CHAPTER 3: HYPOTHESES DEVELOPMENT

3.1 Literature Gaps

After conducting an extensive search of literature on VCoPs in the context of knowledge sharing, the following substantial gaps have been identified. These identified gaps become the basis for the development of the hypotheses in this study.

- 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. Nahapiet & Ghoshal (1998) and Tsai & Ghoshal (1998) have provided only a conceptual framework, without any empirical validation of it.
- 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 et al., 2002). The antecedents and consequences of member participation in virtual communities of practice have not been determined.
- To guarantee community success and perpetuation, the VCoP must be promoted by its members (Algesheimer et al., 2005). Koh & Kim (2004) reported that satisfaction and repeated usage of a virtual community leads to profitable behaviors like community promotion. But there is a lack of research on how knowledge sharing may lead to community promotion in the case of VCoPs.

3.2 Definition and Description of Constructs

*Social Interactions* are exchanges between two or more individuals and is a building block of society (Leana & Pil, 2006). Social interaction can be studied between two individuals (dyads), three individuals (triads) or larger social groups. Social interactions in a VCoP are the
knowledge exchanges that happen between its members. As per the framework given by Nahapiet & Ghoshal (1998), social interactions are a part of structural social capital. It refers to the connections among members in a community and with whom and with what frequency they share information. Hence, a VCoP may be viewed as a social network. Social network theory defines society as built up of individuals in various forms, with weak and strong ties. A number of researches have confirmed that social interactions provide communities with access and resources, such as knowledge (Bonner et al., 2005; Luo, 2003).

Trust is the firm belief in the reliability, truth, or ability of someone or something. According to Nahapiet & Ghoshal (1998), trust is an important outcome of people engaging in social relationships. Trust is a necessary condition for knowledge exchange and sharing (Davenport & Prusak, 1998). Tsai & Ghoshal (1998) defined the relational dimension of social capital as assets that are rooted in relationships, such as trust. Trust as a relational social capital is process based, in the sense that members regularly test each other’s integrity and trust develops over time. Hence, trust is the fundamental energetic element of networks (Berry, 1995). Repeated and long-lasting relationships between the actors in the network are key characteristics of social networks (Podolny & Page, 1998). As people build relationships in a VCoP, mutual trust between the members increase and this mutual trust may influence knowledge sharing behaviors.

Reciprocity is a sense of mutual indebtedness, so that members in a VCoP reciprocate by repaying the benefits they receive from other members. This helps to ensure an ongoing supportive exchange between the members in a VCoP. People willing to share their knowledge will expect others to reciprocate in the same way for mutual benefit and achieving organizational goals (Adler & Kwon, 2002). Participation by knowledge sharing in VCoPs is open and voluntary and people who search for knowledge have no control over the sources and quality of
the responses they receive. People who help these knowledge seekers initially have no assurance that the favor will be returned by those who have received the help. This is not the case with traditional communities of practice where knowledge exchanges occur face-to-face. In traditional communities, people typically know each other through on-going interactions with expectations of obligation and reciprocity.

*Identification* is a person's sense of identity with the community. It is the level of oneness or the sense of belonging, a person feels with a community. Nahapiet & Ghoshal (1998) stated that through identification, individuals perceive themselves as being one with others in a group and that identification motivates the combination and exchange of knowledge. Identification creates a positive feeling in individuals towards a VCoP. Members of communities would not contribute knowledge unless they consider other members as partners and that contribution is conducive to their welfare.

*Shared Vision* in a community creates a sense of commonality, gives coherence to diverse activities and allows everyone to work together. It creates a common identity and a sense of purpose. Cohen & Prusak (2001) stated that shared vision binds the members of human networks and communities, and this makes cooperative action possible which is beneficial to organizations, Tsai & Ghoshal (1998) defined shared vision as the collective goals and aspirations of the members of an organization. They added that shared vision helps to integrate and combine resources from different parts of an organization and works as a bonding mechanism and there is a greater chance for those who share a vision to become partners in sharing or exchanging their resources.

