust that someone would help me if I need	Norm of reciprocity								0,765					
I help the others because I believe they would do the same with me									0,679					
To contribute with others helps me to gain better cooperation from important members of the community									0,445					
When I participate I increase my reputation	Reputation and Status									0,725				
I feel that when I participate I increase my status										0,670				
To contribute in the network helps me to build my image										0,749				
The network gives me the opportunity to express my self to others	Self-expression										0,689			
Showing my knowledge and creations gives me a feeling of happiness											0,817			
Having a space to show my creations and share my opinion is important for me											0,783			
Sharing my knowledge helps me to make friends	Friendship											0,763		
Sharing my knowledge strengthens my tie with others												0,775		
When I share my knowledge I meet new people												0,754		
Others' point of view stimulates me to do a better work	Feedback													
Receiving feedback from the other members increases my confidence in expressing idea													0,565	
The interaction with other opinions, comments and ideas is extremelly important for me													0,500	
The opportunity to earn money in this community is important for me…	Monetary rewards													0,823
I would participate more if I had the opportunity to earn more money…														0,886
I would participate less if the monetary rewards were lower…														0,672

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 13 iterations.
Excluded items under 0,45

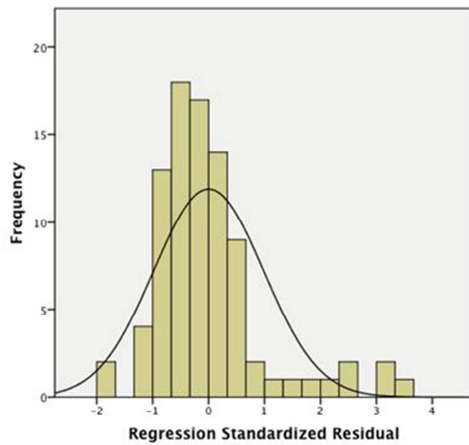**APPENDIX VII – ItsNOON - Results of the residual analyses**

Results of Residual Analysis – ItsNOON
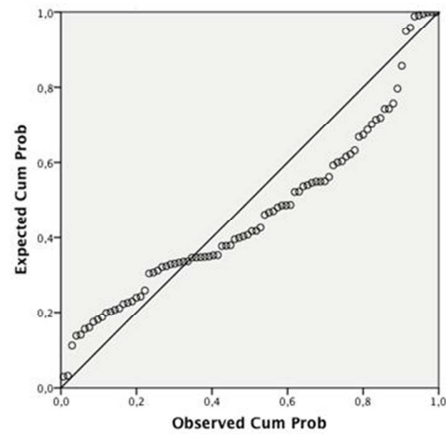
Dependent variable: number of annual posts

Residuals Statistics[a]

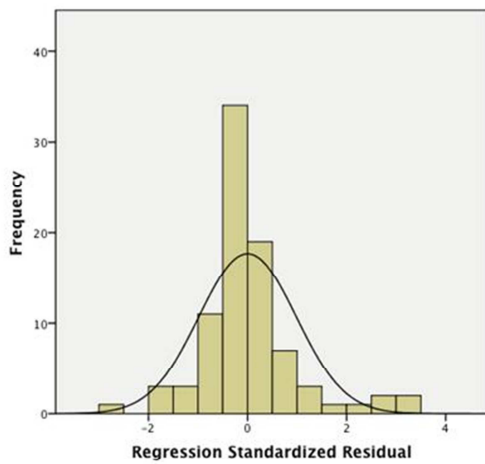|	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-25,0259	137,4651	34,6932	25,14976	88
Residual	-75,57449	134,77893	,00000	39,26865	88
Std. Predicted Value	-2,375	4,086	,000	1,000	88
Std. Residual	-1,891	3,373	,000	,983	88

