CHAPTER 2. REVIEW OF LITERATURE

The existing literature is reviewed in this chapter and the gaps in literature which are addressed by this study are uncovered. The chapter starts with the review of the existing literature on knowledge and knowledge management, followed by communities and virtual communities. After that, studies done on virtual communities of practice are reviewed. Social capital theory is reviewed along with previous studies on communities which made use of social capital to explain knowledge sharing.

2.1 Knowledge

The word “Knowledge” has been defined in many ways in different contexts. It has been linked with words like data, information, skill, intuition, expertise and experience. The philosopher, Plato defined knowledge as “justified true belief”. Nonaka & Takeuchi (1995) changed this and stated that knowledge is a belief about truth and the process by which humans justify their belief. They considered this as being a dynamic process. Understandings, generalizations, and presumptions that we have with us permanently or for a short period of time make up knowledge. Humans use this knowledge to interpret and manage the surrounding world. Knowledge is commonly defined as an understanding based on experience. Knowledge is gained by experience and it can include facts, data or skills of a person. According to the Oxford English Dictionary (2013), it is the understanding of a subject from a theoretical or practical stand point. Davenport & Prusak (1998) described knowledge as information which is put in the right context and coupled with the understanding of how to make use of it. Information that changes someone or something by becoming grounds for action is knowledge; it enables an individual or an institution to take effective action (Drucker, 1989).
A clear distinction between knowledge, information and data was given by Albrecht (2003). He stated that data and information are the raw materials from which knowledge emerges. Data was defined as the atomic raw material which can be stored, moved around, and manipulated, almost like a physical substance, whereas, information is a pattern of data which has got meaning in some particular context. He defined knowledge as the result of engaging or using this information in the mind.

The extant literature on knowledge regards it as having two distinct and mutually exclusive sides (Kogut & Zander, 1992). Polanyi (1966) stated that the tacit dimension of knowledge is internalized in the unconscious mind and is inaccessible to consciousness. Due to this property of tacit knowledge, it cannot be expressed or externalized. According to Polanyi, explicit knowledge codified knowledge, such as that found in documents. It was stated by Polanyi that we cannot express or tell everything that we know (Polanyi, 1966). Practicing the explicitly written down knowledge helps to transform it into tacit knowledge. A person can gain tacit knowledge about a particular activity or a task by performing it. Polanyi (1966) stated that people should strive to create their own tacit knowledge by practice instead of extracting knowledge from people.

A common paradigm found in KM literature is the knowledge pyramid or hierarchy given by Davenport & Prusak (1998). Data transforms into information, which again transforms into knowledge. This hierarchy may be visualized as a pyramid from data moving up to knowledge. Tuomi (1999) opined that knowledge precedes the creation of data and information. The base of the pyramid represents the data which is unprocessed, which turns into information when seen from meaningful context. Knowledge is then created by interpreting and learning something from this information (Usoro et al., 2007). Davenport & Prusak (1998) stated that data
transformation takes place through the following:

a. Contextualized: purpose of gathering the data

b. Categorized: key components of the data

c. Calculated: how data was analyzed

d. Corrected: errors removed from the data

e. Condensed: data was summarized

By these processes, data becomes information and interpretation of this information creates knowledge which lies on the top of the pyramid. Interpreting information is done with interactions with the current knowledge held by the individual. Hicks et al. (2006) classified knowledge in the KM field into two: personal knowledge and codified knowledge. This classification is similar to the classification of Polanyi (1966) into explicit and tacit knowledge. Personal knowledge like tacit knowledge is contained only in the mind of the person, whereas codified knowledge is that which has already been captured and may be shared or exchanged.

The knowledge hierarchy proposed by Davenport & Prusak (1998) illustrates codified management information systems. Hicks et al. (2006) concluded that the biggest challenge for KM initiatives is to ensure that valuable personal knowledge is codified and retained by the organization even if the individual employees may not do so.

Nonaka & Takeuchi (1995) described that knowledge conversion processes are of four types, socialization, externalization, combination and internalization. This model represented a spiral of interactions between explicit and tacit knowledge, as explained below:

1. Tacit to Tacit (Socialization) - knowledge obtained through discussion, observation and shared experiences.

2. Tacit to Explicit (Externalization) - knowledge is converted into a tangible form by dialogue.
3. Explicit to Explicit (Combination) - explicit knowledge is combined.

4. Explicit to Tacit (Internalization) – individuals internalize knowledge from a codified source.

The knowledge spiral of Nonaka & Takeuchi (1995) describes how organizational knowledge is created through developments in the knowledge spiral. They stated that the mobilization and conversion of tacit knowledge is the key to creating knowledge. Such knowledge creation starts at the individual level with the internalization of knowledge through understanding. In socialization, individuals discuss their ideas with their colleagues’ and knowledge moves upward through the spiral. When knowledge is codified by dialogue or documentation, externalization occurs. Combination is the joining of various forms of explicit knowledge. As knowledge progresses up the spiral the spiral widens, and this resembles the increased level of knowledge dissemination.