*Shared Language* refers to people developing words and phrases which arise out of an understanding amongst themselves based on their jobs by making communication more
effective. It includes all the acronyms, subtleties, and underlying assumptions that become part of daily interactions between members in a community (Lesser & Storck, 2001). Shared language provides an opportunity for participants to understand each other and to build a common vocabulary in their domains. According to Nahapiet & Ghoshal (1998), shared language accelerates the combination and exchange of intellectual capitals. They added that shared language increases a person’s capability to gain access to others and their information. Social exchange and knowledge transfer by different parties is made possible with a shared language. Hence, shared language helps in sharing knowledge and ideas and also improving the efficiency of communication in a VCoP.

*Community Promotion* is the act of persuading others to join the community. For any community to survive in the long term, the community must be promoted by its members (Algesheimer *et al*., 2005). Promotion of a VCoP may be defined as the member’s intentions to recommend the VCoP to non-members (Algesheimer *et al*., 2005). Community promotion occurs when members recommend the virtual community to others by communicating the benefits of joining the community. Members of a VCoP who actively share knowledge with each others have a greater chance of promoting the community to others. This would bring in new members and new knowledge into the VCoP.

*Knowledge collection and knowledge donation* are the two parts of knowledge sharing (Hooff *et al*., 2004). Knowledge donation means the willingness of an individual to share his or her intellectual capital and knowledge with others, whereas knowledge collection is a person’s willingness to consult, adopt and accept new intellectual capital and know-how from his or her colleagues (De-Vries *et al*., 2006). The willingness and eagerness of individuals to share knowledge is important to communities and organizations. In VCoPs, knowledge donation as
well as knowledge collection is required among the members to share their knowledge voluntarily.

3.3 Hypotheses development

Knowledge sharing has been proposed to consist of both bringing or donating knowledge and gathering or collecting knowledge (Hoof & Rider, 2004). Since these activities are not the same, and as they may have different consequences, it is crucial to consider them as two distinct parts of knowledge sharing. Most studies in the past have considered knowledge sharing as a single construct. If employees do not take an active role in a community by donating knowledge and use it only to get answers to their problems, the survival of the community would be at stake. Even though it is not compulsory or forced by management, employees have been seen in prior studies to voluntarily participate, by not only searching for knowledge, but also giving knowledge (Koh & Kim, 2004). Employee’s interest and involvement in a community increases as they donate their knowledge to help other members. This may enable them to promote the community to others, and make other employees also join. Hence it is proposed that knowledge donation will have a positive influence on community promotion in VCoPs and accordingly the hypothesis $H_{1a}$ has been developed as given below:

$H_{1a}$: Knowledge donation positively influences community promotion in VCoPs.

Participation happens not only by donation of knowledge, but also by collection. Employees can use the VCoP as a quick and easy way to find solutions to their problems from experts in their field. The VCoP gives access to employees who may have more experience with a particular job or function with which someone is facing problems. When someone receives help by collecting necessary knowledge from other members in a VCoP, they may have good opinion on the community in their minds and may promote the community with others. The members may feel
that others can also take advantage of collecting the knowledge easily available in communities and may persuade them to join the community. Hence it is proposed that knowledge collection will have a positive influence on community promotion in VCoPs and the hypothesis $H_{1b}$ is developed as shown below:

$H_{1b}$: Knowledge collection positively influences community promotion in VCoPs.

The more knowledge a person collects, the more he or she would be willing to donate it to others. The benefits of knowledge sharing are realized through knowledge collection which increases a person's willingness to share or donate (Wang & Noe, 2010). As an employee gets help from other members in a community, he or she may feel the need to reciprocate by helping others in sharing the knowledge within the community. The more a person receives help, the more he or she would be willing to help others in need. Collecting knowledge from communities, may also lead to the formation of strong bonds between the members in the community and this may, in turn, lead to knowledge donation. Hence it is hypothesized ($H_2$) that knowledge collection has a positive influence on knowledge donation in VCoPs, as given below:

$H_2$: Knowledge collection positively influences knowledge donation in VCoPs.

