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Communities of Practice, Knowledge Creation, and Corporate Sustainability: A Study of Bahrain Service Industry

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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Signature:

Date: 12/10/2010

Abstract

The Kingdom of Bahrain is a service-based economy in which the service industry is a highly competitive market environment. Therefore, organisations require employing strategies to compete and sustain their competitive advantage in order to survive. The knowledge-based view of the firm argues that knowledge is a critical source for sustainable competitive advantage. Communities of Practice (CoPs) provide a suitable environment for knowledge exchange and creation. This study defined CoPs as emergent informal networks of people who are located inside and outside the organisation, through which members of these communities share or are interested in the same practice and knowledge. It is noticed from the literature that there is no empirical study investigating the impact of knowledge created in CoPs on corporate sustainability. Moreover, the influence of social capital on quantity and type of knowledge received from different CoPs members is scarce. This research attempts to address this research gap.

The study combined qualitative and quantitative approaches. The information obtained from the literature was used to develop the initial research model. In the first phase, a qualitative field study is carried out to develop a comprehensive research model. A number of hypotheses were then developed. The second phase of the study pilot tested the developed questionnaire. Minor changes were made based on the pilot study participants' comments and feedback.

The third phase of the study is the main quantitative survey. The questionnaire for survey was distributed among senior managers in Bahrain top 100 service organisations both in the public and private sectors. 333 completed questionnaires were returned to the researcher with the response rate of 54%. Partial Least Squares (PLS) was employed to analyse the data collected in the main survey.

The findings of the study did not support all the hypotheses developed in this study. It was found that communities of practise exist in Bahrain service industry, where two types of CoPs are noticed: intra (co-located employees and non co-located employees) and inter CoPs (customers, suppliers, and business partners). It was also found that

co-located employees' and customers' CoPs have the major effect on organisation performance as the knowledge received from them is employed in the knowledge creation process to generate new knowledge in order to improve organisation performance. An interesting finding is the positive effect of CoP characteristics on the knowledge received. Therefore, CoP characteristics do not only identify this type of network but also influence the amount of knowledge received from community members. On the other hand, the knowledge received from CoPs affect the knowledge creation process in its four steps (interaction and communication, develop pool of knowledge, alternative experimentations, and solution to problem). Furthermore, the study empirically tested that knowledge creation process is carried out in four sequential steps. It was also found that the last step of the knowledge creation process "find solution to problem" has the greatest influence on the generation of new knowledge. It was also found that new knowledge positively affects organisational social, environmental, economic, and non economic performances (i.e. corporate sustainability). The study results did not support the hypothesis that social capital aspects (trust, norms, and identification) moderate the amount of knowledge received from CoPs.

From the literature review and the study findings, it is recommended that organisations within Bahrain service industry should develop a knowledge management strategy and implement CoPs to sustain their position in the market. Moreover, the strategy should contain appropriate measures of sustainability objectives.

Despite the fact that the study was conducted in Bahrain service organisations, it is suggested that it can be applied to different organisations in various countries across the globe because of its generic approach. However, it needs to be customised for local application.

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List of Abbreviations

ATX .... Alternative experimentations

AVE .... Average variance extracted

CLE .... Co-located employees CoP

CoP .... Community of Practice

CoPR .... CoP relations

CS .... Corporate Sustainability

CSR .... Corporate Social Responsibility

CUS .... Customers CoP

ECP .... Economic performance

ENP .... Environmental performance

GCC .... Gulf Cooperation Council

GDP .... Gross Domestic Product

HR .... Human Resource

ICR .... Internal consistency reliability

IDN .... Identification

INCO .... Interacts and communicate

KRC .... Knowledge received

NCLE .... Non co-located employees CoP

NECP .... Non economic performance

NoP .... Network of Practice

NRM .... Norms

NWK .... New knowledge

PLK .... Pool of knowledge

PLS .... Partial Least Squares

PRT .... Partners CoP

R&D .... Research and Development

R^2 .... R-square

ROI .... Return on Investment

ROS .... Return on Sales

SCP .... Social performance

SECI .... Socialization, Externalization, Combination, and Internalization

CHAPTER ONE

Introduction

1.1. Overview

The Kingdom of Bahrain – like other Gulf Cooperation Council (GCC) countries – is trying to diversify its economy instead of depending solely on the export of oil (Al-Jasser and AlHamidy 2003). Bahrain Minister of Industry and Commerce Dr. Hassan Fakhro stated that "Bahrain is service-based economy" (Kingdom of Bahrain Ministry of Industry and Commerce 2006). Accordingly, the number of national/international service organisations – especially in the financial sector – is increasing rapidly (Central Bank of Bahrain 2004) and ultimately fierce competition is growing. With this highly competitive market environment, organisations require to employ strategies to compete and sustain their competitive advantage in order to survive. Grant's (1996 a, b) knowledge-based view of the firm argues that knowledge is a critical source for sustainable competitive advantage. This view has been supported by Soliman and Youssef (2003a) who reported that knowledge itself could play a critical role in enterprise knowledge management. This implies that knowledge creation is also critical to organisational knowledge management activities. As stated by Sharkie (2003, 20) "The development of sustainable competitive advantage is a vital management function and an important requirement is the nurturing of a knowledge creating environment to enable the organisation to exploit and develop resources better than rivals and create sufficient knowledge to address the industry's future success factors." CoPs provide this suitable environment to create knowledge by facilitating the exchange of knowledge among members. Roberts (2006) suggested that CoPs inside and outside the legal boundaries of the organisation should be employed to leverage organisation's knowledge capacities. This is because the literature and practice in management are increasingly influenced by CoPs approach due to its significance as a mechanism to understand, transfer, and create knowledge

(Roberts 2006). Hence, CoP is a successful tool to create knowledge required to achieve sustainable competitive advantage. The name and style of CoPs vary among organisations; differences can be in size, time of existence, geographic location, backgrounds, organisation boundaries, initiation, and recognition (Wenger, McDermott and Snyder 2002). Many researchers investigated the role of either intra CoPs or inter CoPs (also known as networks of practice NoPs) on individual or organisational performance (Braun 2002; Lesser and Storck 2001; Fey, Teigland, and Birkinshaw 2000; Teigland 2002, 2003; Teigland and Wasko 2003, 2004) and the impact of social capital on the knowledge transfer or exchange within these networks (Wasko and Faraj 2005; Wasko, Faraj, and Teigland 2004). It is noticed from the literature that there is no empirical study investigating the impact of knowledge created in CoPs on corporate sustainability. Moreover, the influence of social capital on quantity and type of knowledge received from different CoPs members is scarce. It is noticed – to the best of researcher knowledge – that within the context of Bahrain there are no studies investigating the role of CoPs on corporate sustainability and the level of social capital and its effect on knowledge received from CoPs. Hence, this study examined the relationship between knowledge created within CoPs, corporate sustainability, and social capital in the context of Bahrain contributing significantly to the literature.

1.1.1. Communities of Practice (CoPs)

Community of practice (CoP) approach was originally developed by Lave and Wenger in the beginning of the 1990s (Roberts 2006). Despite the criticism of this approach by several scholars (e.g. Contu and Willmott 2003; Fox 2000; Handley et al. 2006; Marshall and Rollinson 2004; Mutch 2003), currently various organisational environments utilise this approach as a tool for analysing and transferring knowledge (Roberts 2006).

Under the CoP theory individual and group tacit knowledge is shared and transferred among members (Teigland 2003). However, Teigland (2003) argued that the lack of methodology and sample in the CoP empirical studies and the generalisation of CoP theory is questioned. Further, Chae et al. (2005) indicated that the disagreement in

conceptualising CoPs and networks of practice (NoPs) occur because of the different presumption by several authors (like Brown and Duguid 2001; Faraj and Wasko 2002).

CoPs exist within an organisation as well as between different organisations (Braun 2002). As mentioned earlier, this study involved both internal and external CoPs including co-located and non co-located employees, customers, suppliers, partners, and rivals. The study of external CoPs that specifically concentrated on customers and suppliers are scarce. Although, Wenger, McDermott and Snyder (2002) believed that customers' and suppliers' CoPs are beneficial tools for organisations and individuals. Several researchers argued that individuals are willing to share their knowledge with employees in rival organisations within NoPs (Schrader 1991; Teigland 2003; von Hippel and Schrader 1996). Regarding partner CoPs, it is noticed that vital information and know-how is exchanged among alliance partners in close personal interaction and strong relational or social cooperation between them (Dyer and Singh 1998; von Hippel 1988).

From the above, it is noticed that the majority of the studies of CoPs and NoPs are done separately. Teigland (2003) in her PhD thesis combined the different types of CoPs and NoPs (that she categorised as: communities of practice, intra-organisational distributed network of practice, intra-organisational electronic network of practice, inter-organisational distributed network of practice, and inter-organisational electronic network of practice) to examine the structure of these networks and their effects on individual performance. This study examined the impact of knowledge received from participants in internal and external CoPs on creating knowledge for corporate sustainability. Nevertheless, in the area of participating in different CoPs and NoPs, there is disagreement between researchers. Proponents argue that combining internal and external knowledge may increase employees' ability to develop creative solutions and improve performance (Teigland and Wasko 2003; von Hippel and Schrader 1996). Alternatively, opponents believe that participating in different communities of practice – each with different goals and identities – will create tension and conflict (Handley et al. 2006). It is noticed that there is a lack of empirical study on CoP relation with corporate sustainability. Therefore, this study will contribute significantly to the literature.

1.1.2. Knowledge Creation

In the literature two major types of knowledge are dealt with as tacit and explicit (Polanyi 1966). It is noted from the knowledge management literature that Polanyi's tacit knowledge is frequently used as an equal to the term implicit knowledge (Day 2005). Moreover, Tuomi (1999) declared that Polanyi and Nonaka and Takeuchi differently interpreted the distinction between tacit and explicit knowledge. The writer acknowledged that "Polanyi, tacit knowledge is a precondition for meaningful focal knowledge, and there is no explicit knowledge without subsidiary, marginal, and tacit meaning structure that underlies all focal knowledge." (Tuomi 1999, 12) Alternatively, Nonaka (1994), Nonaka and Takeuchi (1995), and Nonaka, Toyama, and Nagata (2000) stated that the formulation and communication of tacit knowledge is harder than explicit knowledge. When tacit and explicit knowledge is shared between individuals and groups inside and outside the organisation, new knowledge will be created (Nonaka and Toyama 2005). Von Krogh and Grand (2000) defined knowledge creation as the sharing of tacit knowledge between individuals within an organisation and then converting it to explicit knowledge that can be structured and formalised to facilitate its transference in a wider range. Furthermore, Nahapiet and Ghosal (1998) argued that the combination and exchange of existing tacit and explicit knowledge will create new knowledge.

Nonaka's theory of organisational knowledge creation assumed that knowledge is created through the spiral of social interaction between tacit and explicit knowledge held by individuals, organisations, and societies that represent four sequential conversions: socialization, externalization, combination and internalization (Nonaka 1994; Nonaka and Konno 1998; Nonaka and Toyama 2003, 2005; Nonaka, Toyama and Konno 2000).

One of the important areas of debate in CoPs is related to knowledge creation (Teigland 2003). Brown and Duguid (1991) argued that responding to new problems will incrementally improve work practices, thus there is a positive correlation between CoP and knowledge creation. Besides, Brown and Duguid (2000) argued that knowledge creation is affected by both CoPs and NoPs. Soekijad, Huis in 't Veld, and

Enserink (2004) found that the creation of innovative ideas and practices is facilitated by inter-organisational CoP. Nevertheless, recent studies argued that the spread of innovation across organisation may be restricted due to limitation of knowledge flow across CoPs (Brown and Duguid 2001; Roberts 2006). Alternatively, the level of knowledge sharing and creation in NoPs is higher as it is influenced by members' engagement in debate and discussion and collaboration on projects (Teigland 2003). Brown and Duguid (2000) argued that tacit knowledge is shared in CoPs. Alternatively, Chae et al. (2005) believed that the ability to access unique and non-redundant knowledge is possible through NoPs weak ties. They noted that knowledge sharing (know-what) is facilitated by NoPs while knowledge sharing and creation (know-how) are facilitated by CoPs. Teigland (2003) supported this finding as she discovered that the level of explicit knowledge created in CoPs is low. Besides, von Krogh and Grand (2000) claimed that new knowledge should suit the organisation's context to be acceptable and understandable. This study did not examine the conversion process between tacit and explicit knowledge. The objective of this study is to discover if the knowledge received from members in CoPs will facilitate knowledge creation and the type of knowledge created from these different networks.

1.1.3. Social Capital

Social capital was originated by Jacobs (1961), and lately this concept has been influenced by Coleman (1990) in 1980s and Putnam (1993) in 1990s (Kay 2006). According to Fukuyama (1995) social capital is defined as people's ability to work in groups and organisations to achieve common goals. Moreover, Flap (1995, as cited in Lin 1999) stated that network size, strength of relationship, and resources owned by members of the network are combined to form social capital. The sharing of tacit knowledge that resides in a CoP is facilitated by social capital (Huysman and Wulf 2005).

To understand and explain the creation of intellectual capital, social capital theory is required (Nahapiet and Ghoshal 1998). Under the theory of social capital, knowledge exchange is facilitated by social capital by providing the necessary conditions (Kankanhalli, Tan, and Wei 2005). To understand the creation and sharing of

knowledge within an organisation, social capital can be used as an integrative framework (Nahapiet and Ghoshal 1998). Though, it is noticed that there is no empirical study that investigates the effect of social capital on knowledge creation. The context for knowledge exchange is defined by trust, norms, and identification that are the key aspects of social capital (Nahapiet and Ghoshal 1998). Although scholars identified various aspects and indicators of social capital, these three aspects are employed in this study. Recently, Seyyedeh and Daneshgar (2010) and Seyyedeh, Daneshgar, and Aurum (2009) claimed that contextual factors (such as trust) and organisational factors (such as intention to learn) and the nature of knowledge (tacit or explicit) persuade the ability to share inter-organisational knowledge. Depending on the closeness of people within a group, the dimensions of social capital are divided into two types. "Bridging" is related to people with different characteristics and "bonding" between people with similar characteristics (Productivity Commission 2003). Therefore, it can be argued that bonding social capital exists in intra CoPs, while bridging social capital exists in inter CoPs.

Different levels of cognitive dimensions such as norms of reciprocity and trust are found in CoPs and NoPs (Teigland 2003). Thus, the influence of social capital indicators on different CoPs is needed to be investigated. Kankanhalli, Tan, and Wei (2005) noticed that it is not specified in the literature whether social capital is a moderating or directly influencing variable on knowledge exchange. Several scholars believed that social capital aspects moderate the impact of knowledge exchange (Kankanhalli, Tan, and Wei 2005; Teigland and Wasko 2003; Wasko and Faraj 2005). Conversely, others found that social capital is an outcome in the process of knowledge exchange within CoPs and NoPs (Lesser and Strock 2001; Teigland and Wasko 2004). Thus, the role of social capital (prerequisite, moderator, or outcome) on knowledge received from participants in CoPs is investigated in this study.

1.1.4. Corporate Sustainability

Corporate sustainability has attracted the attention of large and small organisations (Hawken 1993; Elkington 1998; Frankel 1998). According to Porter and Kramer (2006) organisation's economic, social, and environmental performances are the

ultimate principles of sustainability. They added that the avoidance of short-term social disadvantage and environmental waste will ensure a long-term economic performance to an organisation. Through sustainable competitive advantage, organisations will be able to sustain their position in the market.

Organisation's ability to integrate tacit knowledge embedded in individuals' minds will provide a source of sustainable competitive advantage (Nonaka 1994; Grant 1996a, b). An organisation can reach a sustainable competitive advantage through supporting the creation of new ideas and innovation by increasing the flexibility of knowledge integration (von Hippel and Schrader 1996). More importantly, in time of crisis the knowledge required to sustain the organisation can be achieved through CoP (Soekijad, Huis in 't Veld, and Enserink 2004). As a source of competitive advantage, CoPs are promoted within organisations as it is considered vital in the knowledge economy (Teigland and Wasko 2004; Liedtka 1999). Roberts (2006) proposed that organisations are advised by consultancy firms to utilise these communities as an instrument to manage the creation and dissemination of knowledge that will leverage their abilities. Brown and Duguid (2001) argued that the transfer of knowledge across the legal boundaries of an organisation will facilitate the sustainable ability of its competitive advantage.

Several studies showed the importance of knowledge sharing or creation on organisation or individual performance (Schrader 1991; Teigland and Wasko 2003, 2004; Wenger and Snyder 2000). However, Sharkie (2003) stated that knowledge required as a source of sustainable competitive advantage is different and more complicated than knowledge required to enhance performance. The question here is whether the knowledge created through CoPs will enhance organisation's social and environmental performance like the economic performance. This is central because "stakeholder expectations about companies' economic, social and environmental responsibilities change" (Hubbard 2009, 178), in which their interest increased in organisation impact on social and environmental aspects (Elkington 1994). Furthermore, Ali et al. (2010) highlighted the importance of corporate social contribution for stakeholders as it is beneficial to their community and organisation. Epstein (2009) acknowledged that global and local organisations' management and the creation of shareholder value is significantly influenced by social responsibility.

Therefore, the role of knowledge created within CoPs on corporate sustainability is investigated in this study.

1.1.5. The Kingdom of Bahrain Service Industry

In this section a brief overview of the Kingdom of Bahrain and its service industry is highlighted.

The Kingdom of Bahrain economically grows and transforms to modern industrial, business, and service centre and is considered a banking hub in the region (GlobalEDGE 2008; Kingdom of Bahrain Ministry of Industry and Commerce 2008). Consequently, Bahrain financial sector contributed significantly to the country GDP at 27.6% (GlobalEDGE 2008). In the Central Bank of Bahrain (2008) Website, the financial sector fact sheet showed that there are 124 institutions in the banking sector (including retail banks, foreign banks, wholesale banks, and Islamic banks), 167 firms in the insurance sector, and 48 investment business firms. Other service industries like information technology, healthcare, and education are also developing in the Kingdom (GlobalEDGE 2008). Thus, it is claimed that Bahrain is a service-based economy (Kingdom of Bahrain Ministry of Industry and Commerce 2006).

1.2. Research Questions

Knowledge creation is a vital source for sustainable competitive advantage (Choi and Lee 2002; Nonaka 1994; Nonaka and Takeuchi 1995; Nonaka, Toyama, Nagata 2000). As indicated by Liedtka (1999) the creation and sustainability of competitive advantage is achieved by supporting CoPs. This study explored the role of CoP in knowledge creation that grants sustainability for organisations in Bahrain service industry. The context for knowledge exchange is defined by trust, norms, and identification that are the key aspects of social capital (Nahapiet and Ghoshal 1998). Hence, there is a need to investigate the relation between social capital aspects and the knowledge received from CoPs. Accordingly, the dominant questions of this study are:

1. What are the roles of communities of practice (CoPs) existed in the Kingdom of Bahrain in creating knowledge that is essential for corporate sustainability?
2. How does social capital influence CoPs existing in the Kingdom of Bahrain?

1.3. Research Objectives

From the questions provided above, the study objectives are as follows:

1. To examine how Bahraini CoPs contribute to knowledge creation.
2. To investigate the role of knowledge created from Bahraini CoPs on organisation's economic, social, and environmental performance (corporate sustainability).
3. To examine the moderating role of social capital on members receiving knowledge within and between Bahraini CoPs.
4. To compare the impact of social capital on Bahraini CoPs' members (employees, customers, suppliers, partners, and rivals).

1.4. Significance

The significance of this study is divided into two aspects: theoretical and empirical. As previously stated, CoPs and NoPs are usually studied separately. In addition, the majority of the studies focus on CoPs or rivals NoPs. This study examined different types of CoPs inside and outside organisations, which added to the theory of CoPs. Since most of the studies concentrate on the role of CoPs/NoPs on learning (Teigland 2003), knowledge exchange, and individual or organisational performance, the study of the effect of CoPs on corporate sustainability contributed to the theory. It is noticed that previous studies disregarded the discussion of knowledge creation within CoPs and NoPs (Chae et al. 2005). Wasko and Faraj (2005) supported this argument as they believed that there is a need to examine the relationship between participating in electronic NoPs and knowledge creation. The current study explored the role of CoPs on knowledge creation and this also added to the knowledge creation theory. The comparison between social capital across different networks in order to investigate the different levels of participation and knowledge outcomes is required

(Wasko and Faraj 2005). To fulfil this gap, the current study explained the role of social capital on CoPs participants.

In terms of empirical contribution, to the best of researcher knowledge, so far, no empirical study has considered the role of CoPs, social capital, knowledge creation, and corporate sustainability in the service industry in the Middle East and more specifically in the Kingdom of Bahrain. As mentioned before, organisations need to find effective strategies to compete in Bahrain's highly competitive service industry. Thus, it is expected that the results of this study can be used to assist service organisations realize the importance of CoPs as a tool to create a sustainable competitive advantage source of knowledge.

1.5. Structure of the Thesis

Beside this chapter, the thesis contains eight more chapters. Chapter Two underlined the literature review that covered the four key concepts involved in this study: community of practice (e.g. Brown and Duguid 1991, 2001; Lave and Wenger 1991; Teigland 2003; Wenger 1998a, b; Wenger, McDermott and Snyder 2002, etc.), knowledge creation (e.g. Fuller, Jawecki and Muhlbacher 2007; Grant 1996a, b; Nonaka 1994; Nonaka, Toyama and Konno 2000, etc.), social capital (e.g. Kankanhalli, Tan and Wei 2005; Nahapiet and Ghoshal 1998; Productivity Commission 2003; Putnam 1995, etc.), and corporate sustainability (e.g. Elkington 1997; Placet, Anderson and Fowler 2005; Porter and Kramer 2006; Robins 2006; Robinson et al. 2008, etc.). The gaps found in the literature on each of these concepts are highlighted through the definitions, theories, criticisms, and prior studies of these key concepts. Chapter Three covered the study research paradigm and methodology followed in the three phases to collect required data to answer the study questions. In addition, the study research model is also developed in this chapter to present the relationships between the major concepts as "CoPs → knowledge creation → corporate sustainability" and social capital moderation role.

Chapter Four outlined the first phase of this study that is the qualitative field study. The outcome of the ten interviews conducted with senior managers in Bahrain service

industry both in the private and public sector are presented. Content analysis was employed to interpret the data collected and a model was developed for each of the ten interviews. Finally a modified model that combined all the ten interviews' models along with the initial model created from the literature review is produced.

Chapter Five highlighted the study six major hypotheses and related sub-hypotheses that described the relationship between the four main concepts. Arguments obtained from the literature were presented to support the study assumptions. The second part of the chapter illustrated the development of the study questionnaire.

In Chapter Six, the second phase of the study that included the pilot testing of the questionnaire developed in the previous chapter is provided. Moreover, pilot study results and the minor changes to the questionnaire (that resulted from the pilot study feedback) are also included in this chapter. A description of the main survey administration in which, 620 questionnaires were distributed among top 100 service organisations (both private and public) within the Kingdom of Bahrain is presented. The results of the 333 collected questionnaires that highlighted the first part of the questionnaire (participants' demographic information) and second part that highlighted the existence of communities of practice are illustrated as well.

Chapter Seven outlined the Partial Least Squares (PLS) employed to analyse the data collected from the study main survey. Nine PLS models that described the assessment of the measurement model are demonstrated in this chapter. Furthermore, tables that underlined the variables loadings, internal consistency (ICR), average variance extracted (AVE), and the square root of AVE are also provided.

Chapter Eight illustrated the assessment of the structural model, in which the validity and reliability of the six major study hypotheses are assessed by constructs paths (β and γ) and t-values. This chapter also underlined the theoretical and managerial implications of the study results. The last chapter summarised the study and highlighted its limitations, future directions, and significance of the results.