Orr (1996) studied how employees at Xerox perform their jobs, and reported that with continued practice the distinction between tacit and explicit knowledge becomes smaller and smaller. He emphasized that people understand explicit knowledge with reference to the actions they perform daily in their job and this creates tacit knowledge in their minds. His research showed that the technicians at Xerox interact with the machines and they gain practice-relevant knowledge in their field of work. So he argued that tacit knowledge about machines can only be gained through practice. Technicians at Xerox were also able to get help from more experienced members on how to deal with machines that are difficult to operate or broken down.

Brown & Duguid (2001) combined the various distinctions of knowledge in a single conceptual framework. They acknowledged the dual nature of knowledge and they claimed that knowledge manifests in two different ways - ‘sticky’ and ‘leaky’. They stated that as knowledge is led by
practice. With practice a person can identify where and how knowledge sticks and leaks. The central idea brought out by them is that knowledge leaks when it is shared and it sticks when it is not. They opined that as most firms are structured in a way to capitalize labor division knowledge generated in one division will stick to that division and would not be shared to other divisions. This can create knowledge asymmetries as different divisions may be having different practices. Knowledge, thus created in one firm, can leak to another firm with a similar divisional structure in which the same practice is shared. They concluded that bonds are created when practices are shared but barriers are formed when it is not shared. Even though there are barriers, organizations must try to channel knowledge throughout the firm. They added firms that are capable of overcoming stickiness will have a competitive advantage and increased innovation capacity.

Wasko & Faraj (2005) classified knowledge into three groups: as an object, as embedded within people and embedded within communities. Past researchers have mostly considered knowledge as an object and the knowledge residing within individuals, but have not concentrated on knowledge embedded in communities (Tsai, 2002; Borgatti & Cross, 2003; McFadyen & Cannella, 2004; Bock et al., 2005; Huysman & Wulf, 2005; Inkpen & Tsang, 2005; Chui et al., 2006). Social capital theory can be used to study knowledge embedded in communities (Nahapiet & Ghoshal, 1998).

2.2 Knowledge Management

Knowledge is regarded as a crucial resource and a vital strategic asset in organizations (Davenport & Prusak, 1998). Knowledge Management (KM) seeks to realize and utilize the knowledge which exists within an organization (Teece, 2000). Knowledge management includes the processes for generating, acquiring, capturing, assimilating, disseminating and applying
knowledge wherever it resides to help increase organizational performance (Scarborough et al., 1999). Darroch (2003) defined knowledge management (KM) as the process by which knowledge is created or located and managing the sharing and use of knowledge within organizations or between organizations. Management discipline is concerned with formulating a corporate policy and organizing, planning, controlling and directing the assets of the organization to achieve the policy objectives. It may be as small as one person in a small firm to hundreds or thousands of people in multinational companies to perform such management activities. There are two broad groups of knowledge management theories, hard and soft. Theories which deal with technology are called hard theories and those which deal with the human aspect in knowledge management are called soft theories.

Many concepts, definitions and views of KM have been presented in earlier literature (Nonaka & Takeuchi, 1995; Davenport & Prusak, 1998). Edwards (2011) has done a review of KM literature and found that there are many areas of disagreement between different KM researchers, but the central theme revolves around unlocking and leveraging the knowledge of individuals so that it is available as an organizational resource. Anderson & Willson (2009) stated that knowledge must be considered as a quantifiable and tangible manageable asset in order to comprehend knowledge management. However knowledge is not an easy concept to define and there has been different definitions and explanations even dating back to the era of Greek philosophers (Anand & Singh, 2011). Measuring knowledge becomes difficult because of the common view of knowledge as an intangible resource (Usoro et al., 2007). Knowledge management framework extents to and interacts with several disciplines like economics, sociology, psychology and philosophy. In economics and sociology, the aim is to
understand how knowledge is utilized in firms and social networks so as to increase profit and productivity. Psychology domain is concerned about how knowledge is learned, used, propagated and generated and about the mental processes and the human factors involved in them. The philosophical domain tries to explain the nature of knowledge itself (Anderson & Willson, 2009).

2.3 Virtual communities
A virtual community is made up of people who interact with each other in an online environment and having something in common. Virtual communities are enabled by technology and its members follow norms and guidelines of the community (Preece, 2000). Unlike direct communication in communities, communication in virtual communities is done with the help of computers online. Virtual communities may include chat programs, online forums, news and discussion boards etc.