As stated by Nahapiet & Ghoshal (1998) about social capital theory, the network of relationships and the set of resources which are embedded within a virtual community influence the interpersonal knowledge sharing. Both knowledge collection and knowledge donation makes knowledge sharing among the people. It has been seen in the case of virtual communities that the social capital factors of trust, shared language and shared vision have a direct impact on knowledge sharing, while the factors of social interactions, reciprocity and identification did not (Chiu et al., 2006). Nahapiet & Ghoshal (1998) reported that the relational dimension of social capital comprises of trust and trustworthiness, which are assets that are rooted in relationships.
While trust is considered to be a characteristic of an association between people, trustworthiness is seen as an element of an individual actor engaged in the particular association (Barney & Hansen, 1994). Researchers have placed more importance on trust and have described it as a key aspect of relational social capital. They have highlighted the important role played by trust in any collective action including knowledge sharing (Coleman, 1990; Fukuyama, 1995). Morgan & Hunt (1994) considered commitment and trust as the most important factors that enhance successful relationships. Trust is regarded as an essential ingredient for building successful relationships within a community (Berry, 1995, Morgan & Hunt, 1994). Relationships have often been referred to as cooperative advantage and stronger relationships require higher levels of trust. Hence higher trust between members in a VCoP should influence knowledge sharing (collection and donation) in a positive way, and accordingly, the hypotheses $H_{3a}$ and $H_{3b}$ are formulated as shown below:

$H_{3a}$: Trust positively influences knowledge collection in VCoPs.

$H_{3b}$: Trust positively influences knowledge donation in VCoPs.

The research models of Nahapiet & Ghoshal’s (1998) and Tsai & Ghoshal’s (1998) as well explain the concept of cognitive social capital as the shared vision and shared language of members in an organization. A VCoP is meant to deal with a particular job or activity, and members in a particular VCoP would all be performing generally the same job. Such job related communities often see members making special words or jargons or acronyms which may not be familiar to an outsider. These words or language used in a VCoP is unique and only members who have experience in that VCoP would be able to comprehend them. Knowing such words and jargons usually helps the members in the community to communicate quickly and effectively. If a member in a VCoP is comfortable with the language used in the community,
they would be more willing to share and receive knowledge using the community. Based on this, the hypotheses $H_{4a}$ and $H_{4b}$ have been formulated and are given below:

**$H_{4a}$:** *Shared Language positively influences knowledge collection in VCoPs.*

**$H_{4b}$:** *Shared Language positively influences knowledge donation in VCoPs.

Cognitive social capital also includes shared vision meaning that members in an organization are enthusiastic about pursuing the organizational vision and sharing the same ambition at work. A person considering himself or herself as one of the individuals in a group will be possible with the help of shared vision (Nahapiet & Ghoshal, 1998). A shared vision enables members in a social system like a community or an organization to act and behave properly (Tsai & Ghoshal, 1998). Employees view themselves as partners in decision making and feel responsible for directing the organization (Sinkula *et al.*, 1997). When members in a community have the same perceptions on how to interact with other members, any misunderstandings in communication can be avoided. A shared vision helps members of a VCoP to build relationships in which sharing, exchanging, integrating, and combing resources may happen (Darvish & Nikbakhsh, 2010). With a shared vision, the members in a VCoP can freely exchange ideas, information and resources. Therefore, shared vision has been hypothesized ($H_{5a}$ and $H_{5b}$) to positively influence knowledge sharing representing both collection and donation of knowledge. The two hypotheses thus developed are shown below:

**$H_{5a}$:** *Shared Vision positively influences knowledge collection in VCoPs.*

**$H_{5b}$:** *Shared Vision positively influences knowledge donation in VCoPs.*

Chiu *et al.* (2006) imagined the possibility of an indirect effect of social interactions, reciprocity and identification on knowledge sharing through trust. The more interactions a person has with others in a VCoP, greater is the chance of developing trust on other members. As people have
social interactions, their feeling of trust towards others would also increase. So social interactions may positively influence trust in VCoPs. If a person believes that his/her actions in the community would be reciprocated, his/her level of trust towards the members in the community would also be high (Chiu et al., 2006). Members of a VCoP would themselves be more willing to help others when they believe that others would also be willing to help them. So, the norm of reciprocity is hypothesized to positively influence trust in VCoPs. When members feel oneness with a particular community and identify themselves with a community, they would be more open to develop trusting relationships. Therefore social interactions, norm of reciprocity and identification are hypothesized (H_6, H_7 and H_8) to positively influence trust in VCoPs. The three hypotheses thus developed are given below:

**H_6:** Social interaction positively influences trust in VCoPs.

**H_7:** The norm of reciprocity positively influences trust in VCoPs.

**H_8:** Identification positively influences trust in VCoPs.

### 3.4 Regression equations related to Hypotheses developed

A regression equation represents the relation between the selected values of one variable (x) and observed values of the other variable (y) and permits the prediction of the most probable values of y. It takes the form of \( y = a + bx + c \), where ‘a’ is the y-intercept and ‘b’ is the slope of the regression line and ‘c’ is the value called the regression residual. In testing the hypotheses, one regression equation will be developed for each hypothesis to check how much the predictor variables (x) influence the predicted variables (y). Structural equation modeling (SEM) simultaneously checks all the regression equations in order to test all the framed hypotheses included in the research model. In this study, for each framed hypothesis, one such regression equation has been developed.
1) Hypothesis, $H_{1a} : CP = \alpha_1 + \beta_1 KD + \varepsilon$, where $KD$ means Knowledge Donation, and $CP$ means Community Promotion.

If estimated $\beta_1$ is positive and statistically significant; then knowledge donation (KD) is positively related with community promotion (CP). Thus $H_{1a}$ will be supported.

If estimated $\beta_1$ is negative and statistically not significant; $H_{1a}$ will not be supported.

2) Hypothesis, $H_{1b} : CP = \alpha_2 + \beta_2 KC + \varepsilon$, where $KC$ means Knowledge Collection.

If estimated $\beta_2$ is positive and statistically significant; then knowledge collection (KC) is positively related with demand management capability (CP). Thus $H_{1b}$ will be supported.

If estimated $\beta_2$ is negative and statistically not significant; $H_{1b}$ will not be supported.

3) Hypothesis, $H_2 : KD = \alpha_3 + \beta_3 KC + \varepsilon$

If estimated $\beta_3$ is positive and statistically significant; then knowledge collection (KC) is positively related with knowledge donation (KD). Thus $H_2$ will be supported.

If estimated $\beta_3$ is negative and statistically not significant; $H_2$ will not be supported.

4) Hypothesis, $H_{3a} : KC = \alpha_4 + \beta_4 TR + \varepsilon$, where $TR$ stands for Trust.

If estimated $\beta_4$ is positive and statistically significant; then trust (TR) is positively related with knowledge collection (KC). Thus $H_{3a}$ will be supported.

If estimated $\beta_4$ is negative and statistically not significant; $H_{3a}$ will not be supported.

5) Hypothesis, $H_{3b} : KD = \alpha_5 + \beta_5 TR + \varepsilon$

If estimated $\beta_5$ is positive and statistically significant; then trust (TR) is positively related with knowledge donation (KD). Thus $H_{3b}$ will be supported.

If estimated $\beta_5$ is negative and statistically not significant; $H_{3b}$ will not be supported.

6) Hypothesis, $H_{4a} : KC = \alpha_6 + \beta_6 SL + \varepsilon$, where $SL$ stands for Shared Language.

If estimated $\beta_6$ is positive and statistically significant; then shared language (SL) is
positively related with knowledge collection (KC). Thus $H_{4a}$ will be supported.

If estimated $\beta_6$ is negative and statistically not significant; $H_{4a}$ will not be supported.

7) Hypothesis, $H_{4b}$: $KD = \alpha_7 + \beta_7 SL + \epsilon$

If estimated $\beta_7$ is positive and statistically significant; then shared language (SL) is positively related with knowledge donation (KD). Thus $H_{4b}$ will be supported.