1.6. Summary

This chapter provides a brief overview of the four major concepts explored in this study (community of practice, knowledge creation, social capital, and corporate sustainability). The study questions, objectives, and significance theoretically and practically are also underlined in this chapter. The information provided in this chapter is considered as the cornerstone for the following chapters. Finally the thesis structure of the nine chapters is specified.

CHAPTER TWO

Literature Review

2.1. Introduction

In this chapter all the major concepts of this study are explained in more detail. This chapter gives a general overview of the concepts, their definitions, origin, and theories. The structure of this chapter will be as follow: First, Community of Practice that is the main concept of this study and the sections highlighted are: (1) a brief introduction about the concept, its acceptance practically and theoretically, and the limitations of CoP studies; (2) CoP definitions and characteristics; (3) origin and theory of CoP concept; (4) criticisms of CoP theory; (5) CoP Categories; and (6) finally CoP prior studies. Second, Knowledge Creation is the second major concept of the study and the sections covered are: (1) knowledge creation introduction; (2) knowledge creation theory; (3) the three stages of knowledge creation started with the knowledge received, then the knowledge creation process itself, and last the outcome of the process that is the new knowledge; and (4) knowledge creation prior studies. Third, Social Capital is the moderating concept of the study in which the section included: (1) short introduction of social capital; (2) definition, origin, theory, and types of social capital; (3) dimensions or indicator of social capital with emphasis on trust, norms, and identification; and (4) prior studies of social capital. Last section, Corporate Sustainability is the final key concept that is used in the study comprised: (1) corporate sustainability concept; (2) the measurement tool of corporate sustainability that is triple bottom line; and (3) the three sustainability dimensions (social, environmental, and economic performance). At the end, a summary of the chapter is provided.

2.2. Communities of Practice (CoPs)

Before explaining community of practice (CoP) concept, it is necessary to provide some background about the acceptance of the concept academically and practically. As stated by several authors (Chua 2006; Peltonen and Lamsa 2004; Roberts 2006), management literature and practice are inspired by CoP approach. From the academic perspective, several authors indicated the effectiveness of CoP in organisational studies (Amin and Roberts 2008; Iverson and McPhee 2008; Storberg-Walker 2008) that is related to knowledge management and organisational learning (Akkerman, Petter and de Laat 2008; Cox 2005). Alternatively in practice, CoP concept is accepted among various organisations (Chu and Khosla 2008; de Moor and Smits 2002; Davenport and Hall 2002; Scarso and Bolisani 2008; Soekijad, Huis in 't Veld and Enserink 2004) as a mechanism to leverage knowledge, learning and innovation (Cross et al. 2006; Schenkel and Teigland 2008; Soekijad, Huis in 't Veld and Enserink 2004; Swan, Scarbrough and Maxine 2002; Wang, Yang and Chou 2008). It is suggested that employees, customers, and shareholders knowledge need to be collected in order for organisations to be innovative (Parent et al. 2000). In addition, it is stressed that there is a positive relationship between communities of practice and improvement in organisational performance (Kerno 2008). It is proposed that the conceptualisation of an organisation is better understood as a collection of overlapping communities of practice (Brown and Duguid 1991; Gelauff 2003).

Although CoPs can exist in any organisation, it is argued that large organisations have the required resources to utilize CoPs as a method of knowledge management (Andriessen, Soekijad and Keasberry 2002; Roberts 2006). Examples of these organisations are depicted in Table 2-1. It is noticed from the table that CoPs existed in well-known, large, and international organisations in different sectors within the service and production industries. Moreover, CoP concept is also applied in the government sector (Kranendonk and Kersten 2007). An increasing number of managers start to develop and support CoPs for their knowledge management strategies or even as a supplementary organisational structure (Probst and Borzillo 2008; Wenger and Snyder 2000). Bathelt, Malmberg and Maskell (2004) proposed that experiences shared across large organisations' sections and employees are

limited. Consequently, there is a need to investigate whether CoP concept is applicable for large organisations within the Kingdom of Bahrain service industry and in the government agencies.

Table 2-1: Examples of Organisations utilizing CoP according to Their Sector

Sector	Company	Source
Computers:	IBM	(Cross et al. 2006; Scarso and Bolisani 2008; Wang, Yang and Chou 2008)
	Hewlett-Packard (HP)	
	Xerox	(Chu and Khosla 2008; Cross et al. 2006; Wang, Yang and Chou 2008)
	Dell	(Chu and Khosla 2008)
Oil:	Shell	(Scarso and Bolisani 2008; Wang, Yang and Chou 2008)
	ENI	(Scarso and Bolisani 2008)
	ChevronTexaco	
	BP	(Cross et al. 2006)
Insurance:	Allianz	(Scarso and Bolisani 2008)
Consulting:	CAP Gemini	(Scarso and Bolisani 2008)
	Accenture	(Cross et al. 2006; Scarso and Bolisani 2008)
Automotive:	DaimlerCrysler	(Scarso and Bolisani 2008)
	Caterpillar	
	Ford	(Scarso and Bolisani 2008; Wang, Yang and Chou 2008)

Despite the vast acceptance of CoP concept, the benefits of this concept for the business are still questionable (Cross et al. 2006). Scarso and Bolisani (2008) highlighted the difficulty in measuring CoPs' costs and contributions to profit. CoPs empirical studies are considerably insufficient (Andriessen, Soekijad and Keasberry 2002). More precisely, there is a lack of studies investigating the effect of CoPs on innovation processes (Swan, Scarbrough and Maxine 2002). Most studies focused on intra-organisational CoPs, thus there is a need to investigate the concept beyond the organisation boarders (Soekijad, Huis in 't Veld and Enserink 2004; Swan, Scarbrough and Maxine 2002). In addition, Lindkvist (2005) declared that CoP literature is scarcely logical and still developing and the concept is unclear. Furthermore, CoP should be examined from a knowledge management perspective (de Moor and Smits 2002). Although, Couros (2003) noticed that the existed CoPs literature disregarded their description, other researchers (Schenkel, Teigland and Borgatti 2001; de Moor and Smits 2002; Schenkel and Teigland 2008) criticised the

literature for focusing on examining CoPs structure, operations, and evaluation. The examination of the factors influencing CoP performance is also limited (Scarso and Bolisani 2008). For the concern of this study, CoP performance is vital to observe its role on organisational performance. Several researchers noticed the lack of empirical studies exploring the influence of CoPs on organisational performance (Schenkel and Teigland 2008; Schenkel, Teigland and Borgatti 2001; Teigland 2000, 2003). Similarly, Chu and Khosla (2008) declared the limitation of empirical research of the relationship between CoP outcome and its structure.

It is noticed from the literature that community of practice concept was given different terms by several researchers. Examples of these terms are: community of practitioners (Gherardi 2006), collectivities of practice (Lindkvist 2005), networks of practice (Brown and Duguid 1991, 2001), communities of knowing (Boland and Tenkasi 1995), occupational communities (van Maanen and Barley 1984; Bechky 2003), epistemic communities (Knorr Cetina 1981; Haas 1992), and strategic communities (Kodama 2005). These different terms are adding to the confusion of the CoP concept.

2.2.1. Community of Practice Definition and Characteristics

2.2.1.1 Community of practice definition:

The definition, description, and characterization of CoPs are quite different (Chae et al. 2005; Couros 2003; Davenport and Hall 2002; Handley et al. 2006). This is clearly illustrated in the table below that outlined some of CoPs definitions found in the literature. There are several points that can be derived from Table 2-2. They are:

- Many researchers employed Lave and Wenger (1991) CoP definition in their studies (Amin and Roberts 2008; Ardichvili 2008; Chae et al. 2005; Hildreth, Kimble and Wright 2000; Kerno 2008; Kimble, Hildreth and Wright 2001; Mork et al. 2008; Roberts 2006; Swan, Scarbrough and Maxine 2002). One possible explanation for the popularity of this definition is that because they are the originator of the concept.

- Another popular definition of CoP concept was provided by Wenger, McDermott and Snyder (2002) (Scarso and Bolisani 2008). Several

researchers used this definition in their studies (Couros 2003; Cox 2005; du Plessis 2008; Gammelgaard and Ritter 2005; Iverson and McPhee 2002; Kasper, Muhlbacher and Muller 2008; Probst and Borzillo 2008). Although Cox (2005) criticised this redefinition of the original concept by Wenger (1998a), he explained that this definition is unclear and is different from Wenger's original definition. Whereas, Wenger, McDermott and Snyder (2002) definition focused on how members of the CoP "learn and share knowledge, not to get the job done" (Cox 2005, 534).

- Wenger (1998a) also provides a slightly different definition than the one initially developed by Lave and Wenger (1991). Wenger definition is also utilised in some other studies (e.g. Davenport and Hall 2002).

- Some scholars distinguished between internal (called CoP) and external (called external CoP or NoP) communities of practice. For the purpose of this study, both internal and external communities of practice are considered.

- Moreover, other scholars provide their own definitions of CoP that are exemplified in Table 2-2. Similarities between these definitions were extracted:
  - Half of the definitions stated that CoPs consist of a group of people (some scholars elaborate on the characteristics of these groups as the size (small or large) and the members of the group (professionals)).
  - Many definitions mentioned that members of CoP share the goal of learning from each other, they share the same knowledge and/or experience, they have common concerns and interests, and they are informally engaged together.
  - A number of definitions pointed out that CoP members concerned about the same problems, they are self-organised, they tend to help each other, they share common practice and work together, and they share common purposes and goals.

It is important to clarify some points before providing the CoP definition that is employed in this study. CoP members have the same goals and they share their knowledge, skills, and abilities to achieve these goals (du Plessis 2008). This will lead to develop the CoP practices and domains of knowledge (Gammelgaard and Ritter 2008). As noticed from the CoP literature (Klein and Hirschheim 2008) and

contrary to some of the definitions provided in Table 2-2, CoPs are small group of people. Cox (2005, 536) claimed that communities are "large, self conscious and externally recognized, all encompassing, tight knit, friendly, geographically situated group". Despite that, Roberts (2006) argued that communities of practice size and "spatial" need to be distinguished.

As a result, the researcher proposes the following definition of communities of practice (CoPs):

> *An emergent informal networks of people who are located inside the organisation (called intra CoPs that include co-located employees working in the same department and non co-located employees working in other departments or organisation branches) and outside the organisation (called inter CoPs or sometimes networks of practice (NoPs) that consist of suppliers, customers, partners, and rivals). Through which members of these communities share or are interested in the same practice and knowledge.*

According to Wenger (1998b), the three dimensions of a community of practice that can be used to define it are: (1) "what it is about" that is the shared activities known and discussed by the community members; (2) "how it functions" is members' common commitment that connects them together; and (3) "what capability it has produced" is the collection of shared resources such as vocabulary and styles that community members developed over time as an outcome of their relationships with each other. In relation to CoP dimensions, Wenger (1998a) explained three main CoPs characteristics: (1) mutual engagement that resulted from CoP members' interaction; (2) negotiation of a joint enterprise that is motivated by members' connection; and (3) a shared repertoire that is resources like vocabulary and styles developed over time through members' relationships. More CoP characteristics are presented in the next section.

Table 2-2: Community of Practice Definitions

Term	Definitions	Author
C o P s	"A system of relationships between people, activities, and the world; developing with time, and in relation to other tangential and overlapping communities of practice."	Lave and Wenger (1991, 98)
	"Groups whose members are bound by their participation in a valued enterprise, such as singing in tune, discovering scientific facts, or fixing a machine."	Wenger (1998a, 4)
	"Groups of people informally bound together by shared expertise and passion for a joint enterprise …Some communities of practice meet regularly … Others are connected primarily for e-mail networks."	Wenger and Snyder (2000, 139)
	"Groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis."	Wenger, McDermott and Snyder (2002, 4)
	"Relatively tight-knit groups of people who know each other and work together directly…typically face-to-face communities that continually negotiate with, communicate with, and coordinate with each other directly in the course of their work."	Brown and Duguid (2000, 143)
	"A group whose members regularly engage in sharing and learning, based on their common interests."	Lesser and Storck (2001, 831)
	"'tightly knit' (Brown and Duguid, 1998) groups that have been practising together long enough to develop into a cohesive community with relationships of mutuality and shared understandings (Lave and Wenger, 1991; Wenger, 1998, 2000)."	Lindkvist (2005, 1189)
	"A tightly knit group of members engaged in a shared practice who know each other and work together, typically meet face-to-face, and continually negotiate, communicate, and coordinate with each other directly."	Wasko and Faraj (2005, 37)
	"A group of people who are 'peers in the execution of real work' (Brown and Duguid 1991). They are typically not a formal team but an informal network, each sharing in part a common agenda and shared interests."	Merali and Davies (2001, 93)
	"A flexible group of professionals, informally bound by common interests, who interact through interdependent tasks guided by a common purpose thereby embodying a store of common knowledge."	Jubert (1999, 166)

Term	Definitions	Author
C o P s	"A collection of agents having to solve a flow of problems and endowed with the abilities to learn by themselves or by interacting with one another."	Dupouet and Yildizoglu (2006, 670)
	"… informal groups of individuals who have similar work related activities and interests."	Lesser and Everest (2001, 38)
	"Set of people informally bound together through common interest and language with the goals of open communication, and exchange and retention of pertinent knowledge."	Cadiz, Griffith and Sawyer (2005, 11)
	"Informal social structures that have long traditions, all the way from tribes to today's informal groups."	Peltonen and Lamsa (2004, 253)
	"An agglomeration of people who come together to share their experiences and knowledge in a free flowing way and foster new approaches to problem solving. Members of the community are informally bound together by shared expertise and passion for joint enterprise."	Arora (2002, 244)
	"Are groups of people working together towards achieving specific goals through the creation, sharing, harvesting and leveraging of knowledge."	du Plessis (2008, 61)
External CoP	"A group whose members (clients and employees) regularly engage in sharing and group learning based on common interests, mutual trust and collaboration."	Dewhurst and Navarro (2004, 322)
NoPs	"A larger, loosely knit, geographically distributed group of individuals engaged in a shared practice, but who may not know each other nor necessarily expect to meet face-to-face" in which, " learning and knowledge sharing between individuals" is facilitate.	Brown and Duguid (2000, 2001, 202)
	"Occupational communities (van Maanen and Barley 1984) or social worlds that have practice and knowledge in common. NoPs are loose communities across organisational boundaries (Brown and Duguid 2001)."	Chae et al. (2005, 64)

2.2.1.2 Community of practice characteristics:

Within organisations there are many types of networks and groups of people. As the focus of this study is on community of practice, this part of the literature discusses the characteristics that distinguish these communities from other networks in the organisation. It was proposed by Wenger (1998a, b) that CoPs are different from

other groups in the organisation. He provided the difference between CoPs and business or functional unit, teams, and networks. In specifying the difference between CoPs and organisational units, Wenger (1998a, b) argued that opposite to organisational units, CoPs have flexible boundaries where anyone can participate and contribute to the practice. Furthermore, the main difference between CoP and team is the purpose of their existence; Wenger (1998a, b) believed that CoPs are defined by knowledge while teams are defined by task. When the project completes, the team will disappear, but in the case of CoP its life will continue even after the completion of the project. Wenger (1998a, b) stated that network is different from CoP as in a network it is set of relationships with no objective, conversely, CoP has an identity and exists to produce a shared practice that resulted from members' learning process. Wenger, McDermott and Snyder (2002, 42) presented the difference between CoP and other types of organisational structures that is shown in Table 2-3.

Additionally, a range of distinguishing characteristics of CoP highlighted in previous studies are indicated below. It is important to mention here that some of the characteristics are already specified in several CoP definitions that are presented in Table 2-2.

- Community of practice members have a sense of common purpose (Kimble, Hildreth and Wright 2001).
- The development of the group was driven from community members' need (Kerno 2008; Kimble, Hildreth and Wright 2001).
- CoP members share strong feeling of identity (Kimble, Hildreth and Wright 2001; Wenger 1998a, b).
- Share terminology among CoP members such as nicknames, jargons, and vocabulary (Cadiz, Griffith and Sawyer 2005; Kimble, Hildreth and Wright 2001; Wenger 1998a).
- CoPs have indirect responsibility towards the organisation where there is no time restriction (Lesser and Everest 2001).
- CoPs set their own plans that continually change to suit community needs (Yates and Orlikowski 1992; Lesser and Everest 2001; Wenger 1998a).
- Communities of practice involve formal (e.g. education sessions and conferences) and informal (day-to-day interaction designed to solve work related problems) activities (Lesser and Everest 2001; Wenger 1998a, b).

Through which social interaction between CoP members existed as they worked together in these meetings and activities (Soekijad, Huis in 't Veld and Enserink 2004). Even though, the number of CoP participants and the level of intensity of their contribution in the community activities are fluctuated (Lesser and Everest 2001).

- Norms of reciprocity is created, since strong interpersonal ties between CoP members are created as a result of their connections to solve similar problems (Bathelt, Malmberg and Maskell 2004; Carlile 2002; Lave and Wenger 1991; Wenger 1998a; Lindkvist 2005; Scarso and Bolisani 2008).

- Members of a CoP have a common interest in a specific practice (Bathelt, Malmberg and Maskell 2004; Brown and Duguid 2001; Carlile 2002; Gammelgaard and Ritter 2008; Lesser and Storck 2001; Soekijad, Huis in 't Veld and Enserink 2004; Wenger 1998a, b; Wenger, McDermott and Snyder 2002).

- CoP participants are involved in a joint learning process (Cadiz, Griffith and Sawyer 2005; Soekijad, Huis in 't Veld and Enserink 2004; Thompson 2005).

- Within communities of practice, participants shared a specific domain of knowledge (Kerno 2008; Preece 2003; Scarso and Bolisani 2008; Soekijad, Huis in 't Veld and Enserink 2004; Wenger 1998a; Wenger, McDermott and Snyder 2002).

- The existence and development of CoP is spontaneous and it may not be recognised or encouraged by the organisation (Brown and Duguid 1991; Chua 2006; Lave and Wenger 1991; Lesser and Everest 2001; Wenger 1998a, b).

- Members of a community of practice interact with each other on regular bases (DeSanctis 2003). Several authors agreed that the fundamental way of communication utilised by CoPs members is face-to-face interaction (Breu and Hemingway 2002; Cadiz, Griffith and Sawyer 2005; Duguid 2005; Iverson and McPhee 2002; Lindkvist 2005; Wasko and Faraj 2005; Wasko, Faraj and Teigland 2004).

- Participants of a CoP remember previous lessons in which they share best practices and lessons (Cadiz, Griffith and Sawyer 2005; Wenger 1998a).

- The fluidity of communities of practice permits their existence cross the organisation legal boundaries (Brown and Duguid 1991; Kerno 2008).

- The communities' behaviours changed regularly to fit members shifting roles and the practice demands (Brown and Duguid 1991; Preece 2003).

- The relationships between CoP members are characterised as "free floating natural set of relationships" in which the community common sense is internally established by the members themselves (Vann and Bowker 2001; Wenger 1998a).

- Community of practice can be characterised as "a 'tightly knit', 'affect-laden' social structure amounting to 'dense' relationships of mutuality" (Lindkvist 2005, 1194).

- Fast circulation of innovation and transfer of information among CoP members (Wenger 1998a, b)

- Each participant in a CoP knows "what others know, what they can do, and how they can contribute to an enterprise" (Lindkvist 2005; Wenger 1998a, 125).

Cox (2005) stressed that despite the fact that Wenger's indicators of community of practice are significantly clarifying his CoP concept, they are limited in the literature. This study used these indicators to identify the existence of CoP in Bahrain service industry.

As noticed, there is a various number of CoP characteristics provided in the literature. For the concern of this study, some of these characteristics are used and measured to figure out if communities of practice existed in the Kingdom of Bahrain service industry.

2.2.2. Origin and Theory of Community of Practice

2.2.2.1 Origin of the community of practice concept:

Although many scholars pointed out that CoP is relatively a recent concept invented by Lave and Wenger in the 1990s (Akkerman, Petter and de Laat 2008; Carlile 2002; Chua 2006; Cross et al. 2006; Duguid 2005; Dupouet and Yildizoglu 2006; Hildreth, Kimble and Wright 2000; Kerno 2008; Kimble, Hildreth and Wright 2001; Peltonen and Lamsa 2004; Roberts 2006; Soekijad, Huis in 't Veld and Enserink 2004), Cohen,

Ledford and Spreitzer (1996) argued that the concept is not new as it existed in Japan and then extended to the US and Europe (Gonzalez, De La Torre and De Elena 1995, cited in Dewhurst and Navarro 2004). Surprisingly, Kerno (2008) believed that CoP is even more ancient concept that existed since the ancient Romans in professions like metalworkers and potters. Alternatively, Scarso and Bolisani (2008) claimed that CoP existed in Ancient Greece in corporations of craftsmen or in the Middle Age between associations. They added that the application of the concept in managing knowledge within firms is considered new.

2.2.2.2 Community of practice theory:

The base of the community of practice theory derived from identity theory, theories of practice, and theories of social structure and situated experience (Wenger 1998a). More specifically, Duguid (2005) recognised that Lave and Wenger (1991) introduced CoP as a theory of learning that is supported by apprenticeship studies. Cross et al. (2006) agreed that the origin of the CoP concept was built on the social theory of learning in practice (e.g. Cook and Yanow 1993; Weick and Westley 1996). According to Handley et al. (2006, 642) the view of the situated learning theory confirmed that CoP is a "context in which an individual develops the practices (including values, norms and relationships) and identities appropriate to that community."

The community of practice concept consists of two terms: community and practice. Cox (2005) argued that employing community as a term in the CoP theory is troublesome. In contrast, Brown and Duguid (2001) believed that the usage of community term suitably implied the homogeneous of the organisations culture. They declared that practice is the difficult term in the CoP theory as it illustrates the "significant degree divided, riven by practice even as that practice provides participants with their particular kind of organisational identity" (Brown and Duguid 2001, 203).

Table 2-3: Differences between CoPs and Other Structures

	WHAT'S THE PURPOSE?	WHO BELONGS?	HOW CLEAR ARE THE BOUNDARIES?	WHAT HOLDS THEM TOGETHER	HOW LONG DO THEY LAST?
Communities of Practice	To create, expand, and exchange knowledge, and to develop individual capabilities	Self-selection based on expertise or passion for a topic	Fuzzy	Passion, commitment, and identification with the group and its expertise	Evolve and end organically (last as long as there is relevance to the topic and value and interest in learning together)
Formal Departments	To deliver a product or service	Everyone who reports to the group's manager	Clear	Job requirements and common goals	Intended to be permanent (but last until the next reorganisation)
Operational Team	To take care of an ongoing operation or process	Membership assigned by management	Clear	Shared responsibility for the operation	Intended to be ongoing (but last as long as the operation is needed)
Project Teams	To accomplish a specified task	People who have a direct role in accomplishing the task	Clear	The project's goals and milestones	Predetermined ending (when the project has been completed)
Communities of Interest	To be informed	Whoever is interested	Fuzzy	Access to information and sense of like-mindedness	Evolve and end organically
Informal Networks	To receive and pass on information, to know who is who	Friends and business acquaintances, friends of friends	Undefined	Mutual need and relationships	Never really start or end (exist as long as people keep in touch or remember each other)

Source: Wenger, McDermott and Snyder (2002, 42)

Community of practice theory acknowledges that people willingness to cooperate to solve problems by sharing their experiences and understandings is the major force for their engagement in these communities (Breu and Hemingway 2002). Iverson and McPhee (2008, 179) supported this view of the CoP theory as they stated that "CoP theory strongly emphasizes the interactively constructed nature of engaging, sharing, and negotiating." They added that CoP theory is appropriate for studying knowledge process where knowledge dimensions and relationships are explored. Duguid (2005) further explained that the form, context and content provided by CoP to its members facilitate the gaining of practitioners' required explicit knowledge and community identity. Furthermore, CoP theoretical structure suggested that knowledge is not only an outcome of the organisational processes but it is "an active and relevant part" of it (Iverson and McPhee 2002, 264).