Histogram

Normal P-P Plot of Regression Standardized Residual
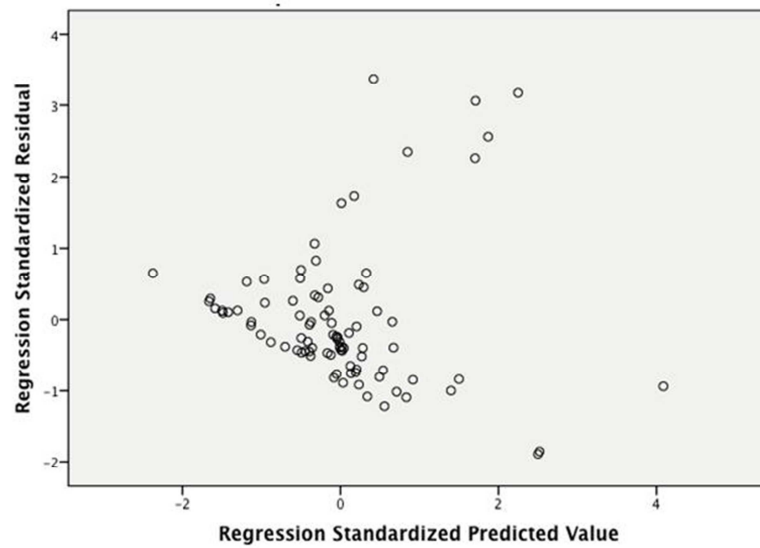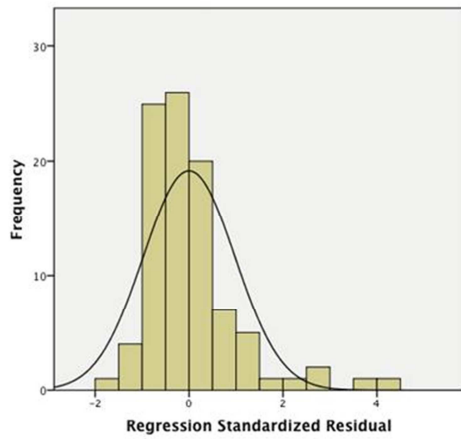

Scatterplot

Results of Residual Analysis – ItsNOON

Dependent variable: number of annual comments

Residuals Statistics[a]

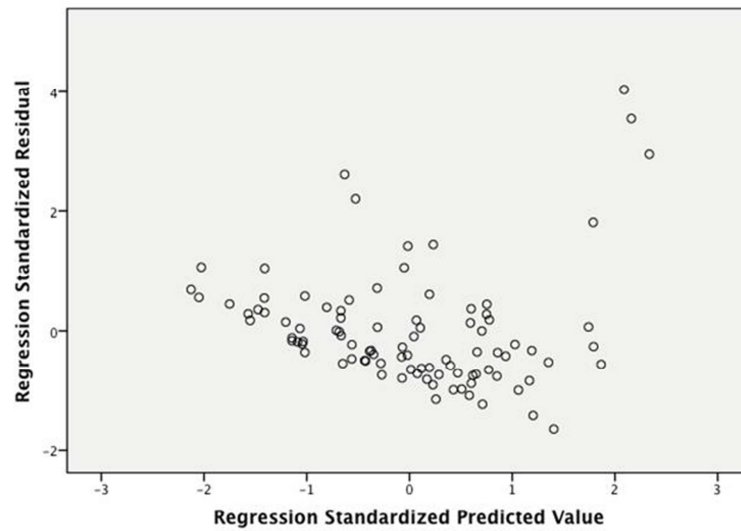|	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	−85,1872	976,9424	159,4483	189,84453	87
Residual	−496,94247	606,66486	,00000	173,19877	87
Std. Predicted Value	−1,289	4,306	,000	1,000	87
Std. Residual	−2,819	3,441	,000	,982	87