Ridings & Gefen (2004) opined that people become members of a virtual community for sharing information or to satisfy their need for social support. It may also be used for creating and sustaining friendships or just for recreation. The same conclusions were also drawn by Horrigan, 2001 who stated that members of virtual communities may use it for a number of reasons. Even though many studies have been conducted on virtual communities, it is still difficult to give a precise definition to them (Porter, 2004). He added that because virtual communities have been studied from various perspectives and platforms, there is a lack of a common understanding about them, with each definition reflecting the perspective of a particular research group. As people are connected to each other with the help of a computer network, that network may be called as a social network. Considering virtual communities as a social network may help to provide a common definition for them.
Previous literature suggests several features of virtual communities. Five such features were identified by Porter (2004). He stated that any virtual community will have a reason or purpose for existence. The purpose of a virtual community will determine the content that is exchanged between the members of that community. Because a virtual community centers on a specific interest, it is crucial to identify the virtual community purpose. It will also be hosted or maintained in a particular place or location. Geographical location is particularly relevant for traditional communities. For virtual communities, location is the place which the members of the virtual community believe they are in (Blanchard, 2004; Porter, 2004). There will also be a platform on which the virtual community is built. This is the technical aspect of the virtual community. The virtual community will have members which make up its population, and finally each virtual community will follow some profit model. Porter (2004) divided virtual communities into three kinds, synchronous, asynchronous and hybrid. In synchronous communities like chat rooms, immediate exchange of information occurs, whereas in asynchronous exchanges may take time like in the case of an email forum. Hybrid communities may have a combination of both of these types.

Proper and efficient management of virtual communities will allow the members of the virtual community to share knowledge freely and quickly. This would in turn be beneficial to organizations (Rothaermel & Sugiyama, 2001). Organizations can make use of virtual communities to increase their business and to achieve their goals. Many advantages of virtual communities have been cited in literature like increasing the amount of sales (Brown et al., 2002), increasing brand and company loyalty (Bickart & Schindler, 2001), boosting hits to the website by increasing traffic (Bughin & Hagel, 2000) and in generating more revenue from
advertising (Rothaermel & Sugiyama, 2001). It has also been noticed that virtual communities help in product support (Hagel & Armstrong, 1997) and feedback from virtual communities also helps in developing new products (Moon and Sproull, 2001). Many researchers have found that virtual communities help in increasing the bond between the organization and its customers (Hagel & Armstrong, 1997; Brown et al., 2002).

2.4 Communities of Practice

People with common goals who join with each others to share professional knowledge or practices is called as a community of practice (Wenger, 1999). It helps in creating relationships between experts who have practical knowledge about a subject which is of interest to other members in the community. The social relationship which exists between the members of a community fosters the transfer of knowledge and ensures continuity within the community (Jin et al., 2010). It is a strategy employed by businesses to assist their employees in getting the required information. The major elements of a community of practice (CoP) are its domain, a network and practices. The domain is the set of issues that the particular community is meant to deal with. The network or the community is the set of relationships which exist between its members, and the practices are the standard ways of doing things (Lin & Lee, 2006). With a CoP, practitioners can obtain, contribute and become producers of knowledge.

The concept of CoPs is widely discussed in the fields of knowledge management, organizational learning and education (Cox 2005). Wenger et al. (2002) stated that in a community of practice people having the same concerns, problems or passions try to increase their comprehension and proficiency in an area with the help of constant interactions. Even though they may not work together every day, their interactions are characterized by problem-solving and the sharing of insight, advice and information (Wenger et al., 2002). Examples of CoPs include the cavemen of
prehistoric times discussing hunting strategy, the artisan guilds of the Middle Ages and the clubs and work/school groups we may belong to in modern life (Wenger et al., 2002). In the context of intentionally created CoPs within organizations, Garavan et al., (2007) state that the benefits to the organization includes improved access to knowledge and creation of a potential source of ideas for new products and services. Ardichvili et al. (2003) stated that the tacit knowledge possessed by a person is intangible and CoPs provide a way for sharing such tacit knowledge. Facilitating employees to talk about their experiences and thereby sharing and internalizing tacit knowledge seems therefore to be a practical solution (Ardichvili et al., 2003).