2.2.3. Criticisms of Community of Practice Theory

In spite of CoPs value and involvement to organisations, a number of issues and difficulties are related to this concept (Kerno 2008). Brown and Duguid (2001) agreed with that as they believed that CoP concept should be handled carefully as it is viewed with remarkable enthusiasm. Roberts (2006) observed that many researchers criticised the CoP concept (e.g. Contu and Willmott 2003; Fox 2000; Handley et al. 2006; Marshall and Rollinson 2004; Mutch, 2003). As mentioned by Fox (2000) CoP theory neglected power issues in the organisations. Roberts (2006) elaborate on that issue, as she argued that knowledge creation and dissemination within CoPs can be figured out by studying the role of power in these communities. Roberts explained that power in sense of CoP members experience, age, personality, and authority in the organisation will affect the degree of participation within these CoPs. The issues related to innovation is another CoP criticism (Cross et al. 2006; Swan, Scarbrough and Maxine 2002). It is suggested by Cross et al. (2006) that the solutions created in CoPs are not unique as members of these communities share the same viewpoints. In addition, the flow of information and innovation across communities of practice is so restricted that it will negatively affect innovation distribution within the organisation (Brown and Duguid 2001). The CoP theory overlooked the explanation of the way members of a CoP change their practice or innovate (Fox 2000; Roberts 2006).

Consequently, Roberts (2006, 630) argued that "Given predispositions, the development of knowledge within a community of practice may become path-dependent as new knowledge reinforces an existing preference or predisposition". Despite the above criticisms, the majority of the studies realized how CoP theory explains the relationship between group and knowledge and how tacit knowledge is managed (Lindkvist 2005).

Most of the community of practice studies focused on co-located communities (Kimble, Hildreth and Wright 2001). Although, Soekijad, Huis in 't Veld and Enserink (2004) proposed that opportunistic behaviour (Larsson et al. 1998), lack of openness, and a lack of shared understanding are examples of the problems created because of the extension of the CoP concept beyond the organisation boundaries. Two other problems regarding inter-organisational setting are: (1) the level of trust among members who have different organisational interests, backgrounds, and ways of working; (2) and the confusion of which organisation will benefit from CoP (Soekijad, Huis in 't Veld and Enserink 2004). Additionally, it is proposed that extending CoP domain lead to difficulties (Duguid 2005; Roberts 2006).

Another criticism of Lave and Wenger theory is disregarding practice as they concentrated on community (Østerlund and Carlile 2005, cited in Duguid 2005). Furthermore, the overlap conception used to characterize CoP processes provided by Wenger and his associates (Wenger, McDermott and Snyder 2002; Wenger and Snyder 2000) added to the confusion of the concept (Iverson and McPhee 2008). More surprisingly, Storberg-Walker (2008, 559) argued that "CoP should not be called a theory" as the theory-building steps were ignored.

As each CoP has its unique practice and identity of structure, it is possible to have conflict and tension between CoP members as they are participating in different CoPs (Handley et al. 2006).

It is reported by Lindkvist (2005) that other concepts within the organisation are ignored or sometimes subsumed under community of practice because of the dominance of the concept in the literature. Moreover, "the CmPs [communities of

practice] literature is still evolving and the views of different authors are hardly coherent" (Lindkvist 2005, 1191).

2.2.4. Communities of Practice Categories

It can be argued that the community of practice can be categorised as internal communities of practice (intra-organisational) and external communities of practice (inter-organisation) (Brown and Duguid 1991; de Moor and Smits 2002; Roberts 2006; Teigland 2000; Wang, Yang and Chou 2008). This is elaborately explained by Amin and Cohendet (2003, 74) "These communities might be found in traditional work divisions and departments, but they also cut across functional divisions, spill over into after-work or project-based teams, and straddle networks of cross-corporate and professional ties. For example, within firms, classical communities include functional groups of employees who share a particular specialisation corresponding to the classical division of labour (e.g. marketing or accounting). They also include teams of employees with heterogeneous skills and qualifications, often coordinated by team leaders who are put together to achieve a particular goal in a given period of time." As it is suggested by Roberts (2006), this study covered both internal and external communities of practice as it is essential to increase an organisation knowledge capacity.

2.2.4.1 Internal communities of practice:

Communities within the organisation boundaries can be either between co-located employees or across an organisation (Preece 2003; Stahl 2000; Wenger 1998a, b; Wenger and Snyder 2000). Probst and Borzillo (2008) noticed that studies of intra-organisational knowledge transfer are limited to improve units' efficiency by enhancing knowledge reuse and improving its quality, motivate innovation within units by encouraging knowledge sharing in the organisation, and increase employee satisfaction. Therefore, the authors proposed that there is a need to empirically study intra-organisational transfer of knowledge.

In this study, intra-organisational communities of practice are divided into co-located employees who are working in the same organisation department and non co-located

employees working in the same organisation but in different departments or branches – either in the same country or abroad.

2.2.4.2 External communities of practice:

As indicated in the above section, internal communities of practice are the most common type of communities, though CoP between members working in different organisations is also existed (Braun 2002; Brown and Duguid 2001; Iverson and McPhee 2002; Samaddar, Nargundkar and Daley 2006; Wenger 1998a, b; Wenger and Snyder 2000). Members of this community will involve suppliers, customers, and competitors (Teigland 2000). This type of group is also known as Networks of Practice (NoPs) (Brown and Duguid 1991, 2001; Duguid 2005). These NoPs include professional and occupational networks (Brown and Duguid 2001). It is criticised by Chae et al. (2005) that NoPs conceptualization in the literature is diverse, besides, the difference between CoPs and NoPs is not clearly recognised.

One of the differences addressed between internal (CoPs) and external (NoPs) communities of practise is the strength of social ties (Granovetter 1973) between the community participants. It is noticed that CoPs have strong social ties while NoPs have weak social ties (Chae et al. 2005; Lindkvist 2005). In addition Brown and Duguid (2001) characterised NoPs with loose relations between the members. Despite the share of knowledge between NoPs members they may not know or even see each other (Brown and Duguid 2001; Duguid 2005). Similarly, Wenger (1998a) identified this type of networks and characterised them to be too broad, diverse, and diffuse.

It is suggested by Elkington (1994) that organisation cooperation with its suppliers, customers, and competitors will positively affect its competitive advantage. Samaddar, Nargundkar and Daley (2006) presented other benefits and sources of competitive advantage resulted from inter-organisational communities of practice, they are: acquiring resources that is not available in the organisation (Yuchtman and Seashore 1967), facilitating flow of goods and services (Anand and Mendelson 1997; Dyer and Nobeoka 2000; Lee, Padmanabhan and Whang 1997), decreasing the level of inventory, and reducing costs (Yu, Yan and Cheng 2001). Furthermore, it is

noticed that the performance of technical development projects is encouraged by personal contacts with colleagues working in other organisations (Allen 1984).

In this study inter-organisational communities of practice include customers, suppliers, business partners, and rivals.

2.2.5. Communities of Practice Prior Studies

A range of studies have been conducted regarding communities of practice. The aim of this section of the study is to highlight the most related studies to the research problem. It is noticed by Carlile (2002, 445) that "the community of practice literature has been particularly helpful in looking at how knowledge and learning is structured by the types of problems faced within a practice." Alternatively, it is argued that the literature disregarded the relationship between community of practice outcomes and organisational performance (Dupouet and Yildizoglu 2006; Lesser and Storck 2001). This is due to the difficulty in measuring CoP benefits as it is considered a hidden organisation asset (Lesser and Storck 2001). Table 2-4 summarises the community of practice studies found in the literature.

Nineteen studies are illustrated in Table 2-4, below are some of interesting points extracted from the table:

Objective of the studies: it is differentiated between investigating the relationship between external CoPs, organisational learning and relational capital (Dewhurst and Navarro 2004), existence of inter-organisational CoPs (Soekijad, Huis in 't Veld and Enserink 2004), participation in electronic CoPs (Chae et al. 2005; Teigland and Wasko 2004; Wasko and Faraj 2000, 2005), impact of informal information transfer networks or CoPs and organisation or individual performance (Lesser and Storck 2001; Schenkel and Teigland 2008; Schrader 1991; Teigland 2000, 2002; Teigland and Wasko 2003, 2004), managing CoPs (Thompson 2005), comparing CoPs and NoPs (Chae et al. 2005; Teigland 2002; Teigland and Wasko 2004), and knowledge sharing in CoPs (Alghatas 2009; Fong and Wong 2009; Zboralski 2009; Kasper, Muhlbacher and Muller 2008; Ardichvili, Page and Wentling 2003; Sharratt and Usoro 2003).

Methodology: questionnaire and interviews are both used in these studies as a tool to attain research objective(s). It is noticed that the studies either combine these two techniques or use them separately in which qualitative methodology (i.e. semi-structured interviews) is equal to quantitative methods (i.e. questionnaire). Moreover, it is noticed that there are other means used to collect studies' data that include observation and content analysis.

The following section will indicate the important findings from these studies that related to this research questions and objectives.

2.2.5.1 Existence of CoPs and NoPs and differences between them:

From the studies depicted in Table 2-4, two studies investigated the existence of CoPs either inside or outside the organisation boundaries. Soekijad, Huis in 't Veld and Enserink (2004) discovered that CoP characteristics that include situatedness – social interaction, interest in specific practice, and generating and acquiring new knowledge, skills, and practical experience between peers are found in inter-organisational context. Based on the results of Iverson and McPhee (2008) study, it is found that CoP elements that include shared repertoire, mutual engagement, and negotiation of joint enterprise are adequate indicators for identifying CoPs.

Chae et al. (2005) investigated the differences between CoPs and NoPs. They found that both CoPs and NoPs should be employed by the organisation. While CoPs facilitate knowledge creation and sharing, NoPs facilitate knowledge sharing only. On the other hand, the authors discovered that it is hard to figure out the link between knowledge type and network type. Another interesting point is the mediating role of trust found between CoPs (strong ties) and NoPs (weak ties) and receipt of useful knowledge. The study revealed that new ideas and opportunities are created through NoPs while knowledge flow is hindered by CoPs.

2.2.5.2 Communities of practice and knowledge sharing:

Sharratt and Usoro (2003) noticed that organisational structure, technical infrastructure, trust, career advancement, sense of community, and value congruence are the factors that influence knowledge sharing in online CoPs. Moreover, Ardichvili, Page and Wentling (2003) found that knowledge flows easily when

viewed as a public good of the organisation. The authors also indicated a number of barriers to knowledge sharing such as are fear of criticism and misleading community members. Kasper, Muhlbacher and Muller (2008) conducted a study of knowledge sharing process in multinational companies. They noticed that there is a positive relationship between decentralisation of knowledge management and cross-site knowledge sharing. In addition, they found that cross-site knowledge sharing is influenced by CoPs. The authors figured out that CoP role on knowledge sharing is through encouraging personal relationships between community members. In a more recent study Alghatas (2009) investigated knowledge sharing in eight online communities of practices. The researcher found that sharing knowledge is the most regular form of activity performed by the eight CoPs members. Another study conducted by Fong and Wong (2009) examined the role of community of practice in effectively and efficiently reusing knowledge and experience in building maintenance projects. On the other hand, Zboralski (2009) studied the influence of community of practice on members' motivation to participate in this community. As it is noticed from the studies indicated in this section that almost all of them examined online or virtual communities of practice. From the researcher's point of view, the above studies focused on the impact of technology – in means of online CoPs – on knowledge dissemination. Whereas, the objective of this study was to examine the impact of offline CoPs on knowledge creation.

2.2.5.3 Community of practice and performance:

It is observed from Table 2-4 that several studies investigated the role of communities of practice on the individual or organisational performance. Schrader (1991) studied the effect of what he called informal information transfer networks on the organisation economic performance. He discovered that information received from competitors is useful and information exchanged has a positive influence on organisation's economic success. In a study of the role of community of practice on organisational performance, Lesser and Storck (2001) suggested that CoP is an engine to develop social capital. The authors believed that the social capital residing in these communities will positively affect organisational performance through influencing knowledge sharing between community members. Schenkel and Teigland (2008) also explored the relationship between CoPs and organisation performance. It is found

that there is some indication of a positive relationship between CoPs and performance.

Teigland (2000) studied the relationship between accessing knowledge and individual performance. The author figured that a positive relationship exists between the use of internal and external information sources and individual performance. Teigland (2002) investigated knowledge exchange in internal and external NoPs and their effect on individual performance. She found a positive relationship between communicating with co-located co-workers and creative performance. She also discovered that external knowledge exchange has indirect impact on individual's performance. Teigland claimed that both internal and external knowledge should be combined to develop and implement solutions that improve performance. In a relatively similar study, Teigland and Wasko (2003) examined the influence of informal information trading within and outside the organisation boundaries on individual performance. They found that CoPs prevent the generation of new ideas and innovation due to redundant knowledge between organisation employees – this is conflicting with Teigland (2002) findings, nevertheless CoPs positively impact individual general performance. The authors indicated similar findings to Teigland (2002) study regarding the indirect effect of external information trading on individual performance and the combination of internal and external knowledge to develop creative solutions and improve performance. Dewhurst and Navarro (2004) figured out that innovation positively affect organisational learning variables that are knowledge acquisition, distribution, and utilization. Furthermore, there is a positive relationship between organisational learning variables and relational capital that includes high quality, better reputation and prestige, and high customer satisfaction.

2.2.5.4 Other communities of practice studies:

Several authors studied the reasons behind individuals' participation in electronic CoPs (Teigland and Wasko 2004; Wasko and Faraj 2000, 2005). Thompson (2005) studied the build and nurture of CoPs structural and epistemic components within organisations. Although this is beyond the scope of this study, the researcher's goal is to provide an overview of the CoP studies founded in the literature.

Table 2-4: Prior Empirical Studies in Communities of Practice

Source	Objective	Methodology	Variables	Finding(s)

Schrader 1991	Investigates the impact of *informal information transfer networks* on firms economic performance	Survey:
		•Middle-level managers and engineers
		•U.S. specialty steel and mini-mill industry
			•Cost of transferring information:
			  o Degree of competition
			  o Availability of alternative information sources
			  o Impact of information on domains of competitive importance
			•Benefits of transferring information:
			  o Expected change of information receiver's willingness to provide information
			  o Value of transferred information to information receiver
			  o Technical expertise of information receiver
				•Information received from colleagues in other firms is an important source.
				•The exchange of information increase when the benefits of this exchange exceed the costs for the firms.
				•The degree of competition, availability of information sources, and the importance of information to the firm are the factors that affect the transfer of information between firms.
				•Information transfer is more likely to occur when benefits are expected in return.
				•Positive relationship between information exchange and firm's economic success.

Wasko & Faraj 2000	Investigate why people participate in *electronic communities of practice*	•Survey •Content analysis •3 technical communities	•Tangible returns •Intangible returns •Community interest	People participate in electronic CoP for the following reasons: • Give back to the community in return for help. • Engage in the exchange of ideas and solutions. • Participation is fun and helping others is enjoyable and brings satisfaction. • Seek, respect, and learn from others experience. • Use existing knowledge instead of 'reinvent the wheel'. • Keep abreast of current ideas and innovations.

Source	Objective	Methodology	Variables	Finding(s)

Teigland 2000	• To understand how individuals access knowledge in their everyday work and what role the internet and communities play.
	• To link an individual's knowledge access behaviour to an individual's work-related performance.
		• Interviews
		• Questionnaire
		• Multinational Internet consultancy
		• Eight European countries
		• Variety of professions: management, programming, art direction, etc.
		• Correlation analysis
		• Multivariate regression analysis
			•Internal sources:
			  o Community of practice (CP) interaction
			  o CP socialization
			  o Codified sources
			•External sources:
			  o CP interaction
			  o Codified sources
			•Control:
			  o Education
			  o Time at current employer
			  o Work experience
			  o Openness of offices
			•Individual performance:
			  o Creativity
			  o On-time delivery
				• The greater the level of social interaction with community members outside of their work, the higher the level of individual performance (creativity, on-time performance).
				• The greater the use of internal codified sources of information, the higher the level of individual performance (creativity, on-time).
				• The greater the use of external codified sources of information, the higher the level of performance (creativity, on-time).
				• The relationship between creativity and social contact outside of work and the use of external codified sources of information (internet communities and the like) is significant.
				• The use of internal codified sources of information is a positive predictor of on-time performance, while the use of external codified sources is a negative predictor.

Lesser & Storck 2001	Explore the role of *communities of practice* in producing value for organisations	•Case studies
		•Interviews
			•Social capital:
			  o Structural capital
			  o Relational capital
			  o Cognitive capital
			•Organisational performance:
			  o Decrease of learning curve
			  o Rapid response rate to customer needs and inquiries
			  o Reduce rework and prevent "reinvention of the wheel"
			  o Spawn new ideas for products and services
				Within CoPs social capital is developed and maintained that positively influence organisational performance.

Source	Objective	Methodology	Variables	Finding(s)
Teigland 2002	• Study knowledge exchange in *intra and inter-organisational networks of practice* • Explore the relationship between knowledge integration and individual performance • Explain how multinational organisations create new knowledge used to improve individual and organisational performance by supporting knowledge exchange	•Interviews •Questionnaire •Multinational media consulting company •Asia, U.S., and Europe •Variety of professions: management, programming, art direction, etc. •Social network analysis •Correlation analysis •Structural equation modelling	•Efficient performance •Creative performance •Internal codified sources •Communication with co-located coworkers •Communication with non-co-located coworkers •External sources •Internal knowledge exchange •External knowledge exchange •Integration centrality •Education •Experience	• No significant relationship between internal codified sources and performance. • Communication with co-located coworkers positively related to creative performance. • Integration centrality is related to creative performance. • Internal knowledge exchange is positively related to integration centrality. • Communication with non-co-located coworkers directly related to integration centrality. • External knowledge exchange indirectly influences individual's performance. • External knowledge exchange negatively related to centrality. • The development and implementation of new solutions and improvement in performance are achieved by combining internal and external knowledge.
Ardichvili, Page & Wentling 2003	To study motivation and barriers to employee participation in virtual knowledge-sharing communities of practice.	•Qualitative study •In-depth case study •Three communities of practice •Multinational corporation •Semi-structure interviews •Company documentations		•When employees view knowledge as a public good belonging to the whole organisation, knowledge flows easily. •Employees hesitate to contribute out of fear of criticism, or of misleading the community members.

Source	Objective	Methodology	Variables	Finding(s)
Sharratt and Usoro 2003	Develop theoretical model that underscore the factors that affect knowledge sharing in online communities of practice	• Existing research		• The factors affecting knowledge sharing are: Organisational structure; the ease of use and perceived usefulness of the information system; trust based upon the benevolence, competence and integrity of the community; the perceived proximity of knowledge-sharing to career advancement; sense of community; and organisational value congruence.

Teigland & Wasko 2003	Examine the relationship between individual performance and informal information trading and accessing knowledge across internal and external organisational boundaries	• Interviews
		• Large IT services and management consulting company
		• Nordic countries
			• Knowledge sources:
			  o Co-located coworkers
			  o Non-co-located coworkers
			  o Intra-organisational electronic networks
			  o Informal contacts in other firms
			  o Extra-organisational electronic networks
			• Information trading:
			  o Internal information trading
			  o External information trading
			• Performance:
			  o Creativity
			  o General performance
				• The redundant knowledge of co-located coworkers and CoPs restrain the development of new ideas and innovation.
				• Intra-organisational information improves integrative flexibility that is proved by positive relationship between internal information trading and general performance and creativity.
				• External information trading indirectly influenced individual performance by affecting internal information trading.
				• The development of creative solutions and performance improvement are achieved by combining internal and external knowledge.
				• Intra-organisational electronic networks facilitate the building of trust and norm of reciprocity more than extra-organisational networks.

Dewhurst & Navarro 2004	Examine the influence of organisational context and innovation on the relational learning process and the contribution to relational capital of external CoPs	• Questionnaire • SMEs in the Spanish optometry sector	• Knowledge acquisition (KA) • Knowledge distribution (KD) • Knowledge utilization (KU) • Relational capital (RC) • Organisational context (OC) • Innovation (EI)	• Positive and significant relationship between OC and EI. • OC and EI significantly impact KA. • EI has positive and significant influence on KD and KU. • KA, KD, and KU positively affect RC. • Negative and significant relationship between OC and KU.

Source	Objective	Methodology	Variables	Finding(s)
Soekijad, Huis in 't Veld, & Enserink 2004	Explore the possibility of applying *CoP* concept in the *inter-organisational* context (between organisations that include **competitors**)	•Case study •Participative observation •Semi-structured interviews	CoPs characteristics: •Situatedness–social interaction •Interest in specific practice •Generating and acquiring new knowledge, skills, and practical experience between peers •Collective learning	CoPs can exist in inter-organisational context as all the major CoP characteristics occur in the community under study.

Teigland & Wasko 2004	• Compare knowledge exchange between *electronic networks of practice* (ENoPs) and communities of practice
	• Investigate the reason for participating in electronic networks of practice
	• Examine the role of electronic network of practice on knowledge outcomes and individual performance
		•Questionnaire
		•Large IT services and management consulting company
		•Nordic countries
			•Participation level
			•Tenure
			•Knowledge acquisition
			•Knowledge contribution
			•Co-located coworkers
			•Individual performance
				• People participate in ENoPs to:
				  o Gain new ideas through help and advice.
				  o Strong norm of reciprocity: participate to pay back by helping others in the network in return.
				  o Strong sense of organisational citizenship.
				•Network support is affected by the communication technology characteristics.
				•Individual performance is positively influenced by participating in ENoPs.
				•ENoPs enhance the flow of new ideas and innovations compared to CoPs.

Chae et al. 2005	To investigate KM activities in CoPs and NoPs and information and communication technologies' role and use in these knowledge networks.	• Case study of an University • Structured interviews • Semi-structured interviews • Electronic communication • Internal document reviews		• There is a difference between CoPs and NoPs that is not explained by organisational boundaries. • NoPs facilitate knowledge sharing and CoPs facilitate knowledge creation and knowledge sharing. • NoPs enable sharing know-what whereas CoPs enable sharing know-how • Trust is mediator between strong and weak ties and receipt of useful knowledge

Source	Objective	Methodology	Variables	Finding(s)
Thompson 2005	Examine how organisations build and nurture *CoPs* structural and epistemic components	•Case study •Observation •Interviews	•Structural components •Epistemic components	• Organisations infrastructure that supports communication and personal identification is required to cultivate CoPs characteristics and attributes. • Encouraging members to share their ideas regularly. • Providing means to promote communication between members to nurture CoP approaches. • Encourage and support interaction within the community and between the community and the wider world.

Wasko & Faraj 2005	Examine the reasons behind people voluntarily contribute knowledge in *electronic networks of practice*	•Archival, network, survey, and content analysis data
		•Legal professional association in the U.S.
			•Individual motivations:
			  o Reputation
			  o Enjoy helping
			•Structural capital:
			  o Centrality
			•Cognitive capital:
			  o Self-rated expertise
			  o Tenure in the field
			•Relational capital:
			  o Commitment
			  o Reciprocity
				•Significant relationship between knowledge contribution and professional reputation.
				•Social capital especially structural capital plays an important role in knowledge exchange.
				•Significant relationship between cognitive capital and knowledge contribution.
				•No relationship between levels of relational capital and knowledge contribution.
				•The correlation between commitment and helpfulness of contribution is negative.