Histogram

Normal P-P Plot of Regression Standardized Residual
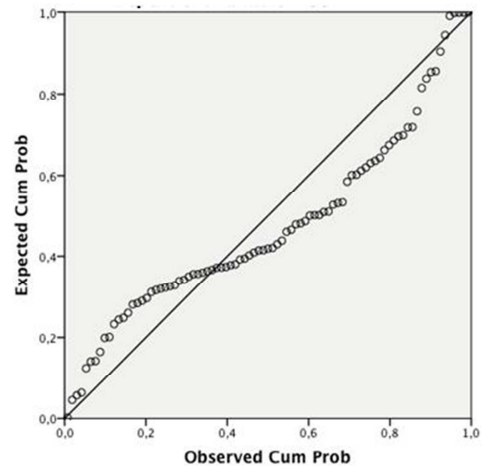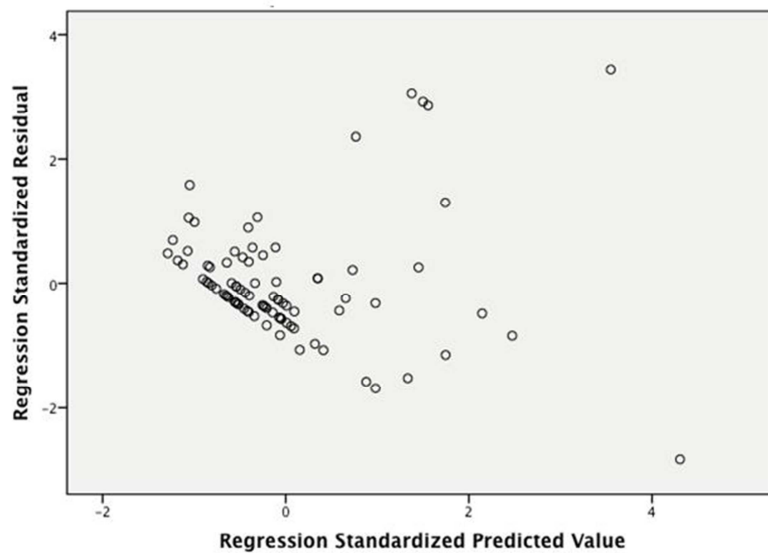
Scatterplot

Results of Residual Analysis – ItsNOON
Dependent variable: combined posts and comments

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	−31,6781	388,1369	72,6047	74,31353	86
Residual	−174,13693	133,44720	,00000	56,90549	86
Std. Predicted Value	−1,403	4,246	,000	1,000	86
Std. Residual	−2,987	2,289	,000	,976	86