Online CoPs made possible by Internet technologies further expand the scope for knowledge-sharing. Developments in technology have been the main drivers in the transformation of the traditional community structure based on physical proximity, personal and family relationships or business associations to communities which exist based on common interests, need and goals (Holzmann & Dubnov, 2011). Lave & Wenger, (1991) provide three main characteristics that are crucial for CoPs. The first characteristic that they mentioned was the domain. It is the common interest on which exchanges occur in the community, and this is responsible in providing identity to the members in a CoP. Members of a CoP may be distinguished from others in their proficiency in a particular domain. The second characteristic that they mentioned is the community itself, in which they emphasized the importance of relationships and strong bonds between the members in a CoP. Such strong bonds allow the members to exchange knowledge freely and quickly and allow them to learn from other members. The third characteristic of a CoP is the practice which is common to the members of the CoP. It is the job or task with which the members are dealing with. Members of a CoP discuss and share knowledge about a particular job or task and it allows those with more experience in a job share what they have
learnt with newcomers. A CoP may have different names, like knowledge centers, practice hubs, etc and knowing the characteristics of a CoP helps in distinguishing them in an organization (Lave & Wenger, 1991).

To facilitate learning in a particular job, the management has to develop and give access to CoPs for all its members. The importance of CoPs for knowledge sharing and learning by employees should be recognized by management and participation in CoPs must be encouraged by them (Brown & Duguid, 1991). The scope and range of CoPs can also extend beyond the organization and such CoPs helps in gathering required knowledge and innovative ideas from external sources. An organization may have many CoPs in it and the organization itself may be considered as a large community. If CoPs are neglected by organizations they will lose out on all these advantages and will hinder learning of its employees (Lave & Wenger, 1991).

CoPs may be bound by geography without proper methods of communication and in such cases, the members from different locations could not properly benefit from the dispersion of knowledge within the community (Jin et al., 2010). There, the medium employed for communication and knowledge sharing would be direct person to person interaction and conversation. This limited the scope of traditional communities of practice to the immediate geographical locations (Jin et al., 2010). The growth and popularity of communities of practice exploded with the advent of the internet and the concept of online communities was born. Such online communities of practice are generally called Virtual communities of practice (VCoPs) (Lewis et al., 2010). Internet technologies offered better ways of undertaking communication despite vast geographical distances. This drastically improved the scale and scope of CoPs which could now take advantage of high collaboration speeds. Internet allowed users to transmit knowledge, research, data, and practical experience more easily (Lewis et al., 2010). People
from different areas of the globe could now meet and share knowledge due to the ubiquitous nature of the internet. Such interactions allowed communities to share knowledge quickly and effectively.

Wenger et al., (2002) stated that communities are not intended to be an additional burden for managers. Managers must try to comprehend the community and incorporate it as a part of their daily routine. Communities help in creating multiple power centers of knowledge and there will be an increase in organizational complexity compared to other approaches. As the centrality of power is reduced, there will be more diversity and more stakeholders responsible for directing the company. The decision making process becomes more and more complicated due to this, and the views and opinions of a larger number of people must be considered. Organizations which operate in such a way are more complicated when compared to a traditional organization. Greater effort is required to manage such knowledge organizations (McDermott, 1999). CoPs cannot be managed in the same organized way in which traditional organizations and communities are managed. They require managerial guidance and championing at every stage of the community’s lifecycle (Wenger et al., 2002).

Virtual Communities of Practice (VCoPs) are the expansion of the CoP model of Wenger et al. (2002) to the virtual world (Palmisano, 2009). Such an expansion is aided by the development and extensive availability of the Internet as a fast, flexible and cheap communication environment (Gouvea et al., 2006). Forums, wikis, blogs, email and social networking software are the technologies used to facilitate the methods of interaction between the personally unknown and geographically separated members of the VCoPs. Any user may create, assemble, organize, share and locate content, emphasizing the importance of participation for successful operation (Kamel et al., 2007). Wikipedia which is a free encyclopedia that anyone can add to or
edit is a good example of a Web 2.0 application, which is made up of the collaborative efforts of contributors who participate in the creation and updating of knowledge. The harnessing of Web 2.0 technology within organizations has become known as Enterprise 2.0 (McAfee 2009). Organizations adopt its tools and approaches to encourage participation in communities which produce useful information and knowledge.

For any community to survive in the long term the community must be promoted by its members (Algesheimer et al., 2005). Virtual community promotion is the willingness of its members to share or promote the community with others who are not members (Algesheimer et al., 2005). As new members join a community through community promotion there is a greater chance for survival of the community.