Kasper, Muhlbacher & Muller 2008	To investigates the process of knowledge sharing between the different sites of a multinational company (MNC) and its influencing factors in several renowned MNCs in various industries all over the world.	• Multiple case study • Different industries • Semi-structured interviews • CEOs, CFOs, further executives and knowledge practitioners.		• Positive relationship between decentralisation of knowledge management and cross-site knowledge sharing • Cross-site knowledge sharing is influenced by CoPs

Source	Objective	Methodology	Variables	Finding(s)
Schenkel & Teigland 2008	To empirically examine the relationship between communities of practice and performance.	• Case study of several CoPs • Semi-structured interviews • Survey • Company records • Construction project • Managers, engineers, operational supervisors, and superintendents	Structural and epistemic indicators of CoP (Thompson 2005; Wenger 1998).	• Company sections developed communities of practice through mutual engagement, narration, collaboration, and social construction in the pursuit of a joint enterprise. • CoP performance improved in three sections, but it was stable in the fourth due to physical changes. • Some preliminary evidence of a positive relationship between communities of practice and incremental improvements in their performance.
Alghatas 2009	To examine the reasons behind people engagement in an online community of practice and find out ways to maintain and stimulate participants for engagement in this community.	• Case study of eight online CoPs • Online observations • Online questionnaire survey		• The most common type of activity performed by members of each CoP was sharing knowledge, followed by socialising. • The most common types of knowledge shared across all CoPs were practical and general knowledge. The types of practical knowledge, however, varied in each CoP. • Storytelling extensively enhances knowledge transfer and participants interpersonal communications in the eight CoPs.

Source	Objective	Methodology	Variables	Finding(s)
Fong & Wong 2009	• To examine whether knowledge and experience in building maintenance projects could be reused in a more effective and efficient way by forming a community of practice across organisations • To study whether a proposed web-based experience management system would be a feasible solution in the sharing, capture, and reuse of knowledge and experience in building maintenance.	• Questionnaire survey • Interviews • Building professionals		• Knowledge gained from experience can enhance work in building maintenance projects. • Building maintenance projects requires a lot of knowledge. • Sharing building maintenance knowledge and experience is mutually beneficial, although professionals are reluctant to share their professional know-how with others.
Zboralski 2009	To analyse the role of community members' motivation to participate in CoPs, the importance of the community leader and the influence of management support.	• Quantitative survey • Partial least square structural equations modelling • Multinational company		• A leading facilitator and an appropriate managerial support influence interaction processes in CoPs positively.

2.3. Knowledge Creation

Knowledge in organisations is a wide spread topic in the literature (Bathelt, Malmberg and Maskell 2004; Carlile 2002; Couros 2003; Wang, Yang and Chou 2008). The popularity of knowledge is driven from its positive impact on organisation competitive advantage (Corno, Reinmoeller and Nonaka 1999; Couros 2003; Kogut and Zander 1992; Laszlo and Laszlo 2002; Miller and Shamsie 1996; Nahapiet and Ghoshal 1998; Nonaka and Takeuchi 1995; Sharkie 2003; Wang, Yang and Chou 2008). More specifically, it is pointed out that organisation sustainable competitive advantage is motivated by its ability to create knowledge (Nonaka, Toyama and Konno 2000; Peltonen and Lamsa 2004). As a result, this drives the attention to knowledge processes within organisations and the way new knowledge is created (Nonaka 1994). Franken and Braganza (2006) advocated that explaining the way knowledge is created and the required conditions to facilitate this process is vital. Nevertheless, there are scarce studies on knowledge emergence and development in the work practices (Peltonen and Lamsa 2004). More precisely, it is argued that the way knowledge is created and managed is ignored (Nonaka 1994; Nonaka, Toyama and Konno 2000). On the other hand, Chae et al. (2005) stated that there are various disciplines and theories that explain the way knowledge is managed. Furthermore, the significant impact of social networks on knowledge creation and sharing in organisations is extensively explored practically and theoretically (Abrams et al. 2003). The literature specified two knowledge management strategies: the first generation is regarding knowledge sharing within organisations (McElroy 2000) and the second generation is focusing on knowledge creation (Couros 2003; Laszlo and Laszlo 2002). The development of communities of practice and the study of producing and disseminating knowledge in CoPs is associated with the second generation (Couros 2003). It is also noticed that exploring knowledge creation within communities of practice is rare, additionally; the role of each community of practice on knowledge sharing and creation is disregarded in the literature (Chae et al. 2005).

Within organisations, the knowledge development cycle comprises knowledge creation, knowledge adoption, knowledge distribution, and knowledge review and revision phases where knowledge creation is the most disorganised and unsystematic

phase (Bhatt 2000, 19).   Avoiding the risk of repeating the same mistakes by capturing the reuse of best practices and encouraging employees to share knowledge about suppliers, customers, partners or competitors are some of the benefits of applying formal knowledge management practices in the organisation (Gorelick and Tantawy-Monsou 2005).   Moreover, knowledge management innovation processes will be facilitated by helping employees' to access required knowledge, thus new knowledge creation will be assisted through these practices (Gorelick and Tantawy-Monsou 2005). Despite that, Carlile (2002) declared that there are several difficulties associated with knowledge management such as difficulty in transferring knowledge (Suzlanski 1996), the tacitness of knowledge (Polanyi 1966; Nonaka 1994), and knowledge stickiness (von Hippel and Tyre 1996).   Knowledge management activities and associated practices have been classified under the three headings: a) knowledge processing; b) knowledge domains; and c) knowledge formality (Vincenti 1990; Faulkner 1994; Coombs and Hull 1998).   The processes of managing organisational knowledge have been described by Soliman, Innes and Spooner (1999) as "the means by which value is added to raw-knowledge (inputs) in order to create processed-knowledge (outputs).   In addition, Soliman and Spooner (2000) have noted that most organisations would attempt to utilise knowledge management processes in order to cover the entire scope of most organisational functions and therefore are significantly important to the knowledge creation process.

According to Chen and Edgington (2005) knowledge creation process takes place in informal structures that is not sponsored by the organisation and related to specific interest.   Thus, it can be argued that knowledge creation process existed in communities of practice that is considered informal organisation structure (Cadiz, Griffith and Sawyer 2005; Jubert 1999; Hildreth, Kimble and Wright 2000; Lesser and Everest 2001; Peltonen and Lamsa 2004; Wenger and Snyder 2000) that has no management control (Brown and Duguid 1991; Chua 2006; Lave and Wenger 1991; Lesser and Everest 2001; Wenger 1998a), and link people with similar interest (Brown and Duguid 2001; Carlile 2002; Gammelgaard and Ritter 2008; Lesser and Storck 2001; Soekijad, Huis in 't Veld and Enserink 2004; Wenger 1998a, b; Wenger, McDermott and Snyder 2002).   Adams and Freeman (2000) agreed that in order to generate new knowledge, a suitable culture that is presented by communities should be promoted to benefit and influence knowledge sharing.   It is proposed that the

process of knowledge sharing between communities of practice members need to be explored (Pan and Leidner 2003).

Built on the knowledge-based view of the firm, knowledge is the essential resource of an organisation (Grant 1996a, b). Therefore, it is believed that the creation of new knowledge will be facilitated by social networks existed within organisations (Kogut and Zander 1992). Teigland and Wasko (2003) agreed with that as they stated that the creation of new knowledge is encouraged by supporting communication channels between employees that will eventually improve their performance as well as the performance of the organisation. Similarly, the creation of new knowledge resulted from individuals' interaction in which they combine and exchange knowledge with each other (Kogut and Zander, 1992; Nahapiet and Ghoshal, 1998). Soliman and Youssef (2001) identified three primary knowledge processes, which are common across knowledge-based organisations and therefore are significant in: a) adding value, b) generating, capturing and sharing knowledge, and c) applying knowledge. However, the underlying processes are often very similar, drawing on people with diverse expertise and knowledge both to enhance existing value decisions and to create new ones. Specific examples where knowledge generated from CoP could be found in manufacturing operations where knowledge is applied to create value in a chain of activities such as product development, process enhancement, marketing, and all other client interactions.

Before discussing the rest of this chapter, it is vital to give some definitions of knowledge and the types of knowledge provided in the literature that is used in this study.

Bhatt (2000) recognised the difficulty of defining knowledge, though there are several definitions provided by researchers in an attempt to get better understanding of that term (Li and Kettinger 2006). According to Ginsburg and Kambil (1999) knowledge is "a renewable, re-usable and accumulating asset of value to firms that increases in value with employee experience and organisational life." Although Nonaka and Konno (1998) argued that knowledge loses its value if not used in the suitable time and place. In this study, knowledge and information is used interchangeably, despite the fact that researchers distinguish between these terms (Gottschalk 2000). As

argued by Alavi and Leidner (1999) knowledge is processed information. Furthermore, the distinguishing characteristics of knowledge as indicated by McDermott (1999, 105) are "knowledge is a human act, knowledge is the residue of thinking, knowledge is created in the present moment, knowledge belongs to communities, knowledge circulates through communities in many ways, and new knowledge is created at the boundaries of old." Though it can be argued that for the purpose of this study the interchangeable use of the information and knowledge can be accepted as the knowledge – or information – received from CoPs members will be processed through the knowledge creation process and the outcome will be the new knowledge. Thus, it is adequate to use information instead of knowledge in some parts of this study. This is supported by Choo, Linderman and Schroeder (2007, 437) as they defined knowledge as "new ideas, improved understanding, and the capability of a team doing a quality project."

Different types of knowledge provided in the literature, Kimble, Hildreth and Wright (2001) gave some examples of knowledge forms that include tacit – or often referred as implicit (Day 2005) – and explicit (Nonaka 1991; Nonaka and Konno 1998), know-what and know-how (Brown and Duguid 1998), and cognitivist and constructionist (von Krogh 1998). Other types of knowledge are also provided in the literature such as stick that describes knowledge movement within the organisation and leaky in which knowledge flows to competition organisations (Brown and Duguid 2001). Nevertheless, the most popular types of knowledge employed by various researchers are Polanyi's (1966) tacit and explicit knowledge (Brown and Duguid 2001; Ibert 2007; Nahapiet and Ghoshal 1998; Peltonen and Lamsa 2004). Although it is difficult to define tacit knowledge (Preece 2003), it can be defined as "personal and context-dependent. It is hard to formalize, and difficult to communicate with others. It is rooted in an individual's actions, experience, values, norms, and emotions" (de Moor and Smits 2002, 8). Alternatively, explicit knowledge is defined as "facts and actions that can be expressed formally in grammars and databases" (Preece 2003, 2). Consequently, contrary to tacit knowledge explicit knowledge as it is easy to apply is not considered as a significant source for competitive advantage (Ibert 2007). It is argued that there is similarity between Polanyi's tacit and explicit and Ryle's (1949) know how and know that – or sometimes referred to know what or about (Brown and Duguid 2001; Grant 1996a; Nahapiet and Ghoshal 1998). Know how is defined as

"skills, the ability to realise something" while know what is identified as "knowledge about facts or information" (OECD 2000, cited in Gelauff 2003, 6). Nonaka, Toyama and Konno (2000) categorised knowledge to four different types: experiential, conceptual, systemic, and routine knowledge. They argued that experiential and routine knowledge are tacit knowledge while conceptual and systemic knowledge are explicit knowledge. The authors defined experiential knowledge as "built through shared hands-on experience amongst the members of the organisation, and between the members of the organisation and its customers, suppliers and affiliated firms" (Nonaka, Toyama and Konno 2000, 21). Thus, it can be assumed that knowledge exchanged between CoP's members is considered to be experiential knowledge.

2.3.1. Knowledge Creation Theory

2.3.1.1. Nonaka's SECI model:

The most popular theory of knowledge creation is Nonaka's (1991, 1994) theory in which they (Nonaka and Konno 1998; Nonaka and Takeuchi 1995; Nonaka and Toyama 2003, 2005; Nonaka, Toyama and Konno 2000) developed the SECI (Socialization, Externalization, Combination, and Internalization) model.

Nonaka's (1994; Nonaka and Konno 1998; Nonaka and Toyama 2003, 2005; Nonaka, Toyama and Konno 2000) theory acknowledges that knowledge is created through four conversion modes of tacit and explicit knowledge. The modes are (Figure 2-1):

- The first mode converts tacit knowledge to tacit knowledge is known as socialisation. This is done through sharing similar experience between individuals.
- The second mode converts explicit knowledge to explicit knowledge that is combination. In this mode new knowledge is created through sorting, adding, re-categorising, and re-contextualising existing knowledge.
- The third mode converts tacit knowledge to explicit knowledge that is called externalisation. Through this mode an individual knowledge is transformed to a more understandable form by others in the group and thus employed to create new knowledge.

- The fourth mode converts explicit knowledge to tacit knowledge that is identified as internalisation. It is a requirement to realise the knowledge related to an individual within the knowledge of the organisation. Knowledge in this stage is applied practically to create new organisation's routines.

The knowledge creation theory presumed that the interaction of SECI model, 'ba', and knowledge assets develop a knowledge spiral through which knowledge is created within organisations (Nonaka, Toyama and Konno 2000). Knowledge creation within organisations is an endless process (Bloodgood and Salisbury 2001; Bohn 1994) that starts at the individual level and expands to communities, sections, departments, divisions, the organisation, and even beyond organisation boundaries (Nonaka and Toyama 2003; Nonaka, Toyama and Konno 2000). It should be noted that during the second, third and (possibly the fourth) mode of knowledge conversion, the knowledge creation process could face some difficulties resulting in the creation of defective knowledge. This defective knowledge has been first introduced in 2000 by Soliman and Spooner (2000) and named as 'knowledge gap'. Soliman and Spooner have shown that there is a link between knowledge gaps and strategic gaps. Further work along the knowledge gaps theory has been carried out by Soliman (2009), Soliman and Mehrez (2009), Mehrez (2010), and Soliman (2010) in relation to evaluating the performance of management models such as quality management models.
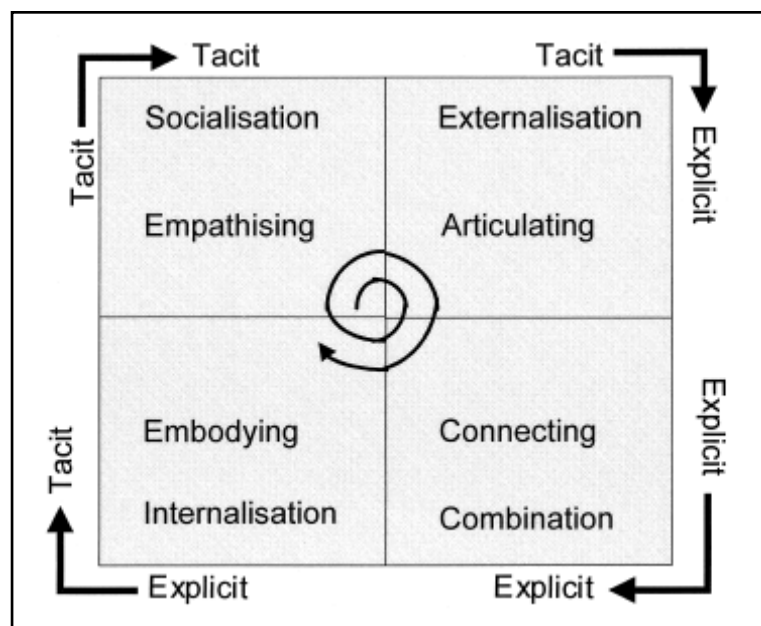
Figure 2-1: The SECI Process (source: Nonaka, Toyama and Konno 2000)

Within Nonaka's theory 'ba' is employed as a term that is outlined as a "shared space for emerging relationships. This space can be physical (e.g., office, dispersed business space), virtual (e.g., e-mail, teleconference), mental (e.g., shared experiences, ideas, ideals), or any combination of them" (Nonaka and Konno 1998, 40). Nonaka and Konno (1998) claimed that the foundation for knowledge creation is ba that is divided into four types related to SECI model. According to Nonaka, Toyama and Konno (2000) the types of ba are: originating, dialoguing, systemising and exercising ba. Although Braun (2002) suggested that communities of practice is drived from Nonaka and Takeuchi (1995) knowledge creation theory. It is found that there are differences between ba and communities of practice, they are (Nonaka and Toyama 2003; Nonaka, Toyama and Konno 2000, 15):

- Ba is a place to create new knowledge and CoP is a place where members learn knowledge.
- The boundary for ba is fluid and changing rapidly while CoP boundary is "set by task, culture, and history of the community".
- Changes in ba are both at micro and macro level, alternatively CoP changes occur at the micro level only.
- Opposite to CoP "membership of ba is not fixed".

2.3.1.2. Nonaka's model criticism:

Regardless of the popularity of applying Nonaka's SECI model (Choi and Lee 2002; Fong 2003; Glisby and Holden 2003; Popadiuk and Choo 2006), the generalisation of the model is criticised as Glisby and Holden (2003) and Tuomi (1999) as they argued that differences in culture should be considered as it will affect the application of SECI. The corporate knowledge scientific measures are ignored and it was focused on the managerial authority in explaining the model (Essers and Schreinemakers 1997). Additionally, Essers and Schreinemakers claimed that the conflict arises due to individuals' commitment to different groups within the organisation and the way management deals with it will hinder creativity and innovation which is neglected in Nonaka's theory. Another criticism provided by Bereiter (2002) acknowledged that both the process through which new ideas created and the development of the depth of understanding is not specified in Nonak's model. The researcher supported this criticism as one of the objectives of this study is to understand how knowledge is created through CoPs. Gourlay (2006, 1421) explained the shortages in Nonaka's

model for the reason that it is based on "studies of information creation and innovation (Imai et al. 1985; Nonaka 1990; Nonaka and Kenney 1991; Nonaka and Yamanouchi 1989) rather than from empirical studies of organisational knowledge processes." Equally, research is requested to certify Nonaka's model (Nonaka et al. 1994). Thus, the purpose of this study is to empirically test the knowledge creation process carried out within CoPs – that is explained in the Knowledge Creation Process section of this chapter. Gourlay (2006) emphasised that empirical and conceptual grounds are required to justify Nonaka's tacit and explicit knowledge conversion processes. Gourlay added that Nonaka's model expressed that knowledge is created as a result of managerial decision while it should be created through human activities. Moreover, Nonaka's model disregarded the role of social interaction in the knowledge creation process, Tuomi (1999, 328) argued that ''there is no model of social activity within the [knowledge creation] model—the motives for knowledge creation, and their relations to individual or organisational needs, remain obscure."

As discussed by Nonaka (1994) Top-Down, Bottom-Up, and Middle-Up-Down are the three styles of management through which knowledge is created within organisations. Nonaka stated that in the Top-Down management model, knowledge creation process is exclusively handled by top managers who will develop strategies and allocate resources for subordinates to implant the outcome of the knowledge creation process. Nonaka (1994) argued that the Bottom-Up management model is the opposite of the Top-Down model in which lower and middle managers create knowledge. Final management model that is Middle-Up-Down model combines the first two models – Top-Down and Bottom-Up – where middle managers are responsible for knowledge creation (Nonaka 1994). As the focus of this study on top and middle level managers in the Kingdom of Bahrain service industry, it can be argued that the Top-Down and Middle-Up-Down models are related to the knowledge creation process. However, this study ignored the role of the formal organisation on the CoP informal process of knowledge creation.

2.3.2. Knowledge Received

As discussed earlier in the community of practice section, it is understood that members of the community will interact with each other that will result in transferring and exchanging knowledge between them. It is noticed from the literature – to the best of the researcher knowledge, so far – there is no study that examines the knowledge received from CoPs. Thus, it is assumed that knowledge received is the outcome of knowledge transfer and exchange conducted between CoPs members. This is supported by Grant (1996a) as he stated that the diffusion and receiving of knowledge are both included in the knowledge transferring process. The absorptive capacity of the recipient is required to analyse the knowledge received (Cohen and Levinthal 1990).

Research emphasised on knowledge sharing theoretical and practical problem due to its fundamental objective in knowledge management initiative (Scholl et al. 2004). Hence, the understanding of the way that knowledge is transferred across organisational boundaries is improved (Mu, Peng and Love 2008).

Different terms are used in the literature to describe the movement of knowledge between individuals within social contexts, the researcher observed a number of these terms: knowledge trading, knowledge transfer, knowledge sharing, knowledge flow, and knowledge exchange. Von Hippel (1987) defined information trading as the willingness of employees working in different firms – even direct competitors – to exchange information informally. Knowledge transfer is identified as a "process through which one network member is affected by the experience of another. Knowledge transfer "manifests itself through changes in knowledge or performance of the recipient unit" (Argote and Ingram 2000, 151). It is argued that there is difference between knowledge transfer and knowledge sharing, in which transfer focuses on an obvious objective, and single direction whereas sharing is the opposite to transfer (Argote and Ingram 2000; Glassop 2002; Nonaka 1994). Mu, Peng and Love (2008, 87) described knowledge flow as "comprises the set of processes, events, and activities through which data, information, and knowledge are transferred from one entity to another. The final results are knowledge capture, creation, retention, and

application." As stated before, this study focused on knowledge received from CoPs members and its effect on knowledge creations.

It is proposed that "CoP members have to play both the roles of knowledge contributor (source) and user (recipient)" (Scarso and Bolisani 2008, 380). Conversely, Watson and Hewett (2006) found that factors influencing the contribution and usage of knowledge are different. In this study Scarso and Bolisani (2008) assumption is adopted.

Informal channels in organisations are the main source of valuable information (Rogers 1982). It is argued that the type of valuable knowledge possessed by the organisation is tacit (Reber 1993) and its transfer is facilitated through small groups' frequent interaction (Kogut and Zander, 1992). This idea is more clarified by Grant (1996a) as he stated that transferring tacit knowledge among organisational members is difficult, therefore the role of communities of practice in creating common structure and meaning to transfer experience is adequate (Brown and Duguid 1991). Additionally, it is stressed that organisations should provide appropriate personal communications and channels that contain formal and informal relationships to enhance tacit knowledge transfer (Kasper, Muhlbacher and Muller 2008). However, previous studies have emphasized that employees are unwilling to share tacit knowledge (Ciborra and Patriota 1998). This is due to "knowledge-hoarding behavior" that is knowledge is power, thus individuals are unwilling to share it (Ardichvili 2008, 543).

Knowledge is perceived differently when it is moved from one context to the other, therefore, there must be a match between recipient's situation and perspectives and the knowledge received (Nonaka 1994).

Despite the benefits that organisational units will obtain from new knowledge creation and ability to innovate when knowledge is transferred among them (Tsai 2001), Arora (2002) explained that there is a number of reasons that hinder that transfer, they are as follow:

- Unhealthy competition between the units that produce similar services;

- ignorance of the other units' requirement of knowledge or possession of knowledge;
- emphasis on individual performance instead of team performance; and
- teams are not benefiting from other teams experiences and start anew.

Further, van Wijk, Jansen, and Lyles (2008) revealed that there are three vital factors that influence the transfer of inter and intra organisational knowledge, they are: knowledge characteristics, organisational characteristics, and network characteristics. Additionally, Schleimer and Riege (2009) conducted a study to examine knowledge transfer among BMW units. The researchers found that there are five factors influencing the transfer of intra-organisational knowledge: "1) strength of network ties; 2) formality of network ties; 3) absorptive capacity; 4) learning adaptiveness; and 5) communication channels." (Schleimer and Riege 2009, 33)

Brown, Dillard and Marshall (2006, 18) stated that "exchanging knowledge is more likely to result in additional sources and stocks of knowledge." Salomon and Martin (2008) noticed that the transfer, deployment, and implementation of knowledge and its positive impact on organisation success and capability are identified by many scholars (e.g. Teece 1977; Winter and Szulanski 2001). This is supported by Rhodes et al. (2008) as they emphasised the favorable relationship between knowledge transfer and organisation competitiveness. On the other hand, Salomon and Martin (2008) argued that knowledge transfer is hindered by knowledge complexity and tacitness.

Rhodes et al. (2008) observed that the occurrence and effectiveness of knowledge transfer within organisations is highlighted in the literature (Argote and Ingram 2000; Gupta and Govindarajan 2000; Ingram and Roberts 2000; Szulanski 1996; Tsai 2002; Zander and Kogut 1995), however, a number of topics were ignored like the effect of knowledge transfer phases on each other, type of knowledge transferred, the effect of social contexts, and the impact of connections and networks on knowledge transfer. Hence, the objective of this study covered two of the overlooked topics: the influence of social contexts represented by communities of practice on knowledge transfer – or for the concern of this study received – and the type of knowledge received from CoPs members.