If estimated $\beta_7$ is negative and statistically not significant; $H_{4b}$ will not be supported.

8) Hypothesis, $H_{5a}$: $KC = \alpha_8 + \beta_8 SV + \epsilon$, where $SV$ stands for Shared Vision.

If estimated $\beta_8$ is positive and statistically significant; then shared vision (SV) is positively related with knowledge collection (KC). Thus $H_{5a}$ will be supported.

If estimated $\beta_8$ is negative and statistically not significant; $H_{5a}$ will not be supported.

9) Hypothesis, $H_{5b}$: $KD = \alpha_9 + \beta_9 SV + \epsilon$

If estimated $\beta_9$ is positive and statistically significant; then shared vision (SV) is positively related with knowledge donation (KD). Thus $H_{5b}$ will be supported.

If estimated $\beta_9$ is negative and statistically not significant; $H_{5b}$ will not be supported.

10) Hypothesis, $H_{6}$: $TR = \alpha_{10} + \beta_{10} SOC + \epsilon$, where $SOC$ means Social Interaction.

If estimated $\beta_{10}$ is positive and statistically significant; then social interaction ties (SOC) is positively related with trust (TR). Thus $H_{6}$ will be supported.

If estimated $\beta_{10}$ is negative and statistically not significant; $H_{6}$ will not be supported.

11) Hypothesis, $H_{7}$: $TR = \alpha_{11} + \beta_{11} REC + \epsilon$, where $REC$ stands for Norm of reciprocity.

If estimated $\beta_{11}$ is positive and statistically significant; then norm of reciprocity (REC) is positively related with trust (TR). Thus $H_{7}$ will be supported.

If estimated $\beta_{11}$ is negative and statistically not significant; $H_{7}$ will not be supported.

12) Hypothesis, $H_{8}$: $TR = \alpha_{12} + \beta_{12} ID + \epsilon$, where $ID$ stands for Identification.
If estimated $\beta_{12}$ is positive and statistically significant; then identification (ID) is positively related with trust (TR). Thus $H_8$ will be supported.

If estimated $\beta_{12}$ is negative and statistically not significant; $H_8$ will not be supported.

### 3.5 Research Model

Based on the developed hypotheses and the relationships among the defined constructs, a conceptual research model has been developed, as shown in Figure 4. Trust with its three antecedents (social interactions, norm of reciprocity and identification) is related to both the parts of knowledge sharing (knowledge donation and knowledge collection). Similarly, shared vision and shared language have also been related to the two parts of knowledge sharing. Knowledge collection is related to knowledge donation. Finally, both knowledge donation and knowledge collection are related to community promotion.

Figure 4: Research Model
3.6 Endogenous Variables

In a causal model or causal system, an endogenous variable is a factor whose value is determined by the states of other variables in the system. A purely endogenous variable is a factor that is entirely determined by the states of other variables in the system. An endogenous variable is said to be of internal origin and represented as the effects of other variables (i.e., at least one arrow pointing to it). It may be compared to a dependent variable in ANOVA (Analysis of variance) or an outcome or criterion variable in regression. In the present study, the endogenous variables are trust, knowledge collection, knowledge donation and community promotion.

3.7 Exogenous Variables

An exogenous variable is that variable whose value is entirely causally independent from other variables in the system. Exogenous variables are said to be of external origin. The causes for these variables are not included in the model (i.e., no arrows are pointing to the variable; only arrows pointing out). Exogenous variables may be similar to an independent variable, as in ANOVA or a predictor variable in regression. In this study, the exogenous variables are the social capital factors: social interaction, identification, norm of reciprocity, shared language and shared vision.

In summary, the Chapter 3 develops the rationale for each of the constructs or factors of social capital leading to knowledge sharing and community promotion in VCoPs and thereby developing the relevant hypotheses. This chapter also shows the basis for the division of knowledge sharing construct into knowledge collection and donation. It results the research model, which is to be validated by testing the framed hypotheses.