2.5 Knowledge Sharing: Knowledge collection and donation

It has been seen that social capital enables the sharing of different kinds of knowledge (Coleman, 1988; Fukuyama, 1995; Hazleton & Kennab, 2000; Adler & Kwon, 2002; Inkpen & Tsang, 2005). Building and using knowledge networks within the organization and giving employees access to required information are the basic necessities for knowledge sharing (Hoegl et al., 2003). Sharing of knowledge is important both at the personal level and the organizational level (Calantone et al., 2002; Scarbourough, 2003). Knowledge transfer is another word which is analogous to knowledge sharing. The only difference is that knowledge transfer requires the utilization of knowledge, whereas knowledge sharing stands for the exchange of knowledge which does not require knowledge utilization (King & Marks, 2004). Knowledge transfer will be effective only when the purpose and anticipated use of knowledge transfer is clearly known to the parties involved. In such cases interpersonal knowledge transfer may be very effective. It has been stated by Zainol & Zaki, (2010) that in most normal cases knowledge transfer is
relatively inefficient. Knowledge sharing involves a set of behaviors that aid in the exchange of acquired knowledge (Chow & Chan, 2008). Many theories have shown statistically various determinants that influence knowledge sharing in the organization (Wong et al., 2001; Bock & Kim, 2002; Ramasamy et al., 2006). Many authors have also theorized that social capital contributes to knowledge sharing (Gulati, 1998; Sandefur & Laumann, 1998). Knowledge sharing can be explained as attitude or willingness to donate and receive information.

Knowledge is about beliefs, values, and commitment (Nonaka & Takeuchi, 1995). Knowledge-sharing culture can be successfully promoted by firms by changing the attitudes and behaviors of employees to enhance willingness and consistency in sharing of knowledge (Connelly & Kelloway, 2003; Lin & Lee, 2004). According to Meyer & Allen (1997), a person’s willingness to give or receive knowledge is dependent on their affective commitment. They added that affective commitment is related not only to knowledge exchanges but also to any task which may require extra exertion. They added that willingness and eagerness are attitudes of people toward knowledge sharing. Willingness means that a person has a positive attitude towards other members of the group and is ready to reply to colleagues in a kind fashion. Members of a group will not begin to actively share their knowledge if they are not sure whether others are also willing to contribute to the group. Knowledge sharing is the group norm of reciprocity (Coleman, 1988, Putnum, 1993). A successful public good in the form of shared intellectual capital can be created with the help of collectivism norm residing in the social structure (Nahapiet & Ghoshal, 1998). Thus, group norms result in personal attitude willingness. Hooff & Ridder (2004) stated that exchanging knowledge depends on the strength of a person’s belief in communicating their intellectual capital to others. An actor that is willing to contribute knowledge will disburse his or her knowledge to others. As people expect their individual
knowledge to be appropriated by others they are usually found eager to share what they know and consider being valuable (De Vries et al., 2006). Wasko & Faraj (2005) suggested that the motivation to exchange knowledge comes when people think that such an action is worth the time and effort and also when they feel that they are capable of helping others. So they added that people are encouraged to share knowledge when they perceive that they will receive some benefits. Hall (2001) stated that when employees are certain of the usefulness of sharing knowledge, they would be more willing to share their personal knowledge to their colleagues. People would consider knowledge sharing to be useful if they believe that their actions will be appreciated and their knowledge welcomed. Personal attitude towards the willingness and eagerness to share knowledge will not be effective if the actors do not act in reality. The success of knowledge sharing depends on behavioral factors (Ismail & Yang, 2005).

2.6 Knowledge sharing in Virtual communities

Koh & Kim (2004) researched the relationship between sharing of knowledge in a community and the outcomes of a virtual community like community participation and community promotion. They also explored whether virtual community outcomes affect the loyalty towards virtual community service providers. Koh & Kim (2004) viewed knowledge sharing as having two distinct activities - knowledge posting and knowledge viewing. They proposed that community outcomes of participation and promotion would be influenced positively by the knowledge sharing activities of posting and viewing. The research model of Koh & Kim (2004) is shown in Figure 1 where they proposed the relationship between knowledge sharing activities and virtual community outcomes of participation and promotion.
They conducted interviews with a few leaders of Korean virtual communities to refine the questionnaire they used for their study which was adapted from previous literature. A pilot study was initially conducted in virtual communities hosted by Netian (www.netian.net) and 90 members participated. It was conducted to check the correctness, completeness and relevance of their study items. Modifications were made based on the recommendations obtained from the pilot study. The main study was conducted on Freechal (www.freechal.com) virtual community platform which has more than 11 million members and was the largest community service provider in Korea. Web-based online survey method was used for its low cost, fast responses and geographically unrestricted sample. A banner ad was shown to community members giving incentives for participation. In their web survey more than 3000 members from more than 600 virtual communities participated. Out of these, only those communities having at least 3 members were chosen. A final 641 usable questionnaires were received from 77 communities for analysis. Information about the size and age of the community and the average postings and viewings for each community was collected using archived data.
In the questionnaire the items were measured using a five point Likert scale (1=strongly disagree to 5=strongly agree). Logarithmic transformation was done to reduce the variance of knowledge posting and viewing activities due to the skewness of archived data. Mean value was calculated for the knowledge sharing activities of posting and viewing. It was calculated by dividing the cumulative postings and viewings with the community age. The reliability of the constructs was examined using Cronbach's alpha values. As knowledge sharing activity was considered at the community level, the individual responses also had to be transformed to the community level. To check normality of each variable the Kolmogorov-Smirnov Z test was used and each variable was found normal. The data was analyzed using multiple regression and their proposed hypotheses were tested. Finally validated model consists of knowledge sharing activity influencing community participation and community promotion. Community promotion influenced loyalty towards the virtual community provider (VCP).