Histogram
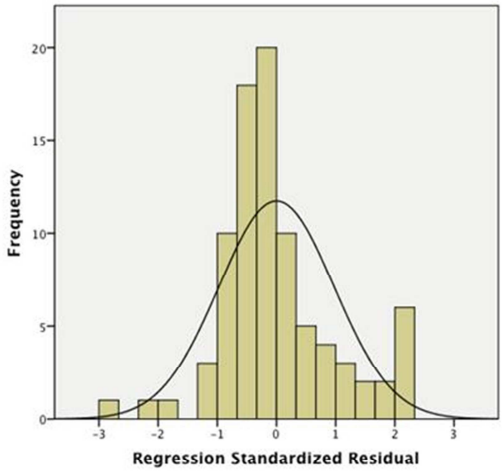
Normal P-P Plot of Regression
Standardized Residual
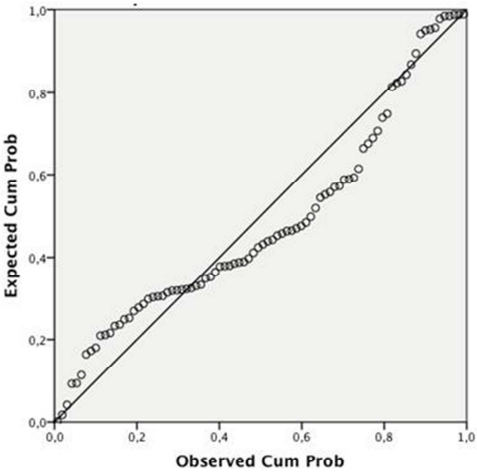
Scatterplot
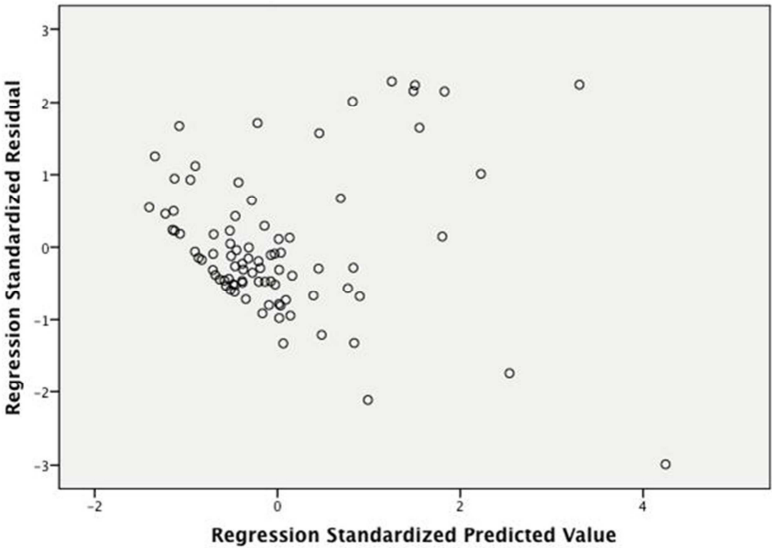
APPENDIX VIII – Drawin - Results of the residual analyses
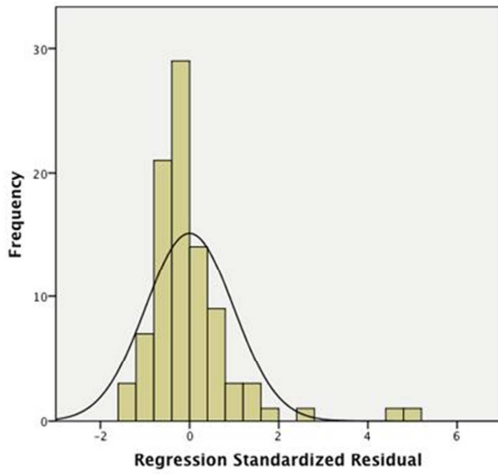
Results of Residual Analysis – Drawin

Dependent variable: number of annual posts

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	−20,6555	122,2752	47,4787	32,03722	94
Residual	−68,47073	167,59866	,00000	40,63790	94
Std. Predicted Value	−2,127	2,335	,000	1,000	94
Std. Residual	−1,648	4,035	,000	,978	94

Histogram

Normal P-P Plot of Regression Standardized Residual
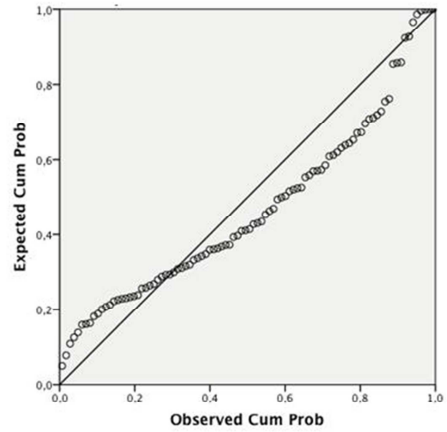
Scatterplot

Results of Residual Analysis – Drawin
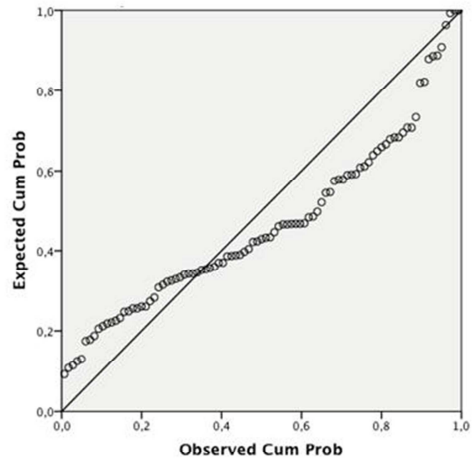
Dependent variable: number of annual comments