2.3.3. Knowledge Creation Process

Grant (1996a) assumed that knowledge creation is an individual activity, in which the organisation role is to apply this knowledge to produce new products and services (Bhatt 2000). This is supported by Nonaka (1994) who pointed out that individuals are the main mover for knowledge created inside organisations. Nonaka (1994, 23) further explained that the interaction occurring in an organisation is "often provided in the form of an autonomous, self-organizing "team" made of several members coming from a variety of functional departments. …….. It defines "true" members of knowledge creation and thus clarifies the domain in which perspectives are interacted." It is indicated that "soft" knowledge within communities of practice is created through three methods: (1) collect domain knowledge such as figuring out how to solve a particular problem; (2) create the knowledge of work practice related to the community for example, how an eccentricity of certain machine is produced; and (3) generate knowledge about community members' abilities for instance, "war stories" evaluation (Kimble, Hildreth and Wright 2001, 223). Correspondingly, Fuller, Jawecki and Muhlbacher (2007, 61) expressed that the way innovation is created within communities of practice is explained in the literature (Franke and Shah 2003; Sawhney and Prandelli 2000). Fuller, Jawecki and Muhlbacher (2007) provided four steps (interact and communicate, pool of knowledge, alternative experimentation and invention, and solution to problem) for innovation creation in CoPs that are explained below. This study obtained these steps as a foundation to investigate the process of knowledge creation within Bahrain service industry. However, some researchers disagreed with this point as they argued that knowledge is not created through a systematic process and the process is unmanageable (Lynn, Morone and Paulson 1996; Mayo 1959).

2.3.3.1 Interact and communicate:

Community members interacts and communicate constantly, in which members talk about their work (also mentioned by Lave and Wenger 1991; Wenger 1998a), ask questions, bring up problems (also specified by Nonaka, Toyama and Konno 2000; Wenger 1998a, b), provide solutions, produce answers, laugh at mistakes, or discuss work changes (Brown and Duguid 1991; Wenger 2004). The extension of Nonaka's

theory of knowledge creation conversion model supported this point as it suggested that on the group level, dialogue and interpersonal activities are employed to explore new ideas (Nonaka 1991). Nonaka (1994) suggested the existence of two concurrently processes within organisational knowledge creation, first is building mutual trust by sharing experiences among the "team" members and second share implicit perspective by continuous dialogue among members. He argued that when "team" members share information, it is possible to solve new problems. Bartley (1987, 440) indicated that individuals interact with each other and share their knowledge "on the unknown and unfathomable object-product" in a process to "create not-yet-existing knowledge about the already existing products, as well as creating new products". As indicated earlier through this step, problems are identified, when these problems are positively structured opportunities for improvement will occur that will eventually lead to create innovative solutions (March 1991). In his study to build a conceptual model of knowledge creation, Fong (2003) found that the first mean of knowledge creation is knowledge sharing. Bathelt, Malmberg and Maskell (2004) observed that the development of new product involved a number of stages, the first stage is articulate and clarify tacit knowledge from different sources. Under the problem-solving school structure, the first phase is problem recognition (Li and Kettinger 2006). Li and Kettinger (2006) proposed their own theory called an evolutionary information-processing theory of knowledge creation, which assumed that knowledge creation process starts with identifying a new problem. It is claimed that – in general – knowledge – as a resource – is created through two processes: combination and exchange (Schumpeter 1934; Moran and Ghoshal 1996), exchange is a prerequisite for combination through which different parties exchange their resources (Nahapiet and Ghoshal 1998).

Beckett (2000) presented an organisational system comprised of eight sub-processes linked by knowledge and/or data flows that result in day-to-day actions within the organisation. Beckett further examined that nature of flows between the sub-processes and the types of knowledge involved, and factors that may facilitate or inhibit the flow of knowledge. The Beckett model has proven useful in understanding what drives the organisation, and in developing a form of diagnostic tool to study how to better share knowledge within the organisation. In addition Beckett (2001), argued that historically perceived values have been driven by financials and capital assets,

however, in recent times the intangible value (such as value of know-how and knowledge in general) should be considered side by side with the value of capital base. It has been observed that as organisations become more proficient at knowledge acquisition and dissemination, the volume of information and opportunities for improvement multiplies rapidly. That is why a focus on the criticalness of knowledge creation has driven Soliman and Youssef (2003a) work to examine the alignment of the organisation's strategy and its performance measures and report that knowledge itself could play a critical role in enterprise knowledge management and in turn in the management of the value chain knowledge.

2.3.3.2 Pool of knowledge:

Develop a pool of collective knowledge that each member updated others about their knowledge, learning, and actions (Brown and Duguid 2000). The amount of knowledge collected in this step exceeds any member individual knowledge and it is open for all members to access (Fuller, Jawecki and Muhlbacher 2007, 61). Similarly, Kimble, Hildreth and Wright (2001) claimed that when a problem occurs community members will gather domain knowledge by interacting and working together to solve this problem. Creative solutions to problems are produced when employees combine their ideas in the cross functional teams and structures developed within organisations (Foley 2000). It is discovered that knowledge creation is carried out through three modes, knowledge integration is the second mode in which knowledge from inside and outside the team is combined (Fong 2003). Bathelt, Malmberg and Maskell (2004) second stage for new product development is re-combine and connect the pool of explicit knowledge – that converted from the tacit knowledge explained in the first stage mentioned in the above section. The second process for knowledge creation is the combination of recourses exchanged in the first process presented in section 2.3.3.1 (Nahapiet and Ghoshal 1998).

Becket (2001) reported that one of the objectives of learning stimulation is creating new knowledge and in turn increasing further learning opportunities. However, there is usually a risk of focusing on the knowledge itself, sharing it and using it. A further problem with pooling knowledge is in identifying where knowledge might lie within an organisation, so that it can be accessed to provide leverage as an asset. Furthermore, knowledge transfer is complex operation, involving a variety of

processes that may risk failing unless these processes are well embedded in the company's routines 'corporate memory' (von Gough and Grand 2000).

Becket (2001) noted that sifting critical knowledge from the flood of background information may require identifying the right filters and decision criteria. Such filters and criteria are important for creating a corporate memory that would be useful for developing the learning organisation and for understanding the potential for knowledge leverage.

2.3.3.3 Alternative experimentation and invention:

Perform a sequence of alternating experimentation and invention, this is done when an unfamiliar situation arises, community members will share and reflect stories related to the situation in hand (Fuller, Jawecki and Muhlbacher 2007, 62). Similarly, this is related to Levi-Strauss (1996, 17) definition of "bricolage" as using available tools and materials to solve problems (Brown and Duguid 1991, 47). The test of a prototype built on technical systems and employees' routines is done in third stage for developing a new product that is known as internalise knowledge (Bathelt, Malmberg and Maskell 2004). The second phase in the problem-solving school frame is idea generation in which alternative solutions to the problem is suggested (Li and Kettinger 2006). Conversely, the problem-solving school has limitations, one of these drawbacks is highlighted by Coombs and Hull (1998) as they discovered that organisational routines may restrict generation of alternatives (Li and Kettinger 2006). During the process of the evolutionary information-processing theory of knowledge creation stems from Li and Kettinger (2006) tentative knowledge occur, in which temporary solutions are found and evaluated to meet the goal.

2.3.3.4 Problem to solution:

Construct solution for the problem will be the ultimate step in the knowledge creation process (Fuller, Jawecki and Muhlbacher 2007, 62). It is agreed that problems are solved by developing and applying new knowledge (Nonaka and Toyama 2003; Nonaka, Toyama and Konno 2000). It is proposed that to extend knowledge beyond individuals' perception, organisational members should accept and use the knowledge produced within the knowledge creation process that will develop new routines and processes for the organisation (Inkpen 1997). That last phase of the problem-solving

school framework is solution selection where the best solution is chosen after evaluating and selecting the alternative solutions (Li and Kettinger 2006). Li and Kettinger (2006) evolutionary information-processing theory process ends at finding a solution to the problem through the creation of new knowledge that is when the tentative knowledge meets the goal.

In the evolutionary information-processing theory of knowledge creation, there are some limitations that are addressed here (Li and Kettinger 2006):

a) The theory is not tested empirically. Therefore, this study that empirically investigated the knowledge creation process is filling in this gap.

b) Role of individuals in the knowledge creation process proposed by the theory is disregarded. As a result, this study positively contributed to the theory as it examined the role of knowledge received from CoPs members on the knowledge creation process.

2.3.4. New Knowledge

This part of the chapter discussed the outcome of the knowledge creation process that is specified in the previous section as the solution to the problem that leads to creating new knowledge (Li and Kettinger 2006; Nonaka and Toyama 2003; Nonaka, Toyama and Konno 2000). Knowledge creation refers to the development of new knowledge or replacement of knowledge existed in the organisation's knowledge repository (Alavi and Leidner 2001). Choo, Linderman and Schroeder (2007) found that the new knowledge created that could be ideas, solutions, or abilities to enhance organisation performance should be considered as an outcome. This is supported by Davenport and Hall (2002) who believed that knowledge creation motivates innovation. The connection of elements from various places (Mattsson 2006), communities (Amin and Cohendent 2004), or organisations (Brown and Duguid 2000) that are related to a particular practice will create innovation (Ibert 2007). Knowledge creation can occur at levels that range from individuals to organisationas (Li and Kettinger 2006). The concern of this study is on organisational knowledge creation that is eventually used for organisation sustainability.

Managers' main concern is to increase the creation of new organisational knowledge (Inkpen 1996). Nonaka and Toyama (2005) mentioned that organisation ability to innovate is to create knowledge that is considered a knowledge asset. According to them this type of asset is vital for the organisation as it is a source of value for the organisation. Despite the importance of new knowledge on organisation performance and ultimately the sustainability of its competitive advantage, the relation between knowledge creation and management is relatively rare (Inkpen 1996).

Marakas (1999, 440) defined creativity as "the ability to originate novel and useful ideas and solutions". On the other hand, Urabe (1988, 3) describes innovation as follows:

> *Innovation consists of the generation of a new idea and its implementation into a new product, process or service, leading to the dynamic growth of the national economy and the increase of employment as well as to a creation of pure profit for the innovative business enterprise. Innovation is never a one-time phenomenon, but a long and cumulative process of a great number of organisational decision-making process, ranging from the phase of generation of a new idea to its implementation phase.*

Another definition for innovation provided by Afuah (1998, cited in Popadiuk and Choo 2006, 303) depicted that "innovation as new knowledge incorporated in products, processes, and services." Innovation is also identified as "something that generates and facilitates change of practice" (Tuomi 2002, 10).

It should be noted that Davenport (1996) and later Lucier and Torsilieri (1997) observed that the failure of knowledge management schemes in many companies because the focus was only on making that resource available, while ignoring that there must be action to deliver value. Accordingly, knowledge creation must be aligned with the organisational strategy. However, Vicari and Toilo (2000) in considering the link between knowledge creation and creativity, has found that knowledge may be necessary for developing operational know how to support organisational strategy. In other words, knowledge is regarded as an asset and hence it could be sold or exchanged or donated or borrowed to deliver value for the purpose of improving products and/or processes. If knowledge is regarded as a facilitator of

creative practices that help a company compete, then it must lead to beneficial change such as above average return and/or more efficient operations of the supply chain components (Soliman and Youssef 2003a).

Li and Kettinger (2006) realised that several research schools attempt to analyse knowledge creation, example of these schools are: innovation (Rogers 1995), organisational learning (Pentland 1995), and problem solving (Gray 2001). This study adopted the problem solving school to examine the organisational knowledge creation process within Bahrain service industry. As indicated by Li and Kettinger (2006) the school that focused more on knowledge creation is the problem-solving school. Moreover, the interaction between individuals who exchange their knowledge and competencies to solve a problem is the essence of innovation and knowledge creation (Bathelt, Malmberg and Maskell 2004).

It is declared that the knowledge created within the organisation should be evaluated or "justified" to ensure the usefulness of this new knowledge for the organisation and society as a whole (Nonaka 1994). Sharkie (2003) argued that knowledge uniqueness is vital to organisation competitive advantage.

2.3.5 Prior Studies

As indicated earlier in the knowledge creation section, there are inadequate studies on existence and development of knowledge in the work practices (Peltonen and Lamsa 2004). Additionally, the way knowledge is created and managed is overlooked (Nonaka 1994; Nonaka, Toyama and Konno 2000). Nevertheless, few studies investigate knowledge role in practice that are provided in this section.

Although Schrader (1991) study was mentioned in communities of practice prior studies section in this chapter, it is described in here as well. The study empirically investigated the information transfer behaviour of employees in the U.S. specialty steel and mini-mill industry. In the survey distributed among middle-level managers and engineers, Schrader (1991) explored which source of technical information is more important. Schrader discovered that colleagues within the same firm and

colleagues in other firms respectively are important information sources. In addition, Schrader found that the surveyed employees also act as information source for colleagues in other firms who seek help from them. The aim of this study is to figure out which community of practice (inside or outside the organisation boundaries) is more important in providing the necessary knowledge required to achieve organisation sustainability through the knowledge contributed in the knowledge creation process.

Another study was conducted by Fong (2003) concentrated on knowledge creation process in a multidisciplinary project team setting. The researcher employed in-depth case studies that include documentation and organisational records, interviews, and observation to attain the goal of the study. Fong (2003) realised that knowledge creation occurs in five processes that are not linear but connected. This is illustrated in Figure 2-2, they are as follows:

1. Boundary crossing: it is a prerequisite for the other following processes, but knowledge creation is not ensured as it can be encouraged or obstructed via interactions across the boundaries.
2. Knowledge sharing: members of the team have their unique knowledge domains that need to be discussed with each other. The sharing and discussion of this different pool of knowledge is beneficial for team members.
3. Knowledge generation: team interaction and communication will produce new or "emergent" knowledge. Sources of new knowledge generation – that are vital for creativity and innovation – include social networks, printed sources, and customer and competitor feedback. The most important resource is social networks, though, publish materials and understanding customer needs and approaching competitor products also generate knowledge.
4. Knowledge integration: within the decision-making process, various views and knowledge are combined.
5. Collective project learning: professionals and experts in self-learning – through engagement in the project –always learn new technology and techniques even from their failures.

Tsai and Li (2006) examined the relationship between knowledge creation process, new venture strategy, and firm performance. The researchers found that "knowledge

creation process plays a mediating role through which new venture strategy benefits new venture performance" (Tsai and Li 2006, 9). As indicated earlier in Nonaka's theory criticism section, research is requested to certify Nonaka's model (Nonaka et al. 1994). Accordingly, Tsai and Li (2006) study empirically supported Nonaka's (1994) knowledge creation theory, in which it proved that the SECI model creates new knowledge for the organisation. Tsai and Li stressed that their study also supported Grant's (1996a, b) knowledge-based view. Moreover, they showed that their findings confirmed that knowledge creation is a valuable source for organisation sustainable competitive advantage.
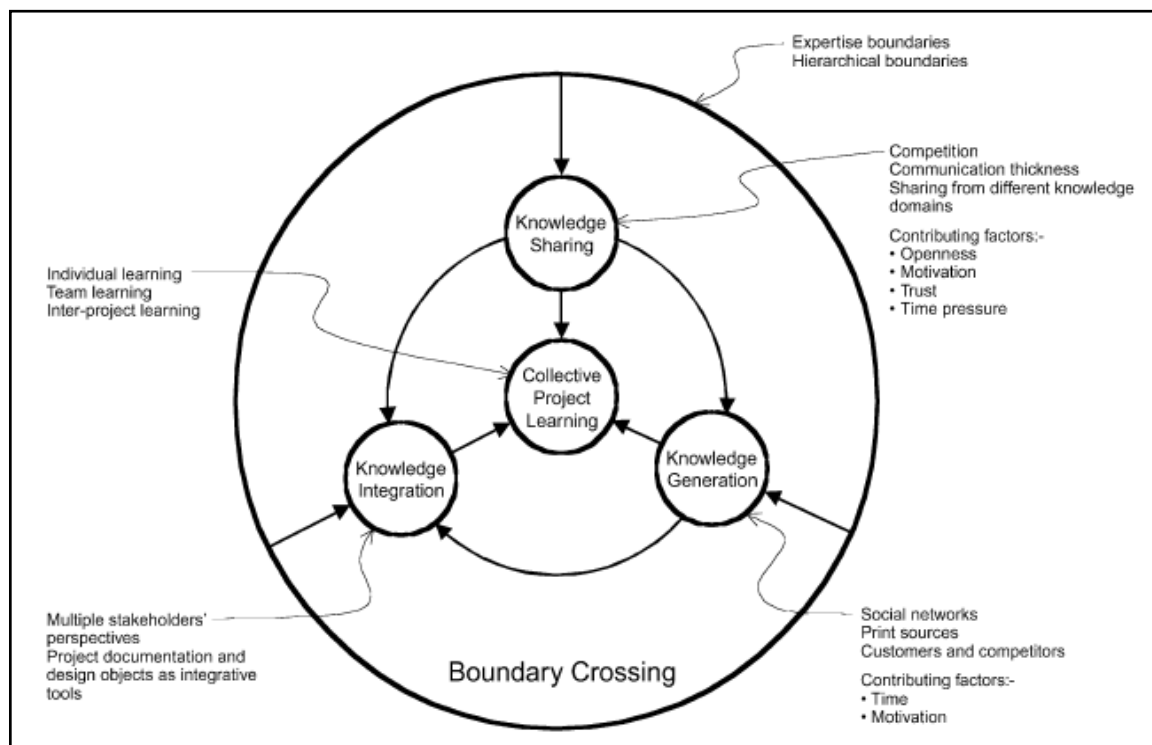
Figure 2-2: The Interrelationship between Multidisciplinary Knowledge Creation Processes (source: Fong 2003)

2.4. Social Capital

Social capital is a popular concept that originally emerged in community studies (Nahapiet and Ghoshal 1998) and is adopted in various disciplines (Lin 1999; McElroy, Jorna and van Engelen 2006) that is recently applied in the business field (Adam and Roncevic 2003; Adler and Kwon 2002; Gammelgaard and Ritter 2005; Lesser and Storck 2001; Nahapiet and Ghoshal 1998). Therefore, it is a growing

concept and its establishment, operations, applications, and description of its sources, appearance, and impacts are viewed differently (Adam and Roncevic 2003; Productivity Commission 2003). Similarly, the benefits of social capital are questionable and whether it is considered as a form of capital (Productivity Commission 2003). Social capital is a renewable resource of an organisation, for instance, when trust is showed and used in a relationship more trust will be resulted (Brown, Dillard and Marshall 2006). It is broadly agreed that social capital's main aspects are social norms, networks and trust. McElroy, Jorna and van Engelen (2006) noticed that the relationship between social capital and knowledge creation is not covered in the literature. Thus this study employed trust, norms, and identification to examine their role in knowledge creation. Further, social capital facilitates cooperation within networks of individuals (Productivity Commission 2003). Hence, the study investigated the role of social capital on CoPs members' connections. Within communities of practice, social capital converted from an individual asset to a jointly owned asset (Braun 2002).

As stated above, social capital is an evolving concept, therefore, theoretical and measurement confusions occur (Lin 1999). Woodhouse (2006) found that the reason behind the confusions is vagueness of social capital definition due to the existence of various descriptions of the concept. Two unsolved issues that stated by Adam and Roncevic (2003, 160) are social capital sources and consequences and "the question of whether social capital is a dependent, independent or intermediary variable." Styhre (2008) claimed that there are positive and negative consequences of social capital. It is claimed that empirical examination of the relationship between organisational learning and social capital is scarce, inspite of their influence of knowledge transfer (Rhodes et al. 2008). In this study, the level of social capital in the Kingdom of Bahrain services industry is measured and social capital role on the knowledge received from CoPs members is explored.

2.4.1. Definition, Origin, Theory, and Types of Social Capital

2.4.1.1. Social capital definition:

As mentioned in the social capital section, there are many definitions of the social capital concept (Nahapiet and Ghoshal 1998; Productivity Commission 2003; Woodhouse 2006). Adler and Kwon (2002) discovered that there is a broad similarity between the different social capital definitions; conversely, there are also differences between them that are the focus of the definition: (a) social capital is considered as substance, source, or effect; and (b) relations between actors, the structure of relations between actors, or the two types of linkages. These differences are adopted – with some modifications – in this study to categorise the definitions found in the literature that is depicted in Table 2-5. The existence of various social capital definitions is due to its emergence from different theoretical traditions (Productivity Commission 2003). Social capital concept can be divided into four basic approaches: economic, political, sociological, and anthropological (OECD 2001).

First, it is noticed from Table 2-5 that Nahapiet and Ghoshal's social capital definition is widely used in the literature (Adler and Kwon 2002; Chiu, Hsu and Wang 2006; Gammelgaard and Ritter 2005; Kankanhalli, Tan and Wei 2005; Lesser and Storck 2001; Wasko and Faraj 2005). It is argued by Lesser and Storck (2001, 833) that Nahapiet and Ghoshal (1998) definition of social capital is "a useful framework for understanding social capital in a business context". Consequently, this study will employ Nahapiet and Ghoshal (1998) definition. Second, Portes (1998) definition of social capital is also popular as it is used by several authors (Adam and Roncevic 2003; Adler and Kwon 2002; Mu, Peng and Love 2008; Productivity Commission 2003). Third, it is observed that in some cases the same scholar provides different social capital definitions, these scholars are: Woolcock (1998, 2001), Lin (1999), Putnam (1993, 1995), and Fukuyama (1995, 1997, 1999). Finally, the three most used categories – that is based on Adler and Kwon (2002) – of social capital definitions provided in the table are source and effect, relations and effect, and source and relations. In which, trust, norms, and networks are considered the most common sources of social capital.