Chiu et al. (2006) integrated two theories, the social capital theory and the social cognitive theory to study knowledge sharing in virtual communities. Human behavior is considered as interactions between personal factors, behavior and social networks according to the social cognitive theory. One important construct which originated from social cognitive theory is self efficacy. It shows how a person judges himself or herself as being able to organize and perform assigned duties. Outcome expectation is another construct of social cognitive theory which are the personal judgments’ about the consequences of their actions. Self efficacy was not considered as a construct of interest by Chiu et al. (2006) because their study was based on a global virtual community in which knowledge sharing is voluntary. Their model is given in Figure 2. Two different outcome expectations of knowledge sharing were identified – personal
and community related. They employed the conceptual framework on social capital as given by Nahapiet & Ghoshal (1998). They expected that the factors of social capital would be related to knowledge sharing in online communities.

![Research model](image)

**Figure 2: Research model- Chiu et al., (2006)**

It was reported by Chiu et al. (2006) that quantity of knowledge sharing was influenced by social interactions, reciprocity, and identification, but these factors were not seen to have an effect on knowledge quality. They reasoned that an indirect effect on knowledge sharing quality through trust may be the reason behind such a result. To verify this, additional LISREL analysis was done by considering a direct effect of social interactions, reciprocity and identification on trust. Trust was not seen to have a positive and significant effect on the quantity of knowledge sharing and they argued that this may be due to the fact that in trust is not necessary when risk is less. Their results showed a significant negative influence of shared vision on the quantity of knowledge sharing. Chiu et al. (2006) explained that those who share knowledge having a shared vision and language within a community is more focused on the quality of knowledge sharing rather than the quantity.
Chang & Chuang (2011) examined the reason behind individuals sharing their knowledge with unknown people and for no visible gains. By conducting a literature review, they concluded that social capital theory is best suited to find out the answer for their question. They applied social capital theory to general virtual communities as it was done by Chiu et al. (2006) and using the same social capital dimensions and constructs. Two factors of individual motivation namely reputation and altruism were also used in their study apart from the factors of social capital. Their research model is given in Figure 3. The dependent variable was knowledge sharing behavior which consisted of the quality of knowledge sharing and the quantity of knowledge sharing.

Figure 3: Research model- Chang & Chuang (2011)
The hypotheses proposed by Chang & Chuang (2011) were tested by using data collected with the help of a survey instrument with a seven-point Likert scale used to measure all items. Data was collected for their study by posting the survey on a website. The link of the website was then shared in forums and bulletin boards so that members can access the questionnaire. They considered all who completed the questionnaire as being valid virtual community user. They conducted three analyses - descriptive analysis, confirmatory factor analysis and multiple regression analysis.

Hierarchical regression was employed by Chang & Chuang (2011) to analyze and test the proposed hypotheses. They found that social capital factors had a significant positive effect on shared knowledge quality. Altruism was also found to have a significant positive effect on the quality of shared knowledge but reputation did not show such a relationship. There was a positive significant relationship quantity of shared knowledge and identification, reciprocity, shared language and altruism. Participant involvement was found to moderate the relationship between altruism and shared knowledge quantity.

2.7 Social Capital Theory

There is a tremendous effect of social capital on many social aspects like social welfare, crime rate, social cohesion and social economic status. It has been considered as a very critical asset by many researchers (Portes, 1998; Flap, 2000; Lin, 2001; Flap & Boxman, 2001). Social capital is an asset not only for individuals, but also for groups, communities and even the society (Helliwell, 2001). The interest shown by researchers on social capital has increased and many studies have been done to figure out how it originates and accumulates, and also to understand its economic and social impacts. Social capital has been largely considered as a heuristic phenomenon and many definitions and conceptualizations have been given to it. Numerous
research studies have concentrated on its application and measurement. Coleman (1990) defined social capital as resources which are socially structured, and help individuals within the structure to perform activities. Putnam (1995) mentioned social capital in the context of networks, norms and trust which are all parts of social life.