Residuals Statistics[a]

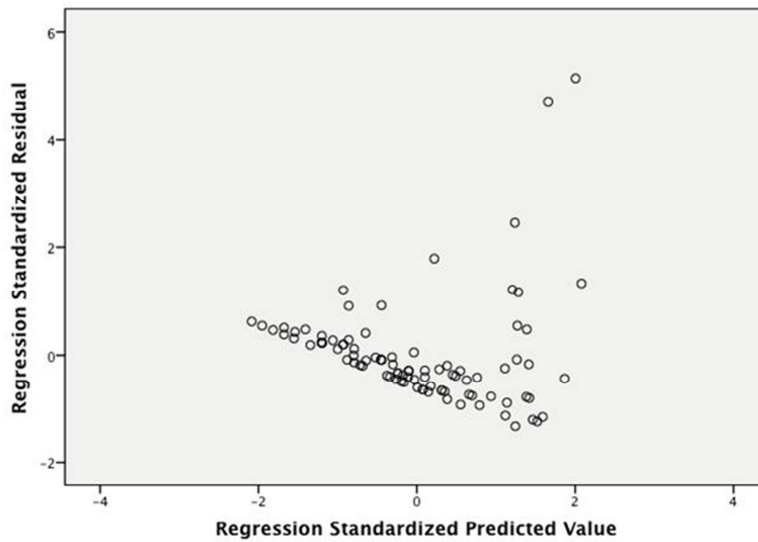|	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-237,7299	692,6143	228,1290	223,31574	93
Residual	-506,06540	1964,17053	,00000	375,29185	93
Std. Predicted Value	-2,086	2,080	,000	1,000	93
Std. Residual	-1,326	5,148	,000	,984	93

Histogram

Normal P-P Plot of Regression Standardized Residual
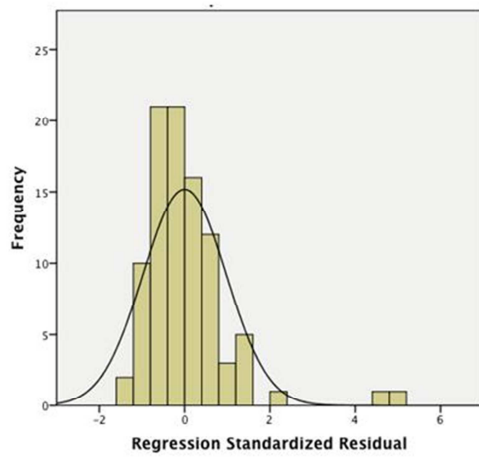

Scatterplot

Results of Residual Analysis – Drawin
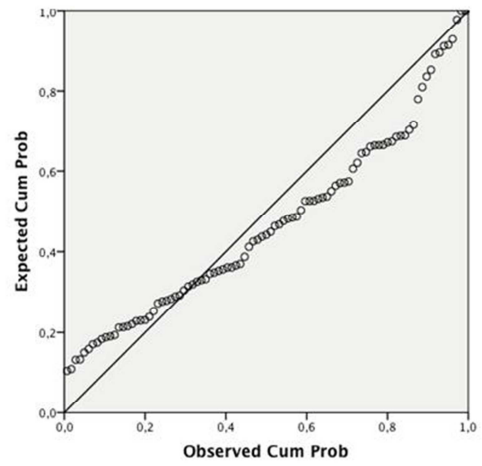Dependent variable: combined posts and comments

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	−54,1777	309,6398	101,9462	89,24543	93
Residual	−159,16412	653,36023	,00000	123,93915	93
Std. Predicted Value	−1,749	2,327	,000	1,000	93
Std. Residual	−1,256	5,156	,000	,978	93

Histogram

Normal P-P Plot of Regression Standardized Residual

Scatterplot