Table 2-5: Social Capital Definitions

Focus	Definition	Source
Effect	"The ability of people to work together for common purposes in groups and organisations."	Fukuyama (1995, 10)
Source	"… the information, trust, and norms of reciprocity inhering in one's social networks."	Woolcock (1998, 153)
	"…composed of social networks which can be activated."	Wall, Ferazzi and Schryer (1998, 304)
Relations	"Social capital resides in the fabric of relationships between individuals and in individuals' connections with their communities."	Putnam (1995, 67)
Source & Effect	"…norms and networks that facilitate collective action."	Woolcock (2001, 13)
	"Norms and networks facilitating collective action."	(Woolcock and Narayan 2000, 226)
	"… features of social organisation such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated actions."	Putnam (1993, 167)
	"The existence of a certain set of informal values or norms shared among members of a group that permit cooperation among them."	Fukuyama (1997)
	"Social capital is an instantiated informal norm that promotes cooperation between two or more individuals."	Fukuyama (1999, 1)
	"Social capital is networks together with shared norms, values and understandings that facilitate cooperation within or among groups."	OECD (2001)
Source & Effect	''Social capital consists of knowledge and organisational resources that enhance the potential for individual and collective action in human social systems''.	McElroy, Jorna and van Engelen (2006, 125)
	"The norms and social relations embedded in the social structure of societies that enable people to coordinate action to achieve desired goals."	World Bank (2000)
Relations & Effect	"Investment in social relations by individuals through which they gain access to embedded resources to enhance expected returns of instrumental or expressive actions."	Lin (1999, 35)
	"Those expectations for action within a collectivity that affect the economic goals and goal-seeking behavior of its members, even if these expectations are not oriented toward the economic sphere."	Portes and Sensenbrenner (1993, 1323)

Focus	Definition	Source
Relations & Effect	"Naturally occurring social relationships among persons which promote or assist the acquisition of skills and traits valued in the marketplace."	Loury (1992, 100)
	"The set of elements of the social structure that affects relations among people and are inputs or arguments of the production and/or utility function."	Schiff (1992, 160)
	"… the ability of actors to secure benefits by virtue of memberships in social networks and other social structures."	Portes (1998, 8)
Structure of Relations & Effect	"The amount and quality of communication about a community that takes place among its members within their social networks. One outcome of this participation and talk is the development of social trust that facilitates collective social action toward achieving common social goals (i.e., civic engagement)."	Kavanaugh and Patterson (2001, 497)
Structure of Relations & Effect	"The process by which social actors create and mobilize their network connections within and between organisations to gain access to other social actors' resources."	Knoke (1999, 18)
Both linkages & Effect	"Social capital is defined by its function. It is not a single entity but a variety of entities with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors — whether persons or corporate actors — within the structure."	Coleman (1988, S98)
Source & Relations	"The sum of actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or a social unit."	Nahapiet and Ghoshal (1998, 243)
	"The aggregate of resources embedded within, available through, and derived from the network of relationships possessed by an individual or organisation."	Inkpen and Tsang (2005, 151)
	"The shared and mutual trust that individuals develop in their joint collaborations."	Styhre (2008, 941)
	"Resources embedded in a social structure that are accessed and/or mobilized in purposive action."	Lin (1999, 29)
	"A combination of network size, the relationship strength, and the resources possessed by those in the network."	Flap (1995, cited in Lin 1999, 35)

Focus	Definition	Source
Source & Structure of Relations	"A resource that actors derive from specific social structures and then use to pursue their interests; it is created by changes in the relationship among actors."	Baker (1990, 619)
Source, Relations, & Effect	"A common social resource that facilitates information exchange, knowledge sharing and knowledge construction through continuous interaction, built on trust and maintained through shared understanding."	Daniel, Schwier and McCalla (2003, 116)
Source, Relations, & Effect	"A jointly owned set of resources that accrue to an individual or group by virtue of their social connections."	Rhodes et al. (2008)

2.4.1.2. Social capital origin:

According to Woolcock and Narayan (2000), social capital was found by Hanifan (1916). The authors stressed that social capital disappeared for decades and then rediscovered in 1950s by the sociologists Sim and Loosely (1956), then in 1960s by an exchange theorist Homans (1961) and an urban scholar Jacobs (1961), after that in 1970s by an economist Loury (1977). Woolcock and Narayan (2000, 229) stated that "none of these writers, interestingly, cited earlier work on the subject, but all used the same umbrella term to encapsulate the vitality and significance of community ties." Hence, the current studies of social capital are driven from Coleman (1988, 1990) who focused his study on education and Putnam (1993, 1995) who studies civic participation and institutional performance and the effect of social capital on them (Woolcock and Narayan 2000, 229). In addition, Gammelgaard and Ritter (2005) claimed that Coleman's (1988) recognition of social capital stems from Granovetter (1985) study of social structure. Woolcock and Narayan (2000, 229) discovered that there are nine major fields of study that concentrated on social capital, they are: "families and youth behavior; schooling and education; community life (virtual and civic); work and organisations; democracy and governance; collective action; public health and environment; crime and violence; and economic development." The concern of this study is on one of these fields that is work and organisations.

2.4.1.3. Social capital theory:

In general social capital theory assumed that different outcomes can be attained through social capital (Woodhouse 2006). More specifically, many researchers agreed that social capital theory posits the importance of social capital that resides in

relationships on knowledge exchange or sharing (Chae et al. 2005; Chiu, Hsu and Wang 2006; Gottschalk 2000; Kankanhalli, Tan and Wei 2005; Nahapiet and Ghoshal 1998). Some researchers argued that social capital theory acknowledged the positive impact of relations on social actions or activities (Nahapiet and Ghoshal 1998; Winter 2000) such actions are economic capital (Bourdieu 1986) and human capital (Coleman 1988). For other researchers, it is relations that influence access to resources (Gottschalk 2000). Nahapiet and Ghoshal (1998, 243) declared that "the central proposition of social capital theory is that networks of relationships constitute a valuable resource for the conduct of social affairs, providing their members with the collectivity-owned capital".

McElroy, Jorna and van Engelen (2006) indicated that social capital theories are divided into two categories: (1) ego-centric or psycho-centric theories (e.g. Granovetter 1973; Burt 1992; Coleman 1990; Portes 1998) in this category the main actors are individuals who take actions based on the resources accessed through their relationships; and (2) socio-centric theories (e.g. Fukuyama 1997; Putnam 1995) here the key actor is an organisation or a society in which social capital influences actions within these collectives. As the focus of this study on communities of practice that is a group of individuals, the second category is related to the study.

2.4.1.4. Types of social capital:

The two types of social capital are bonding and bridging social capital (Adler and Kwon 2002; Gelauff 2003; Pigg and Crank 2004; Preece 2003;Productivity Commission 2003;Norris 2003; Woodhouse 2006). Below is a brief explanation of these two types:

❑ *Bonding social capital:*

Bonding social capital – sometimes called strong-ties (Gelauff 2003) – resides within one community (Preece 2003) between groups of similar characteristics (Productivity Commission 2003; Woodhouse 2006). Gelauff (2003, 3) proposed that bonding social capital "consist[s] of a closely knit set of connections within a specific group of people, who are well aware of each others behaviour and reputation. These connections generally exist for a long period of time." The creation of this type of social capital is influenced by shared goals, norms, and values (Preece 2003). The

drawback of bonding social capital is the restriction of creativity (Gelauff 2003).Pigg and Crank (2004) believed that "thick trust" existed in bonding social capital. Social norms are encouraged in bonding social capital (Naranyan 1999). Therefore, it can be argued that bonding social capital illustrated the connections existed in internal communities of practice (CoPs).

- *Bridging social capital:*

Bridging social capital – or weak-ties Gelauff (2003) – motivates the communication and a connection between different communities (Preece 2003) with different characteristics (Productivity Commission 2003; Woodhouse 2006). Gelauff (2003) emphasised that this type of social capital lasted for a short period of time, but it reached a larger number of individuals. Bridging social capital is motivated by shared artefacts (Preece 2003). Innovation is more likely to be supported in bridging social capital (Productivity Commission 2003). This is because the connection between different individuals from diverse cultures and backgrounds encourage the share of different ideas that motivated this type of social capital (Pigg and Crank 2004). Pigg and Crank (2004) stated that opposite to bonding social capital, bridging social capital is related to "thin trust". Thus, the connections within external communities of practice or networks of practice (NoPs) can be described as bridging social capital.

It is reported that strong and loose ties existed in organisational networks and both provide beneficial outcomes for the community by creating a sense of belonging between the members (Leonard and Onyx 2003). This supports this study assumption that both bonding and bridging social capital existed in Bahrain service organisations, hence, internal and external communities of practice are expected to occur within these organisations.

2.4.2. Social Capital Dimensions/Indicators

Putnam (1995) stressed that social capital dimensions need to be clarified, thus, Nahapiet and Ghoshal (1998) proposed that there are three dimensions of social capital:

1) Structural dimension: present individuals' ability to connect others in the organisation, through these connections the required time and investment to collect information is reduced.

2) Relational dimension: propose support for individuals' connections through interpersonal relationship development. This dimension includes four components: obligations, norms, trust, and identification (Wasko and Faraj 2005).

3) Cognitive dimension: occur when two parties develop a shared context that reinforces information access for individuals as they share language and codes existed between them.

The main motivator of knowledge development is social capital structural dimension as it facilitates knowledge exchange and involvement in knowing activities (Nahapiet and Ghoshal 1998). On the other hand, the relational and cognitive dimensions of social capital facilitate individuals' access to information and knowledge that positively influence knowledge exchange and combination (Nahapiet and Ghoshal 1998). However, this study employed the components of the relational dimension, they are: trust, norms, and identification. As stated by Kankanhalli, Tan and Wei (2005, 116) "trust, norms, and identification can be considered as social capital since they are organisational resources or assets rooted within social relationships that can improve the efficiency of coordinated action." Onyx and Bullen (2000) indicated that networks, reciprocity, trust, shared norms, and social agency are the major contents of social capital. Fukuyama, (1995) argued that to reinforce social capital development between group members, trust, shared norms, values, obligations, expectations and identification are vital. In fact, relational dimension plays an important role towards social capital relationship with knowledge (Nahapiet and Ghoshal 1998). Furthermore, "access to parties for exchange, anticipation of value through exchange and combination, and the motivation of parties to engage in knowledge creation through exchange and combination" are the three conditions of exchange and combination that are influenced by relational dimension (Nahapiet and Ghoshal 1998, 254). The following sections explain each of the three relational dimension components in more detail.

2.4.2.1. Trust:

It is understood that one of the primary components of relational capital is trust that enhances action between groups (Coleman 1990; Fukuyama 1995). Thus, Wasko and Faraj (2005) emphasised that trust is complicated as within organisational settings, various dimensions of trust occur at different levels of analysis (Ring and Van de Ven 1994; Tsai and Ghoshal 1998). Moreover, trust definition and understanding is difficult (Roberts 2006). However, Lazaric and Lorenz (1998, 3) defined trust as "beliefs about the likely behaviour of another, or others, which matter for the trustor's decision-making." Mistzal (1996, 9) also described trust as "the belief that the intended action of others would be appropriate from our point of view." Mishra (1996, 117) provided another definition for trust that "indicates a willingness of people to be vulnerable to others due to beliefs in their good intent and concern, competence and capability, and reliability." Putnam (1993) believed that participating in networks of association will develop trust. More precisely, Wasko and Faraj (2005, 43) suggested that trust is developed "when a history of favorable past interactions leads to expectations about positive future interactions."

As the concern of this study is on level of trust within communities of practice, generalised trust is adopted to measure trust. This is supported by Kankanhalli, Tan and Wei (2005) as they indicated that generalised trust is a form that existed in social units. The authors described generalised trust as "the belief in the good intent, competence, and reliability of employees" (Kankanhalli, Tan and Wei 2005, 117).

It is discovered that there is confusion in the relationship between trust and social capital (Adler and Kwon 2002), many authors recognised trust as a social capital element. However, others believed that it is a source or outcome of social capital (Adler and Kwon 2002; Productivity Commission 2003). This study, employs the first assumption that trust is an element of social capital.

2.4.2.2. Norms:

McElroy, Jorna and van Engelen (2006) noticed that norms is one of social capital forms that is addressed widely in the literature. Harmony within a social system is represented by norms (Coleman 1990). Norms can be defined as "shared understandings, informal rules and conventions that prescribe, proscribe or modulate

certain behaviours in various circumstances" (Productivity Commission 2003, 9). Another description of norms is provided by Coleman (1990, 242) ''specify what actions are regarded by a set of persons as proper or correct, or improper or incorrect''. This definition is supported by Pigg and Crank (2004), they added that although norms are not documented but is understood within a social context. Further, Coleman (1990) believed that regular communication drives norms. It is argued that social norms existed in bonding social capital but not in bridging social capital because individuals are distant from each other (Pigg and Crank 2004). However, Adler and Kwon (2002) claimed that the literature did not clearly explain the way norms work as a source to enhance social capital.

Hechter and Opp (2001) observed that the interaction and exchange among strangers are motivated by norms.As the study aim is to investigate social capital role on knowledge received from CoPs, Kankanhalli, Tan and Wei (2005, 117) expressed that "norms of teamwork (Starbuck 1992), collaboration and sharing (Goodman and Darr 1998; Jarvenpaa and Staples 2000; Orlikowski 1993), willingness to value and responding to diversity, openness to conflicting views, and tolerance for failure (Leonard-Barton 1995)" are the norms that motivate knowledge sharing.

2.4.2.3. Identification:

Identification is acknowledged as "a process of internal and external persuasion by which the interests of an individual merge with the interests of an organisation, resulting in the creation of identifications based on those interests." (Johnson, Johnson and Heimberg 1999, 160). Alternatively, Nahapiet and Ghoshal (1998) described identification as "the process whereby individuals see themselves as united with another person or set of individuals."

As indicated by Kankanhalli, Tan and Wei (2005, 118) there are three identification elements mentioned in the literature (Patchen 1970), they are:
1) Similarity of values refers to organisation members' shared goals and interests;
2) membership in the organisation reflects "the degree to which self-concept of members is linked to the organisation"; and

3) loyalty toward the organisation is "the extent to which members support and defend the organisation."

2.4.3. Prior Studies

The growing concern of theorising social capital associated with a rising interest in measuring and empirically analysing this concept (Productivity Commission 2003). The empirical literature is evolving and studies focused on either examining social capital in one context or across a number of countries by assessing social capital and its effects (Productivity Commission 2003). As discovered by the Productivity Commission (2003), previous studies foundations should be interpreted carefully as the results are not perfect due to the novelty of social capital concept. Three prior studies that are related to this study are illustrated in this section.

The first study conducted by Chiu, Hsu and Wang (2006) that examined the relationship between social capital dimensions outcome expectations and facets on knowledge sharing within virtual communities. The study followed Nahapiet and Ghoshal (1998) definition of structural, relational, and cognitive social capital dimensions – already highlighted earlier in the social capital dimensions/indicators section. The dependent variables in Chiu, Hsu and Wang study are the quantity and quality of knowledge sharing that they measured quantity of knowledge sharing. Wherein the quantity of knowledge sharing is related to this study amount of knowledge received from CoPs. From the online survey distributed among members of a well-known IT-oriented virtual community in Taiwan, the following results were found. The authors found that there is a positive relationship between community-related outcome expectations that was identified as "a knowledge contributor's judgment of likely consequences that his or her knowledge sharing behavior will produce in a virtual community" and quantity and quality of knowledge sharing (Chiu, Hsu and Wang 2006, 1876). Another finding is the positive impact of reciprocity and identification on quantity of knowledge sharing; on the other hand, trust has no effect on quantity of knowledge sharing. It is discovered that shared language and shared vision positively influence quality of knowledge sharing, while they negatively affect quantity of knowledge sharing.

The second study by Mu, Peng and Love (2008) investigated the correlation between social capital, knowledge flow, and innovation. In-depth interview and analysis of firm documents are employed to collect data from China software industry. The results of the study emphasised a positive relationship between social capital and knowledge flow between firms that will eventually motivate firm innovativeness. It is also found that trust significantly influence knowledge acquisition as it is considered as a prerequisite for knowledge sharing between firms. Mu, Peng and Love (2008) stressed that in networking firms knowledge sharing is influenced by accumulated social capital that significantly encourages innovation.

The third study carried out by Rhodes et al. (2008) explored the relationship between social capital, organisational learning, and knowledge transfer. Questionnaires were distributed among CEOs and MDs working in Research and Development (R&D) firms in Taiwan was used in this study. Nahapiet and Ghoshal (1998) and Yli-Renko, Autio and Tontti (2002) variables of social capital were employed to measure social capital. It is found that shared value positively impacts process/innovation, while network connection positively influences financial performance. Rhodes et al. (2008) discovered a significant relationship between the duration of a firm involved in the network to develop social capital and knowledge transfer. The authors noticed a significant relationship between financial performance and process/innovation. In addition, they found positive correlation between core knowledge player, common norms, and process/innovation.

The following study did not specify trust and communication between staff as aspects of social capital. However, it is important to mention it here. The study conducted by Al-Alawi, Al-Marzooqi and Mohammed (2007) investigated the impact of organisational culture factors on knowledge sharing among Bahraini organisations. The study specified a number of organisation culture factors, but only two factors are of interest to this study. The first factor is trust that includes previous experience with trust and belief in others' good intentions. The second factor is communication between staff that consists of high level of face-to-face interaction, use of common language, and teamwork discussion and collaboration. Al-Alawi, Al-Marzooqi and Mohammed (2007) proved that trust and communication between staff had a

significant effect – more than 60% of respondents' agreement – on knowledge sharing in the Kingdom of Bahrain public and private sector.

2.5. Corporate Sustainability

As stated before in the knowledge creation section, knowledge is a resource for corporate sustainable competitive advantage. Knowledge is value because it represents intangible assets, operational routines, and creative processes that are hard to imitate (Grant 1996a; Liebeskind 1996). As a result, the interest in studying sustainable development is increasing between the business, research, and government spheres (Placet, Anderson and Fowler 2005; van Marrewijk 2003). Placet, Anderson and Fowler (2005) suggested that radical innovation is needed to improve the environmental and social conditions. Gorelick and Tantawy-Monsou (2005) supported this idea that social, environment, and economic performance should be considered for sustainability and organisation long-term survival. As illustrated in Figure 2-3, sustainability is further explained by Placet, Anderson and Fowler (2005): (1) environmental stewardship concerned with protecting and effectively managing the earth natural resources (e.g. air, water, and land); (2) social responsibility refers to enhancing quality of life and fairness for the employees and society; and (3) economic prosperity includes economic opportunity for the organisation and stakeholders.

It is discovered that there are numerous definitions for sustainability (Atkinson 2000; Hockerts 2001; Robins 2006). Valor (2005, 191) agreed with that as she noticed that in the literature the term corporate sustainability is giving different names and definitions such as "corporate social responsibility, public responsibility, corporate social responsibilities, corporate societal responsibility, corporate social responsiveness, corporate social performance, corporate citizenship, business citizenship, stakeholding company, business ethics, sustainable company, and triple bottom-line approach."Hockerts (2001) expressed that sustainability occurred as early as the 1970s, but arose in the 1980s by Brundtland Commission's report that defined sustainable development as "the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland 1987, 43). Atkinson (2000) noticed the Brundtland Commission (or Word Commission of

Environment and Development WCED) definition is the most popular definition for sustainable development. Although this definition is for sustainable development, it is argued that the same description could be applied for corporate sustainability in a sense that organisations should attain the needs of their stakeholders in the present as well as in the future. Other corporate sustainability definitions are provided below.

Corporate Sustainability is defined as "the capability of an organisation to continue its activities indefinitely, having taken due account of their impact on natural, social and human capitals" (AccountAbility 1999, 94). Brundtland report's (1987) provided another definition for sustainability that is meeting the needs of organisation's stakeholders in the present and future as well. Therefore, van Marrewijk (2003) proposed that a clear and objective corporate sustainability definition is required for the development and implementation of corporate sustainability development process. However, Hockerts (2001) stressed that developing an acceptable definition of sustainability is relatively hard. For the concern of this study AccountAbility (1999) definition will be employed to describe corporate sustainability.
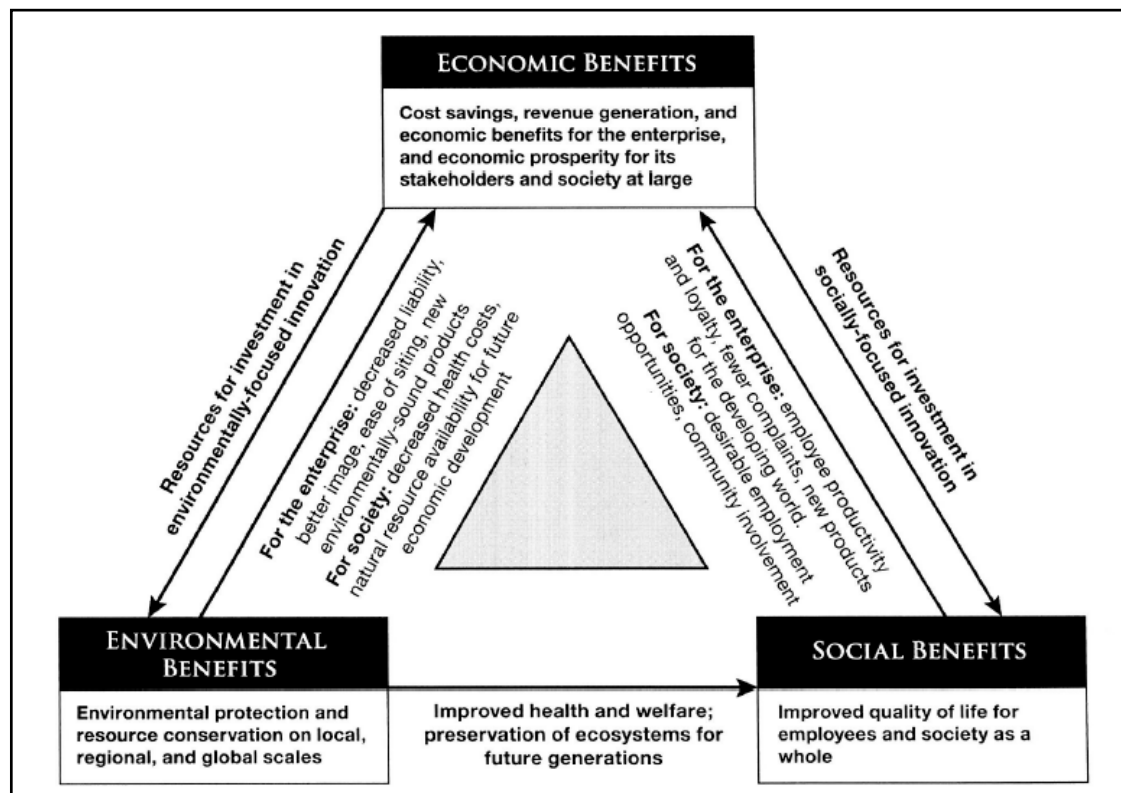
Figure 2-3: The Cornerstones of Sustainable Development (source: Placet, Anderson and Fowler 2005)

Van Marrewijk (2003) declared that according to Ernst and Young (2000) research, relatively low percentage of organisations implement corporate sustainability strategies, although high percentage of them recognized its importance and is considering it. Robinson et al. (2008, 795) explained that "adopting sustainability principles requires proactive management of financial, human, environmental and social capital and a shift from the shareholder to the stakeholder perspective." This idea is supported by Wempe and Kaptein, (2002) who believed that corporate sustainability is the organisation ultimate goal in which corporate social responsibility that balanced TBL is the intermediate stage for organisations. Nevertheless, Hockerts (2001) believed that organisations are facing difficulties in making decisions regarding sustainability issues. Therefore, it can be argued that organisations are reluctant to implement corporate sustainability due to the challenge encompasses with each of the sustainability dimensions (Hockerts 2001) and more specifically with the interaction area between and covered by these dimensions (Elkington 1997). As a result, Elkington (1997) suggested the "shared zones" that link two dimensions are as follows:

1. Eco-Efficiency: the share zone between economic and environmental dimensions.
2. Social Productivity: combines economic and social dimensions.
3. The share zone between environmental and social dimensions.

Hockerts (2001) emphasised that although the link of two dimensions reduces the difficulties related to combining all three dimensions at the same time, problems existed with shared zone view. Placet, Anderson and Fowler (2005) expressed that it is difficult to implement a comprehensive sustainability strategy that includes all three sustainability dimensions. In addition, the authors argued that sustainability strategy can be met with resistance due to the costs encompassed with environmental protection measures and benefits for stakeholders. Conversely, Placet, Anderson and Fowler (2005) emphasised that profit and economic growth can be achieved through engaging in environmental stewardship and social responsibility. It is argued that good economic performance facilitates environmental and social performance (Isaksson 2005; Placet, Anderson and Fowler 2005; Porter and Kramer 2006). The role of sustainability is to foster employees, customers, and investors loyalty for the

organisation (WWF 2003) by enhancing its understanding and responding to stakeholders needs (Robinson et al. 2008).

The stakeholder view of the firm articulated that maintaining a good relationship with organisation's stakeholder enables organisations to survive (Clarkson 1995; Donaldson and Preston 1995; Post, Preston and Sachs 2002). It is mentioned that stakeholders include shareholders, employees, clients, suppliers, public authorities, partners, and the society as a whole (Perrini and Tencati 2006; Robins 2006). This is aligned with the study as the knowledge received from different CoPs members (co-located and non co-located employees, customers, suppliers, partners, and rivals) is a vital source for the organisation that can be used to enhance organisation relationship with stakeholders.

Innovation has a positive impact on corporate sustainability that was highlighted by Senge et al. (1999, 535) who stated that "in the end, sustainable development can't be achieved without innovation, and innovation is best achieved in a culture that embraces and fosters learning and change". It is noticed, that this statement is related to the study assumption that CoPs foster innovation within organisations that ultimately enhances organisation sustainability. Molnar and Mulvihill (2003) put forward the proposal that top management, middle management, and employees from all levels of the organisation are playing an important role to implement sustainability. However, this study focuses on the role of top and middle managers in pursuing sustainability as it is assumed that the implementation and acceptance of sustainability is more likely to occur if it is supported by the decision making bodies of the organisation.