Grootaert, 1998 envisaged social capital with varying levels of scope, ranging from micro level to meso level and to the macro level. In all these levels, social capital is characterized by social norms and reciprocity. Social capital at the micro individual level is classified as a collection of personal participation in associations which are voluntary in nature, and the trust develops in other members as a result of this association. The number and density of groups in a given community makes up the meso level. It is assumed at this level that the presence of social capital is good and has a positive effect on the welfare of a community, and that as the number of groups’ increases, the benefits for the community also increases. According to the meso level, social capital can be equated to local groups like clubs, associations and civic bodies within a community or a region. The macro level social capital includes the social and political environment which gives shape to the social structure and which gives rise to social resources like trust and shard norms. Collier (1998) argued that political, legal and institutional environment shapes and nurtures community networks and the civil society. Putnam et al. (1993) and Fukuyama (1995) studied the heterogeneity of people participating in social activities across nations and races, from a cultural perspective. Compelling empirical evidence has been provided mostly for individual level social capital, because in this level microeconomic analysis can be done easily and its application and generalization in empirical models of research is possible. The meso and macro levels of social capital lack a common definition and standard, and there is also no quantitative measure of collective social capital. Glaeser (2000) stressed the
importance of individual level social capital and stated that social capital is produced by individuals and not communities. He added that any definition of social capital must begin at the individual level.

Types of social capital as given by Nahapiet & Ghoshal (1998) in their framework have become the most influential in studying social capital and intellectual capital. They stated that there are three dimensions of social capital - structural, relational and cognitive. Structural social capital deals with the bonds that arise due to the relationships that are formed between community members. Relational social capital can be defined as the individual trust among members and the organization and the employees’ commitment to the organization. Cognitive social capital is comprised of shared values and goals.

Structural dimension of social capital is concerned with the connections and the strength, density and centrality of the connections between the members in a community (Leana & Pil, 2006). Any organization may also be considered as a large network or community with social ties connecting the employees. Social network theory states that the connections between individuals may be strong or weak, and based on this, the social interaction ties are distinguished as strong ties and weak ties. Researchers have found out that having strong bonds or ties in an organization allow for the easy sharing of resources like knowledge (Bonner et al., 2005; Luo, 2003). These strong relationships between the employees also enable them to be proactive and innovative because of the access they have to knowledge (Luo, 2003; Walter et al., 2006). Many different types of knowledge may be shared within the organization like knowledge about a particular job, knowledge about some skill or capability or even market knowledge (Kale et al., 2000). The shared knowledge may be used to improve the performance of the organization and for organizational growth (Bonner et al., 2005). Interactions between human thought and the
organizational social context can create organizational knowledge.

Nahapiet & Ghoshal’s (1998) as well as Tsai & Ghoshal’s (1998) models explain the concept of cognitive social capital as the shared vision and shared goals of members in the organization. Shared vision is defined as members in the organization that are enthusiastic about pursuing the organizational vision, including members sharing the same ambition at work. Sharing goals means that members are enthusiastic about pursuing the collective goal, enthusiastic about pursuing the mission and they know what and how to achieve important work.

Shared vision means the conception of a person seeing him or her as one of the individuals in the group (Nahapiet & Ghoshal, 1998). Shared vision consists of the combined objectives (Naghavi et al., 2011) and the views of the community members on how members should behave. With shared vision employees may feel themselves to be partners in decision making in organizations (Sinkula et al., 1997). Possible misunderstandings in communications can be avoided when employees have similar perceptions on their behavior in the organization. Ideas, information and resources can be freely exchanged when such similar perceptions are shared between members. An organization’s members that have shared vision would consider themselves as partners and would not feel hesitant to share and exchange resources (Darvish & Nikbakhsh, 2010). Such employees would be more helpful and would be willing to engage in problem solving for the benefit of others.

Nahapiet & Ghoshal (1998) relied on Granovetter’s (1995) concept of social capital as an integrative framework for understanding the creation and sharing of knowledge in organizations. They argued that organizations have unique advantages for creating knowledge over more open setting. The findings from Laila’s research results (2007) have indicated that the strength of relationships contributes in a significant way to the sharing of public and private knowledge in
Frequent and close social interactions permit actors to know one another, to share important information, and to create a common point of view. Thus, the social ties interaction network is likely to be perceived as trustworthy by others in the network, and people are willing to share knowledge and information through their social strong ties (Hansen, 1999). According to several authors, the strength of the interpersonal connection can also affect how easily knowledge is transferred (Szulanski, 1996; Uzzi, 1997; Hansen, 1999). Strong ties for example can influence the value of knowledge via screening and matching, and their research results also show that the strengths of the firm’s ties can influence the transfer of knowledge and increase the firm’s capabilities (Cohen & Levinthal, 1990; Uzzi & Lancater, 2003). Uzzi (1997) has asserted that an organization that lacks frequent and extensive communication among members is unlikely to share knowledge, as the weak ties among members in units are unable to share knowledge.

Relational dimension is the third dimension of social capital. Tsai & Ghoshal (1998) identified trust as the major construct of the relational dimension of social capital. Trust is a concrete belief in the ability of others within a community (Barney & Hansen, 1994). Researchers have suggested that trust is one key aspect of the relational social capital and a facilitator of collective action (Coleman, 1990; Fukuyama, 1995). The theme of relational social capital can be linked to work commitment, which refers to the individual accepting an organizational goal and desiring to make efforts for the benefit of the organization (Mowday et al., 1979). Relationships have often been referred to cooperative advantage. Commitment and trust are key factors in enhancing successful relationships (Morgan & Hunt, 1994). Trust generally is viewed as an essential ingredient for successful relationships (Morgan & Hunt, 1994; Berry, 1995). Similarly, commitment is recognized as an essential ingredient for successful long-term relationships.
The achievements of mutual gain are developed through credible relationships which require such attributes as trust and commitment between partners (Kwon, 2011). Researchers have asserted that strong ties are typically associated with trust and facilitate the flow of information (Gulati, 1998; Rowley et al., 2000). Trust plays a key role in the willingness of network actors to share knowledge (Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998). A lack of trust may lead to competitive confusion about whether or not a network firm is an ally (Powell et al., 1996). Trust is process based, in the sense that members regularly test each other’s integrity—as trust develops over time, opportunities for knowledge sharing between network members’ increase, and trust can be analyzed as the fundamental energetic element of networks. Confidence in others is also essential to accepting the value of information, knowledge, referrals, and promises that are supported by the networks (Cross et al., 2001; Hansen, 2002; Borgatti & Cross, 2003). Hausman (2001) proposed that trust and commitment are relationship strength that influences the efficiency of firms. This statement has been empirically supported in a variety of inter-firm relationships (Hausman, 2001; Gilliland & Bello, 2002). Previous scholars show that relational social capital is defined as one of the exogenous latent variables which are comprised of trust and commitment. Trust bears great importance in the establishment of social relations (Sparito, 2001; Yilmaz & Atalay, 2009). In this sense, trust means the willingness of members to be vulnerable to help other members out of difficulties (Mayer et al., 1995). According to Fukuyama (1995), trust is the expectation that rises in a society where all the members act in line with the shared norms, regularly, honestly and cooperatively. Trust can be defined as the set of beliefs that the group is well intentioned, fair, and constructive, and is based on ethical norms (Carnevale & Wechsler
It is the belief that the organizational members will always try and help other members out if one gets into difficulties (Chow & Chan, 2008). As Blau (1964) described the trust process, individuals initiate an exchange by making an investment in another party by offering a favor. The others will be motivated to reciprocate their favor with a similar return. Thus, in organizational trust, members are willing to give a hand when others need it (Chow & Chan, 2008). Mayer et al., (1995) proposed that trust is the expectation that the other party’s act can have important results. According to Leena & Van Buren (1999), trust means the belief in and acceptance of the ability of individuals to contribute their efforts to helping others collectively. Trust can be viewed in relation to the organizational culture, one that encourages people to engage in solving problems and making the job easier. Certain environmental conditions allow a person to reliably expect to be able to obtain and use the resources made available through his or her contacts (Gambetta, 1988; Ring & Van de Ven, 1994; McAllister, 1995; Nahapiet & Ghoshal, 1998). Mutual trust among members means that other members will not cause harm in their work (Chow & Chan, 2008). Luhmann (1979) cited in Yilmaz & Atalay (2009) states that trust can be viewed as the belief of a person that the acts of the other consider his or her own good.

Social capital has been posited at several levels of analysis drawing on different perspectives. Researchers use the level of social capital in describing the attributes of nations or geographic regions (Bankston & Zhou, 2002; Coleman, 1988; Fukuyama, 1995; Putnam, 1995; Portes, 1998); communities (Putnam, 1993); individual networks (Burt, 1992); firms in their interactions with other firms (Baker, 1990); individual actors (Belliveau et al., 1996); and aggregate component of groups (Newton, 1997; Kilpatrick et al., 1998; Buys and Bow, 2002; Sander, 2002). Social capital thus crosses several levels of analysis and has been described at a macro (society, nation, and region), meso (group), and micro (individual) levels (Paxton, 1999).
2.8 Social capital to understand knowledge sharing

With the advent of the internet, individuals and firms have understood the value that may be derived from using virtual communities. Since interactions between members in a virtual community are a social activity, social factors or resources embedded in networks should influence members' knowledge collection and donation behaviors. Virtual communities of practice have a great impact on firms and they influence marketing capabilities, sales, product and service development and supplier/distribution networks (Wang & Fesenmaier, 2002). To guarantee community success and perpetuation, the virtual community of practice must be promoted by its members (Algesheimer et al., 2005). It has been found that satisfaction and repeated usage of a virtual community leads to profitable behaviors like community promotion (Koh & Kim, 2004).