It is revealed that comprehensive studies of corporate sustainability are scarce, in which they are limited to defining the concept and providing guidelines to monitor and develop organisations' environmental performance (Atkinson 2000).

It is perceived that corporate sustainability and triple bottom-line are the same term (Porter and Kramer 2006; Valor 2005). Alternatively, it is stated that sustainable development or organisational sustainability is measured by the triple bottom line (TBL) (Isaksson 2005; Kleindorfer, Singhal and van Wassenhove 2005). While

Robins (2006) stressed that sustainable development is a TBL reporting goal. This study followed the second assumption that corporate sustainability is measured by TBL. The following section describes TBL term in detail.

2.5.1. Triple Bottom Line (TBL)

As specified in the previous section, triple bottom line is employed to measure corporate sustainability. The triple bottom line theory acknowledged that "a reporting mechanism is designed to encourage businesses to give closer attention to the whole impact of their commercial activities, rather than just their financial performance" (Robins 2006, 1).

Sustainability dimensions can be measured by "triple bottom line, the three Ps of people, profits, and the planes, and the goal of maintaining viable social franchises (the trust of employees, customers, and the communities)" (Kleindorfer, Singhal and van Wassenhove 2005, 483). Recently, the triple bottom line (TBL) derived the attention as it is the most famous non-financial reporting formats (Molnar and Mulvihill 2003; Robins 2006). Through TBL the economic value plus social and environmental impacts balance sheets are presented (Brown, Dillard and Marshall 2006; Hockerts 2001; Molnar and Mulvihill 2003; Robins 2006; Schafer 2005). The aim of the TBL is to address the harm of organisation activities and create positive economic, social, and environmental value (Elkington 1997). Despite the benefits of TBL, Robins (2006, 2, 8) addressed a number of weaknesses with this term:

- one of these drawbacks is not allowing organisations to concentrate on one stakeholder group;
- second limitation is giving managers hard time to favor one stakeholder group over the other in time of conflict;
- third weakness is the lack of standard account that is "it provides no means of summing a series of different outcomes within either of the two noneconomic "lines." Nor does it provide a unit of account for summing across all three bottom lines"; and
- last disadvantage is that "TBL, alone, without the addition of independent assessment and audit, may not necessarily give a "true and fair" statement of

activities in a way that is truly informative." Schafer (2005) further explained that there are no uniform standards that measure environmental and social reporting.

Brown, Dillard and Marshall (2006) questioned the validity of TBL reporting in addressing corporate sustainability. They presumed that "triple bottom line reporting, although a step towards increasing the awareness of multiple, competing, simultaneous objectives for organisations, is an inadequate, and perhaps detrimental, representation of organisational sustainability." (Brown, Dillard and Marshall 2006, 3) Regardless of TBL weaknesses, Robins (2006) indicated that through TBL organisations' information is distributed to fulfill the public demand. Another TBL advantages specified by Group of 100 (2003) are the alignment of managerial and stakeholder needs and mitigate organisation risk profile.

Triple bottom line is a relatively new concept that appeared in the 1990s, by John Elkington (1997) of the SustainAbility consultancy and since then TBL is gaining popularity between organisations (Brown, Dillard and Marshall 2006; Robins 2006). The adoption of triple bottom line widely spread among the business community and across countries (Brown, Dillard and Marshall 2006; Hockerts 2001; Molnar and Mulvihill 2003; Robins 2006; Schafer 2005). The popularity of TBL among large organisations is because of: first, the size and political visibility motivates TBL reports production and second public scrutiny where TBL is employed as a reputation management device (Rice 2004; Schilizzi 2002). The reasons for TBL popularity among organisations can be due to either their willingness to offer this information to attract new investors or buyers or to obey the social or governmental pressure (Robins 2006).

It is hard for organisations to increase the performance of all three dimensions of the TBL reporting (Schilizzi 2002); however, organisations' primary consideration is the financial performance (G100 2003). As stated before in corporate sustainability, good economic performance facilitates environmental and social performance (Isaksson 2005; Placet, Anderson and Fowler 2005; Porter and Kramer 2006). The difficulty in measuring all three dimensions derived from diversity in the social, economic, and environmental sustainability characteristics (Brown, Dillard and Marshall 2006).

Although Hockerts (2001, 4) stressed that "integration [of all three sustainability dimensions] is critically important for organisations to understand the full implications of the options they face and decisions they make."

2.5.1.1. Social Performance:

Social performance or sometimes called social responsibility is one of the three sustainability dimensions declared in the previous sections (corporate sustainability and triple bottom line). Social Responsibilities of Businessmen book by Bowen that was published in 1953 introduced the Corporate Social Responsibility (CSR) concept (Carroll 1999). In the beginning, the emphasis of the concept was on individuals' social principles and then the focus shifted to organisations after the rise of social problems (Valor 2005).

In the past, it was assumed that CSR is not related to corporate sustainability (CS), though nowadays, the two terms are used interchangeably (van Marrewijk 2003). Van Marrewijk (2003, 102) provided a definition of corporate sustainability and CSR as "company activities – voluntary by definition – demonstrating the inclusion of social and environmental concerns in business operations and in interactions with stakeholders." Brown, Dillard and Marshall (2006) noticed that organisations are narrowly adopting the social sustainability concept as maintaining a good relationship with supply-chain partners, employees, and unions in order to survive. Porter and Kramer (2006) postulated that organisations should view social responsibility as a source of opportunity, innovation, and competitive advantage.

In 2005 the CSR (Corporate Social Responsibility) reports were published by more than half of the 250 largest multinational corporations, however, these reports do not provide a consistent structure for CSR activities or strategies (Porter and Kramer 2006). The environmental and social dimensions specified in the CSR reports are limited to a single unit or region, listed the actions but not the impact of those actions, and ignored clear performance targets (Porter and Kramer 2006). A clear practical guide for corporate leaders is ignored within CSR literature (Porter and Kramer 2006). According to Porter and Kramer (2006), CSR proponents argued that (1) organisations have a moral obligation to the society; (2) sustainability concentrates on environmental and community stewardship; (3) the notion of license to operate

demonstrates stakeholders permission in tacit or explicit form for organisations to do business; and (4) reputations of the organisation by improving its image, strengthening its brand, enhancing morale, and increasing its stock value.

Porter and Kramer (2006) proposed a three categories framework for the influence of social issues on organisations that varied according to organisations units, industry, and place. The categories are:

1. Generic social issues that affect the society but have no impact on the organisation's operations or long-term competitiveness;
2. Value chain social impact in which organisation's activities are influenced; and
3. Social dimensions of competitive context related to external factors that influence organisation's operations.

Studies focusing on the impact of social reputation on consumer purchasing preferences are questionable, because the measurement of the indirect relationship between these two variables is impossible (Porter and Kramer 2006). The limitation in specifying CSR program benefits discourages organisations to adopt them (Porter and Kramer 2006). Another limitation of this concept is addressed by Votaw (1973, cited in Valor 2005) that is lack of a single clear definition of CSR.

2.5.1.2. Environmental Performance:

The second dimension of sustainability is environmental performance or as other scholars referred to as environmental stewardship. The popularity of corporate environmental performance is increasing (Andrews 1998, cited in Blanco, Rey-Maquieira and Lozano 2009). It is indicated that corporate environmental performance is part of or equal to industrial sustainable development (Blum-Kusterer and Hussain 2001). Moreover, Brown, Dillard and Marshall (2006) claimed that part of the environmental agenda is the social and economic concerns, however, researchers found that environmental concerns are in the lead keeping behind social aspects reports (Kolk 2003; Adams 2002).

Previous studies concentrated on refining the content of corporate environmental performance such as environmental reporting, classifying corporate 'greenness', examining managers' awareness of sustainability, or testing the gap between practice

and theory (Blum-Kusterer and Hussain 2001). Nevertheless, there are scarce studies that investigate the incentives behind organisations' environmental change (Blum-Kusterer and Hussain 2001). Elkington (1994) discovered that environmental reporting does not sufficiently cover organisation's environmental goals and performance to meet the increase demand from stakeholders like government, customers, and partners. It is predicted by researchers that the environmental demand on organisations will continue to increase to reach all industries (Elkington 1994). Therefore, Elkington (1994) recommended that organisations' view of environment responsibility should be taken seriously as it is affecting its existence. It is mistakenly argued that "quantification of environmental costs and the inclusion of such costs into business strategies can significantly reduce operating costs by firms"(Aras and Crowther 2009, 282).Thus, it can be argued that organisations should not view environmental performance as a mean to decrease costs as it may increase it by implementing new methods and technology to protect the environment and clean it.

2.5.1.3. Economic Performance:

The third sustainability dimension is economic performance or also known as economic prosperity which is the traditional measure for organisations performance.

In Lesser and Storck (2001) study authors found that communities of practice positively impact three organisational performance areas: decrease new employees learning curve, rapidly respond to customers' needs and inquiries, and generate new ideas for products and services. Similarly, Birchall and Tovstiga (1999) argued that organisation's capabilities are measured in comparison with its rivals as when organisations can do things more quickly, flexibly, and reliably. Choi and Lee (2002) on the other hand, stated that managing knowledge improves and raises organisation's profits. While Placet, Anderson and Fowler (2005) argued it the bottom line of an organisation is enhanced by improving organisation's productivity, decreasing workdays lost, enhancing company loyalty, and decreasing employees' turnover.According to Sellers-Rubio and Nicolau-Gonzaˊlbez (2009) organisations' financial performance can be measured by return on investment (ROI) and return on sales (ROS), although, theyclaimed that organisation's performance is complex and a single measure to describe it (organisation profitability or productivity) is inadequate. Alternatively, Vormedal and Ruud (2009, 214) argued that "the economic dimension

does not refer to traditional financial reporting, but to business ethics and socio-economic impact on society, such as corruption, value creation, competence building, innovation and entrepreneurship."

Aras and Crowther (2009) found that in many cases analysing sustainability focused on environmental and social performance is "deficient". They added that researchers (e.g. Dyllick and Hockerts 2002) assumed that there is a conflict between financial performance and social/environmental performance. Aras and Crowther (2009, 281) stated that "most work in the area of corporate sustainability does not recognise the need for acknowledging the importance of financial performance as an essential aspect of sustainability and therefore fails to undertake financial analysis".

2.6. Summary

Each of the four major concepts of this study is huge, though a detailed explanation of these concepts is provided as much as possible in this chapter. The gaps found in the literature on each of these concepts are highlighted and employed as a foundation for the study. Through the definitions, theories, criticisms, and prior studies of the key concepts a deep understanding of communities of practice, knowledge creation, social capital, and corporate sustainability is derived that eventually identified the possible relationships between these concepts.

CHAPTER THREE

Research Paradigm, Methodology and Research Model

3.1. Introduction

This chapter covered the study's research paradigm, methodology, and initial research model. Quantitative and qualitative approaches are employed in this study and the differences and advantages and disadvantages of the two approaches are highlighted in this chapter's first section. The research process includes three stages that are: qualitative field study, quantitative pilot study, and main quantitative survey which are explained in detail in the second section. The last section of this chapter discussed the study original research model.

3.2. Research Paradigm and Method

The research paradigm is divided into four schools: postpositivism, constructivism or sometimes called interpretivist paradigm (Thomas 2003), advocacy/participatory, and pragmatism (Creswell 2003, 6). It is recognised that there are three approaches for research: quantitative approach, qualitative approach, and mixed methods approach (Creswell 2003). As presented in Table 3-1 Creswell (2003) further explained each approach, as for the quantitative approach that uses postpositivist claims for developing knowledge, in qualitative approach constructivist perspectives are used, while the mixed approach is based on pragmatic grounds.

The main approach employed in this study is quantitative, though a qualitative approach is also utilised to analyse the data collected in the study first stage that is field study. The quantitative approach is used because it is aligned with the study as a

theory is developed to identify the role of knowledge created within communities of practice on corporate sustainability. As stated by Creswell (2003, 7) "in the scientific method – the accepted approach to research and postpostivists – an individual begins with a theory, collects data that either supports or refutes the theory, and then makes necessary revisions before additional tests are conducted." Therefore, a theory or explanation is tested through quantitative approach (Creswell 2003). Though, the study combined a qualitative approach to explore the service industry in Bahrain as the researcher is unaware of what is happing in the real world. Moreover, Scandura and Williams (2000) argued that in order to robust and generalise the findings of a research, a topic need to be examined through different methods. Therefore, the study conducted in three stages that are described below.

Table 3-1: Four Alternative Combinations of Knowledge Claims, Strategies of Inquiry, and Methods

Research Approach	Knowledge Claims	Strategy of Inquiry	Methods
Quantitative	Postpositivist assumptions	Experimental design	Measuring attitudes, rating behaviours
Qualitative	Constructivist assumptions	Ethnographic design	Field observations
Qualitative	Emancipatory assumptions	Narrative design	Open-ended interviewing
Mixed methods	Pragmatic assumptions	Mixed methods design	Closed-ended measures, open-ended observations

Source: (Creswell 2003)

Figure 3-1 illustrated the research process of this study. The first stage of this study employed qualitative paradigm in order to identify what is happening in the Kingdom of Bahrain service industry. According to Creswell (2003, 8) "assumptions identified in these works hold that individuals seek understanding of the world in which they live and work." Hence, the exploring nature of the study first stage suites the application of qualitative research. Thomas (2003, 2) stated that "qualitative researchers study things in their natural settings, attempting to make sense of, or interpret phenomena in terms of the meanings people bring to them." Ten interviews with senior managers in Bahrain service industry public and private organisations were conducted. Content analysis was used to analysis the interview scripts and the

findings were used to modify the initial research model and obtain new measure for the study variables.

In the second stage of the study, a pilot study was conducted to test the study questionnaire developed based on the literature review and field study results (discussed in Chapter Four). The questionnaire was distributed among sixty participants where twenty seven of them returned a completed questionnaire to the researcher (45% response rate). Minor changes were done to the main survey questionnaire based on the pilot study feedback and comments.

The third stage of the study is the main survey questionnaire. The revised questionnaire was distributed among 620 senior managers in more than 80 public and private organisations within the Kingdom of Bahrain service industry. The organisations selected for this stage were based on the Bahrain Chamber of Commerce list of top organisations in Bahrain. The Partial Least Squares (PLS) tool was used to analyse the data collected in the primary survey. The results are used to test the study research model and related hypotheses.

3.3. The Research Process

3.3.1. Qualitative Field Study

The first phase of the study is qualitative, whereas a field study has been employed – Chapter Four. As stated before, this approach is suitable for this exploratory phase of the study. In this stage the researcher objective is to know what is happening in the real world in the Kingdom of Bahrain service industry. In addition, it was important to know whether communities of practice exist in Bahrain service industry and if so how it affects knowledge creation that ultimately influences corporate sustainability. As stated by Patton (1990, p. 278) "the purpose of interviewing is to allow us to enter the other person's perspective".

3.3.1.1. Sample selection

The interview participants selected for this study were based on two criteria: the position of the participant and the industry their organisation in. Seven public and private organisations within the Kingdom of Bahrain service industry were chosen for the field study. In total, ten managers in the middle and top level management were interviewed (see Table 4-1 for interviews demographic information). The selection of all interviewees was based on personal contacts or convenient sampling procedure (Babbie 1990). Participants were given a copy of the interview questions with a detailed information sheet about the study objectives and their role in the study. All participants took part in this study voluntarily.

3.3.1.2. Data collection

The general interview guide approach is used to collect data through open-ended interviews (Patton 1990). A semi-structured interview is employed where a list of questions are developed to explore study different variables (communities of practice, knowledge creation, social capital, and corporate sustainability) within Bahrain service industry. Patton (1990) guidelines of interview plan are followed.

The areas of information that the questions focused on are: (1) the existence of CoPs and their categories, (2) the characteristics of CoPs, (3) the level of importance of internal and external CoPs, (4) type of knowledge (tacit/explicit) received from CoPs members, (5) how knowledge is created, (6) the creation of new knowledge, (7) social capital level within these CoPs, (8) social capital moderating role, and (9) corporate sustainability (organisation social, environmental, and economic performance). The questions were pilot tested in which minor adjustments were made.

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│         Defined the topic         │
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│       Study questions and         │
│           objectives              │
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│         Literature review         │
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│       Initial research model      │
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│       Qualitative field study     │
│  ┌───────────────────────────┐   │
│  │  Semi-structured interviews │   │
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│       Modified research model     │
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│          Hypotheses and           │
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│            Pilot study            │
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│  │   Survey: questionnaire     │   │
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│            Main survey            │
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│      Interpretation of main       │
│          survey findings          │
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Figure 3-1: The Study Research Process

Based on the literature review the interview questions were developed and pilot tested. Minor adjustments were made based on the pilot interview feedback. The final interviews were scheduled to suite participants' preferences. Some participants asked to read the interview questions before the actual interview date, in which the researcher sent it to them for review and to write their thoughts. In total, ten interviews were conducted. Each interview lasted for about forty-five minutes. With the permission of the interviewees, each interview was recorded by a tape recorder and notes were being taken during the interview as well. The transcription of the interviews was done on the same day or the following day of the interview.

3.3.1.3. Analysis of data

Forty pages of interview scripts were produced out of the ten interviews conducted in this stage used for analysis. The technique used to analyse the interview data is content analysis (Berg 2001; Thomas 2003).

The analysis of the data collected in the interviews was done manually by reading each line and sentence of the interview scripts. By doing that a list of variables were addressed on each major area of the study. Then each question was viewed separately for all the interviewees to find similarities and differences among their answers. It is important to indicate that most of the variables were previously checked from the communities of practice, knowledge creation, social capital, and corporate sustainability literature. Therefore, a matching between the variables collected from the interviews and the variables found in the literature was made (see Table 4-3 for interviews findings).

For each of the ten interviews a model was developed and then all these models were combined to produce the modified research model where few changes were made (demonstrated in section 4.4.6.). One of the changes is dropping rival CoPs – external communities of practice categories – as it is indicated in the interview, it does not exist in Bahrain service industry. The second change is the addition of a new measure for organisation performance that is called non economic performance as all

participants showed that knowledge created within their networks affect employees' loyalty for the organisation and the organisation growth and performance.

3.3.2. Empirical Pilot Study

The purpose of the pilot study is to test the research model after it was refined through the field study that was carried out in the earlier stage of this study (see Chapter Four). A quantitative pilot study – Chapter Six – was conducted to test the clarity of the questions (Polgar and Thomas 2000), participants' level of understanding the survey questions, and the required time to complete the survey. In addition, the pilot study was employed to pre-test the adequacy of the study questionnaire by assessing the sufficiency and feasibility of the questions and examine the efficiency of the method used to distribute the survey (Teijlingen and Hundley 2001) and assist the researcher to clarify survey instructions (Bordens and Abbott 2008). The survey was first tested by one potential participant to obtain his feedback and opinion in which a positive feedback was received.

3.3.2.1. The questionnaire

Based on the existing literature review and from the outcomes of the field study interviews – described in Chapter Four, a questionnaire is developed to measure the study research model. A six point Likert scale was used when it is appropriate where 1 indicated *Strongly Agree* and 6 indicated *Strongly Disagree*. The respondents were asked to fill in all the questions in the survey for the purpose of allowing the use of Partial Least Squares (PLS) to analyse the collected data.

3.3.2.2. Sample selection and data collection

Twenty seven completed questionnaires were collected out of sixty distributed among organisations within the Kingdom of Bahrain service industry (response rate 45%). The participants were middle to top managers in large public and private organisations (see Table 6-1 for detailed pilot study demographic information).

3.3.2.3. Data analysis

Simple frequency analysis of SPSS (Statistical Package for the Social Sciences) software was used to analyses the data collected from the survey. The results of this pilot study – highlighted in Chapter Six – are used to refine the final study questionnaire and to test the competence of analysing survey variables.

3.3.3. Main Quantitative Survey

Thomas (2003) justified why a positivist or scientific paradigm should be supported by quantitative methods. As stated before, it is noticed from the literature review chapter that past studies applied either combined qualitative and quantitative methods or used them separately. An advantage of surveys is "provide quick, inexpensive, efficient, and accurate means of assessing information about the population" (Zikmund 2003, 175). Though, a limitation of quantitative survey highlighted by Thomas (2003, 44) is the "fail to describe the qualitative features that make for the uniqueness of each member of the collectivity that the survey is intended to represent." A cross-sectional survey is employed in this study (Creswell 2003).

3.3.3.1. Sample selection and data collection

It is important to mention that in all the three phases conducted in this study – field study interviews, pilot study questionnaire, and main survey – English language was used because it is considered the official language for business in Bahrain (Kingdom of Bahrain eGovernment Portal n.d). The study primary survey was conducted among more than 80 organisations in the Kingdom of Bahrain service industry (both public and private sector). The organisations were selected based on Bahrain Chamber of Commerce list of the top 100 organisations in the Kingdom of Bahrain (other industries organisations were excluded from the list). The survey was distributed to 620 managers in the middle and top level management positions within these organisations by personally contacting the Human Resource (HR) Department managers (in other cases employees working in the HR were contacted) in the selected organisations and gave them a number of questionnaires to be distributed

among the managers working in their organisations. Thus, a cluster sampling procedure is applied in this study (Creswell 2003).

The study questionnaire was divided into five sections (see the Appendix):
  (1) demographic information of the participants and their organisations;
  (2) community of practice: the section covered CoPs categories within Bahrain service industry, the importance of different CoPs categories, and CoPs characteristics;
  (3) knowledge creation: this includes the type and frequency of knowledge received from CoPs, the steps followed in the knowledge creation process, and the creation of new knowledge (knowledge creation output);
  (4) social capital (presented by trust, norms, and identification) level and its moderating role on the knowledge received from CoPs; and
  (5) corporate sustainability: the effect of new knowledge on the organisation sustainability that includes social, environmental, economic, and non economic performance.

The response rate was 54% that was considered adequate for analysis and reporting (Babbie 1990), in which 333 questionnaires were returned to the researcher. There were 34 organisations out of the 80 organisations that did not participate in the survey (see Table 6-10 for reasons for organisations not participating in the survey). Moreover, from the 620 distributed questionnaires, there were 287 unreturned. Additionally, as PLS is used to analyse the main survey data, the sample size is appropriate. A number of authors declared that PLS is suitable for small sample studies (Barclay, Higgins and Thompson 1995; Gefen, Straub and Boudreau 2000). A rule of thumb to determine the proper sample size for PLS analysis is ten times the number of items in the model (Barclay, Higgins and Thompson 1995). As it will be shown in Chapter Seven, the number of items in the final research model is nineteen, thus 190 (19 * 10 = 190) is an appropriate sample size for this study.

3.3.3.2. Data analysis using Partial Least Squares (PLS)

The utilisation of partial least squares (PLS) is recommended in predictive research models that focus on theory development (Barclay, Higgins and Thompson 1995; Gefen, Straub and Boudreau 2000). According to Barclay, Higgins and Thompson (1995) PLS is suitable for exploratory studies. As a result, PLS is proper for analysing the data collected for this study (see Chapter Seven) as the research model is developed to test a new theory that combines community of practice, knowledge creation, social capital, and corporate sustainability theories. Another reason for applying PLS is the relatively small sample size of this study, as according to Barclay, Higgins and Thompson (1995, 291) "PLS can be used effectively in small sample studies with complex casual models." To verify the reliability and validity of the relationships between the study constructs, PLS model assess the reliability and validity of the measurement model and structural model (Barclay, Higgins and Thompson 1995).

3.4. The Research Model

A discussion of the study original research model is presented in this chapter. As mentioned before in the literature review chapter, communities of practice are related to organisation innovation and performance (Cross et al. 2006; Kerno 2008; Schenkel and Teigland 2008; Soekijad, Huis in 't Veld and Enserink 2004; Swan, Scarbrough and Maxine 2002; Wang, Yang and Chou 2008). Few studies explored, the relationship between communities of practice, organisational learning and relational capital (Dewhurst and Navarro 2004), the impact of CoPs on organisational or individual performance (Lesser and Storck 2001; Schenkel and Teigland 2008; Schrader 1991; Teigland 2000, 2002; Teigland and Wasko 2003, 2004), and the process of knowledge sharing within CoPs (Kasper, Muhlbacher and Muller 2008).

The original model of this study is developed based on a number of theories: community of practice theory, social capital theory, and knowledge creation theory. From the theoretical perspective, prior studies show that CoPs relate to knowledge creation (Brown and Duguid 1991, 2000; Soekijad, Huis in 't Veld, and Enserink

2004). In this regard, it is assumed that knowledge received from CoPs members (employees, customers, suppliers, partners, and rivals) will influence the creation of new knowledge. Moreover, it is believed that the more knowledge received, the greater the possibility to create knowledge. Consistent with the work of Kankanhalli, Tan, and Wei (2005), Teigland and Wasko (2003), and Wasko and Faraj (2005), it is argued that social capital is posited as prerequisite for transferring knowledge within and between CoPs that eventually affect the process of knowledge creation. Therefore, the quantity and type of knowledge received will be influenced. The proposed model argues that knowledge creation will impact the economic, social, and environmental outcomes of an organisation.   Thus, CoPs indirectly influence corporate sustainability by providing the suitable context to share and create knowledge. The dependent variables of this study will be organisation's economic, social, and environmental performance that symbolizes corporate sustainability. The independent variables are CoPs and the moderator variable is social capital, while knowledge creation is the mediating variable. Figure 3-2 illustrated the introductory research model.

As stated above, the original model of this study is built on previous studies results and theoretical background driven from CoP (Lave and Wenger 1991), knowledge creation (Nonaka 1991, 1994), social capital (Kankanhalli, Tan and Wei 2005; Nahapiet and Ghoshal 1998), and corporate sustainability theories.

<u>Communities of practice:</u>

The relationship between communities of practice different categories (co-located employees, non co-located employees, customers, suppliers, business partners, and rivals) and the reception of knowledge is driven from Lave and Wenger (1991) theory. Under their CoP theory, they assumed that the interaction between CoP members and their willingness to share knowledge (Breu and Hemingway 2002) will lead to learning and new knowledge creation: interaction → knowledge sharing → learning → new knowledge. This is supported by several authors as they believed that CoP is related to leverage and manage organisational knowledge, organisational learning, and innovation (Akkerman, Petter and de Laat 2008; Cox 2005; Cross et al. 2006; Schenkel and Teigland 2008; Soekijad, Huis in 't Veld and Enserink 2004;

Swan, Scarbrough and Maxine 2002; Wang, Yang and Chou 2008). However, it is noticed that there is a lack of studies investigating the effect of CoPs on innovation processes (Swan, Scarbrough and Maxine 2002).
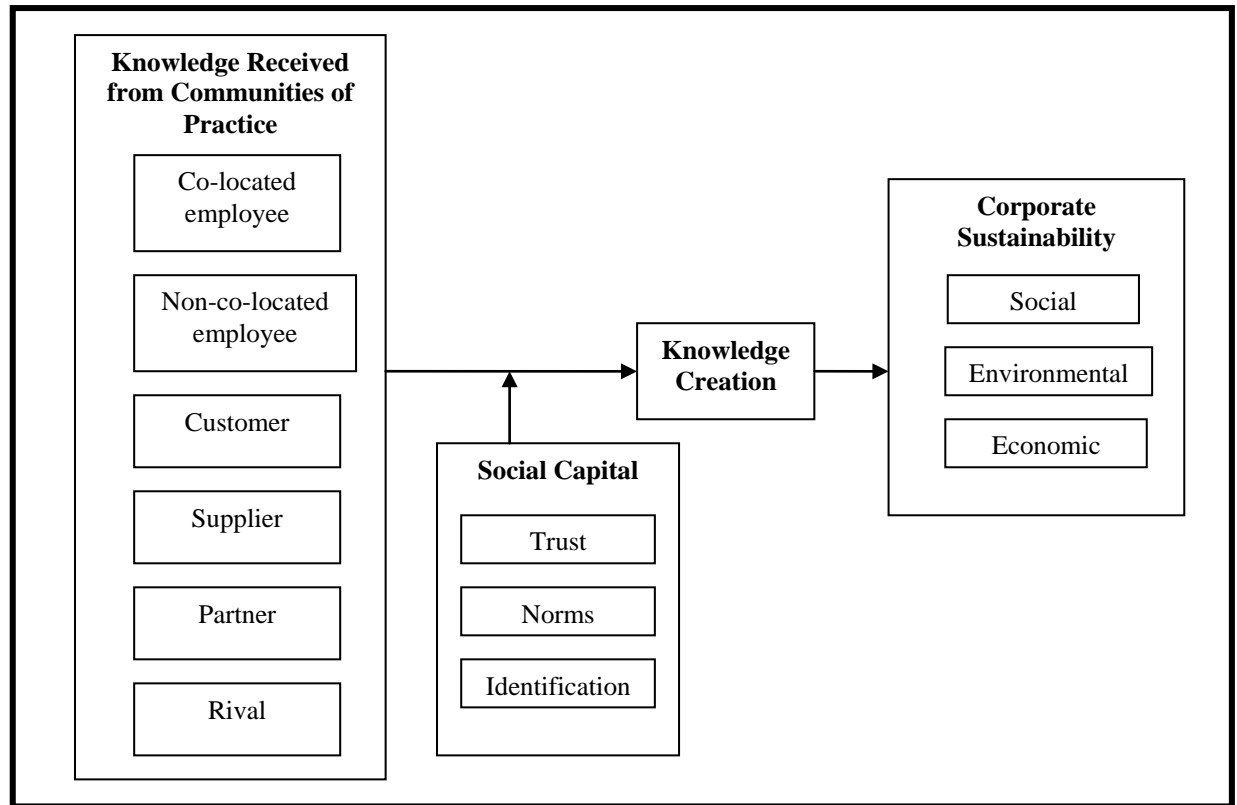
Figure 3-2: The Introductory Research Model

Kasper, Muhlbacher and Muller (2008) discovered in their study that there is a positive relationship between CoPs and knowledge sharing. Several authors assumed that CoPs are suitable environment to create and share knowledge (Arora 2002; Chua 2006; Lesser and Everest 2001; Lesser and Storck 2001; Roberts 2006; Wang, Yang and Chou 2008; Wenger 1998a, b). It is believed that knowledge received from different CoP members that include co-located employees (Constant, Sproull and Kiesler 1996; Teigland and Wasko 2003; Wenger 1998a, b), non co-located employees (Coleman 1990; Szulanski 1996; Tsai 2001; Tsai and Ghoshal 1998; Wenger 1998a, b), suppliers (Nonaka 1994; von Hippel 1988; Wenger 1998a, b), customers (Nonaka 1994; von Hippel 1988), business partners (Adam and Roncevic 2003; Corno, Reinmoeller and Nonaka 1999; (Inkpen 1996; Mu, Peng and Love 2008), and rivals (Brown and Duguid 2001; Schrader 1991; Rogers 1982; von Hippel 1987) will positively impact the creation of new knowledge. Thus, it can be assumed

that the knowledge received from communities of practice interactions and knowledge sharing between their different categories will impact the creation of new knowledge: knowledge received from CoPs → new knowledge creation.

<u>Knowledge creation:</u>

In knowledge creation theory it is argued that the interaction of SECI model (i.e. socialisation, combination, externalisation, and internalisation), 'ba', and knowledge assets develop a knowledge spiral through which knowledge is created within organisations (Nonaka, Toyama and Konno 2000): SECI → ba → knowledge assets → knowledge creation. Nevertheless, the way knowledge is created and managed is ignored (Nonaka 1994; Nonaka, Toyama and Konno 2000). More importantly, it is also noticed that exploring knowledge creation within communities of practice and the role of each community of practice on knowledge sharing and creation is disregarded in the literature (Chae et al. 2005). Past empirical studies found that communities of practice promote knowledge sharing within the community (Barley 1996; Hutchins 1991; Orr 1996). Grant (1996a) argued that the knowledge transferring process comprised knowledge diffusion and receiving. Rhodes et al. (2008) observed that the type of knowledge transferred, the effect of social contexts, and the impact of connections and networks on knowledge transfer is disregarded in the literature.

According to Chen and Edgington (2005) knowledge creation process takes place in informal structures that is not sponsored by the organisation and related to specific interest. It can be assumed that community of practice is the suitable environment for knowledge creation within organisations. In which, the creation of new knowledge resulted from individuals' interaction as they combine and exchange knowledge with each other (Kogut and Zander, 1992; Nahapiet and Ghoshal, 1998). Moreover, the interaction between individuals who exchange their knowledge and competencies to solve a problem is the essence of innovation and knowledge creation (Bathelt, Malmberg and Maskell 2004). Du Plessis (2008) suggested that knowledge creation and sharing across organisational boundaries produce innovation. The exchange of ideas between communities of practice members motivates learning and innovation (Brown and Duguid 1991; Wenger 1998a).Davenport and Hall (2002) believed that knowledge creation motivates innovation. It is noticed that there is positive

relationship between new knowledge and organisational performance (Inkpen 1996). In a past study, Tsai and Li (2006) discovered that knowledge creation is a valuable source for organisation sustainable competitive advantage. Therefore, it is argued that knowledge created within communities of practice will produce innovation that is necessary for organisation competitive advantage that eventually influences organisation growth and survival: knowledge creation → corporate sustainability.

Social capital:

Under the social capital theory it is believed that social capital influence knowledge exchange or sharing (Chae et al. 2005; Chiu, Hsu and Wang 2006; Gottschalk 2000; Kankanhalli, Tan and Wei 2005; Nahapiet and Ghoshal 1998): social capital → knowledge sharing. More precisely, organisational environment is a suitable context to create knowledge because it supports social capital development (Nahapiet and Ghoshal 1998). Nebus (1998) argued that the existence of social capital between a multinational corporation units support information transfer to the corporation as a whole. Gelauff (2003) expressed that the level of social capital between network members knowledge creation is facilitated as they easily share knowledge between them. It is believed that the flow of knowledge in communities of practice is supported by social capital (Davenport and Hall 2002; Gelauff 2003). The relationship between social capital and knowledge creation is ignored in the literature (McElroy, Jorna and van Engelen 2006). The role of social capital is not clear whether it is dependent, independent, or intermediary variable (Adam and Roncevic 2003). The Productivity Commission (2003) stated that previous studies foundations should be interpreted carefully as the results are not perfect due to the novelty of social capital concept.

The relational dimension of social capital that include trust, norms, and identification (Nahapiet and Ghoshal 1998; Wasko and Faraj 2005) is employed in this study to measure the level of social capital within service organisations in the Kingdom of Bahrain and the role of social capital on the amount of knowledge received from CoPs members. According to Nahapiet and Ghoshal (1998) individuals' access to information and knowledge is facilitated by the relational dimensions of social capital that positively persuades knowledge exchange and combination.

One important component of relational capital is trust, in which action between groups is facilitated (Coleman 1990; Fukuyama 1995). The role of trust is differently viewed by several authors, in which some recognised it as a social capital element while others believed that it is a source or outcome of social capital (Adler and Kwon 2002; Productivity Commission 2003). Many authors believed that within a group, there is a positive relationship between trust and members' engagement in cooperative activities and knowledge exchange (Ford 2003; Fukuyama 1995; Gambetta 1988; Huysman and Wulf 2005; Leonard and Onyx 2003; Mu, Peng Love 2008; Nahapiet and Ghoshal 1998; Putnam 1993, 1995; Ring and Van de Ven 1992, 1994; Saxenian 1985; Tyler and Kramer 1996; Wasko and Faraj 2005).Chiu, Hsu and Wang (2006), on the other hand, found that trust has no effect on quantity of knowledge sharing. Chae et al. (2005) discovered that trust mediates the relationship between strong ties and knowledge received. Conversely, Nonaka, Toyama and Konno (2000) assumed that trust among organisational employees is considered as an output of the knowledge creation process as well as a moderator that facilitated knowledge creation process.

Norms is another social capital form that is widely addressed in the literature (McElroy, Jorna and van Engelen 2006). Adler and Kwon (2002) claimed that the literature did not clearly explain the way norms work as a source to enhance social capital. It is claimed that norms promote knowledge sharing between individuals (Huysman and Wulf, 2005) and positively impact cooperation among individuals (Coleman 1990; OECD 2001; Putnam 1993; Woolcock 2001; Woolcock and Narayan 2000; World Bank 2000; World Health Organisation 1998).

Jones, Hesterly and Borgatti (1997) argued that high levels of identification within networks positively affect the interaction between the network members. It is agreed by several scholars that identification motivates the exchange of knowledge (Bouty 2000; Chiu, Hsu and Wang 2006; Kramer, Brewer and Hanna 1996; Lewicki and Bunker 1996; Nahapiet and Ghoshal 1998; Nonaka 1991).

Several scholars believed that social capital aspects moderate the impact of knowledge exchange (Kankanhalli, Tan, and Wei 2005; Teigland and Wasko 2003; Wasko and Faraj 2005). Thus, it can be assumed that social capital (that includes

trust, norms, and identification) will moderate the role of knowledge received from different CoPs members to create new knowledge.

Corporate sustainability:

The corporate sustainability concept presumed that organisation sustainability and long-term survival is related to social, environmental, and economic performance considered by an organisation (Gorelick and Tantawy-Monsou 2005): corporate sustainability = social performance + environmental performance + economic performance. Moreover, it is believed by many scholars that knowledge leads to sustaining organisation competitive advantage (Corno, Reinmoeller and Nonaka 1999; Couros 2003; Kogut and Zander 1992; Laszlo and Laszlo 2002; Miller and Shamsie 1996; Nahapiet and Ghoshal 1998; Nonaka and Takeuchi 1995; Sharkie 2003; Wang, Yang and Chou 2008). According to Senge et al. (1999) innovation is necessary for sustainable development. Several researchers noticed that there is a positive relationship between knowledge and performance (Argote 1999; Choo, Linderman and Schroeder 2007; Kodama 2005; Laszlo and Laszlo 2002; Levin 2000; Salomon and Martin 2008; Teece 1977; Winter and Szulanski 2001). Thus, it can be argued that as knowledge affected organisation sustainable competitive advantage, it is related to organisation survival: knowledge → corporate sustainability.

The studies of corporate sustainability are scarce and are limited to defining the concept and providing guidelines to monitor and develop organisations' environmental performance (Atkinson 2000). A study by Schrader (1991) found that information received from competitors – that is one of CoP categories highlighted in this study – is useful and information exchanged has a positive influence on organisation's economic success. Another study by Lesser and Storck (2001) discovered that knowledge sharing between CoP members that is influenced by social capital positively affects organisational performance. As stressed earlier in this section, communities of practice have positive indirect influence on organisation performance (Kerno 2008).This is more explained by Escriba-Esteve and Urra-Urbieta (2006) as they stated that the transfer of knowledge creates new capabilities that positively impact organisational performance. Nevertheless, empirical studies

exploring the influence of CoPs on organisational performance are limited (Schenkel and Teigland 2008; Schenkel, Teigland and Borgatti 2001; Teigland 2000, 2003).

Social performance or sometimes called social responsibility is one of the three sustainability dimensions. A number of limitations noticed in relation to corporate social responsibility (CSR) studies that include: (1) the impact of social reputation on consumer purchasing preferences are questionable (Porter and Kramer 2006); (2) the CSR programs' benefits are disregarded (Porter and Kramer 2006); and (3) the lack of a single clear definition of CSR (Votaw 1973, cited in Valor 2005). It is discovered that organisations' ability to access employees' knowledge improves their ability to respond to the needs of the society (Robinson et al. 2008).

Environmental performance or environmental stewardship is the second dimension of sustainability. Blum-Kusterer and Hussain (2001) discovered that previous studies concentrated on refining the content of corporate environmental performance such as environmental reporting, classifying corporate 'greenness', examining managers' awareness of sustainability, or testing the gap between practice and theory.

The last sustainability dimension is economic performance or economic prosperity. Choi and Lee (2002) stated that managing knowledge improves and rises organisation's profits. The effect of knowledge transfer improves organisation's financial performance that includes improving profit, reducing cost, and increasing market share (Rhodes et al. 2008). Robinson et al. (2008) added that accessing knowledge will enhance stakeholder value by attracting investors that will increase organisation's profitability. From the above, it can be assumed that knowledge has a positive impact on corporate sustainability dimensions (social, environment, and economic).

3.5. Summary

In summary, this chapter highlighted the paradigm and approaches utilised in this study. First, the qualitative field study is explained where the sample, data collection and analysis is discussed. The study quantitative pilot study is next highlighted. That

is followed by the main quantitative survey, in which the sample and data collection and analysis are explained in details. Finally, the original research model and its different relationships between its dependent, independent, and moderating variables are explored.

CHAPTER FOUR

The Field Study and Modified Research Model[*]

4.1. Introduction

In this stage a field study is carried out, in which ten interviewees were chosen to conduct qualitative interviews. The interviewees are managers in the top and middle management level working in organisations within Bahrain service industry. According to Kerlinger (1973), there are three purposes for an interview: (1) it is a useful exploratory tool in which variables and relations can be identified; (2) it helps in creating study hypotheses; and (3) it is used as a guide for other study phases. The aim of this field study is to investigate the existence of CoPs and its characteristics and the effect of knowledge created within these CoPs on corporate sustainability, the content of the interviews scripts are analysed. The data collected is used to refine the initial research model and to develop the survey questionnaire.

4.2. The Operation of the Field Study

4.2.1. Qualitative Research Paradigm

As stated earlier in the previous chapter, the first phase of the study employed a qualitative method to explore what is happening within Bahrain service industry. It is stressed that qualitative research interview used constructivist and interpretivist paradigm (King 1994). The exploratory research suites the purpose of the first phase of the study, according to Zikmund (2003, 62) "the researcher should know exactly what data to collect during the formal project and how the project will be conducted." Ten semi-structured interviews were conducted to discover whether communities of practice existed in Bahrain service industry and the role of knowledge created within these communities of the organisation growth and survival (corporate sustainability). The interview questions are driven from the literature review. As mentioned by Thomas (2003) random and convenience are the two ways to draw a sample of a population. On the other hand, Zikmund (2003) referred to these techniques as probability and non-probability sampling. The field study research process is discussed in detail in the following sub-sections. The findings of the field study are utilised to modify the research model and prepare the survey questions of the pilot study and the primary study afterwards.

4.2.2. Sample

The selection of the interview participants based on two main conditions; first the position of the participant and second the industry their organisation work in. Ten managers from middle and top management were chosen to be interviewed. The selection of all interviewees was based on personal contacts. Thus, nonprobability sample (or convenience sample) is employed in this stage of the study (Babbie 1990). Seven organisations in the service industry in Bahrain were involved in this part of the study. The interviewees were given a copy of the interview questions attached to it a detailed information sheet about the study objectives and their role. The participants took part in this study voluntarily. Table 4-1 illustrates the demographic information of the interview participants and the organisations they work at.

4.2.3. Data Collection

The data gathered in this phase of the study was collected using semi-structure interviews. One of the approaches used to collect qualitative data through open-ended interviews is the general interview guide approach (Patton 1990). Although, Patton (1990) recognised that important issues may be neglected in the interview guide approach. Generally a disadvantage of interviews is the considerable amount of time required to conduct them (Thomas 2003). The standpoints that guided the interview process were focused on communities of practice, knowledge creation, social capital, and corporate sustainability. The interview questions were first developed and tested. The interview plan followed the guidelines of Patton (1990).

Table 4-1: Interviews Demographic Information

	Position	Nationality	Education	Organisation	Nature of Business	Public/Private
Interviewee 1	Senior Vice President	Bahraini	MBA	Organisation 1	Financial services (Banking)	Private
Interviewee 2	Executive Director	Not Bahraini	MBA	Organisation 2	Financial services (Banking)	Private
Interviewee 3	Manager	Bahraini	Master	Organisation 3	Public services	Public+Private
Interviewee 4	Director	Bahraini	Master	Organisation 4	Public services (Defence Force)	Public
Interviewee 5	Director	Bahraini	Bachelor	Organisation 5	Public service (Municipality)	Public
Interviewee 6	Head of Department	Bahraini	MBA	Organisation 6	Public services (Transportation)	Public
Interviewee 7	Director	Not Bahraini	MBA	Organisation 6	Public services (Transportation)	Public
Interviewee 8	Director General	Bahraini	MBA	Organisation 7	Public services (Transportation)	Private
Interviewee 9	Chief Executive	Bahraini	PhD	Organisation 3	Public services	Public+Private
Interviewee 10	Head of Department	Bahraini	PhD	Organisation 5	Public services (Municipality)	Public

The areas of information that the semi-structure interview questions focused on are: (1) the existence of CoPs and their categories, (2) the characteristics of CoPs, (3) the level of importance of internal and external CoPs, (4) type of knowledge

(tacit/explicit) received from CoPs members, (5) how knowledge is created, (6) the creation of new knowledge, (7) social capital level within these CoPs, (8) social capital moderating role, and (9) corporate sustainability (organisation social, environmental, and economic performance). Before the final interviews were carried out a pilot interview was conducted with one of the participants. The interview questions proved to be working well in getting the required information. Nevertheless, minor adjustments were made based on the feedback.

The schedule of the final interviews was based on interviewees' preferences. A copy of the interview questions with a detailed information sheet was presented to the participants before asking them the questions. On the other hand, some participants asked to read the interview questions before the actual interview date where the researcher sent it to them for review and to write their thoughts. In total ten interviews were conducted. It was observed during the interview that the interviewees were welcoming, helpful, and willing to answer the questions openly. This is because they were contacted through personal relations. Another reason is due to the cultural values of Bahrain society of helping others. In addition, the conversational style used to conduct the interviews was also useful to make the interviewees comfortable and answer all of the questions freely. Each interview lasted for about forty-five minutes. With the permission of the interviewees, each interview was recorded by a tape recorder and notes were taken during the interview as well. As stated by Patton (1990), that taking notes is important even if the interview is recorded. To maintain a fresh memory of participants' body language and other cues, each interview was transcribed in the same day or the following day.

4.3. Data Analysis via Content Analysis Approach

For the ten interviews conducted in this study, forty pages of interview scripts were produced for analysis. The technique used to analyse the interview data is content analysis (Berg 2001; Thomas 2003) as the study is in the exploratory stage. Although Bordens and Abbott (2008, 240) expressed that "it [content analysis] cannot establish casual relationships among variables."

The analysis of the data collected in the interviews was done manually by reading each line and sentence of the interview scripts. By doing that a list of variables were addressed on each major area of the study. Then each question was viewed separately for all the interviewees to find similarities and differences among their answers. It is important to indicate that most of the variables were previously checked from the communities of practice, knowledge creation, social capital, and corporate sustainability literature. Therefore, a matching between the variables collected from the interviews and the variables found in the literature was made. After that a table was developed to show all the variables (see Table 4-3).

For each question, the researcher read through the answers of each interview separately to find out key words and phrases that is used to prove the variables collected from the literature.

These words and phrases were used to produce the labels and categories used to identify respondents' answers (the similarity and differences). Furthermore, it is used to figure out if the answers match what was found from the literature.

4.4. Results and Interpretations

4.4.1. Demographic Information

Interviewees' demographic information is illustrated in Table 4-1. It is noticed that all of the interviewees are male except one female manager. Moreover, seven of the interviewees are in top level management, while the others in the middle level. Two of the participants are not Bahraini. Regarding their level of education, one of them had Bachelor degree, two are PhD holders, and the rest had master degrees. Three of the interviewees work in the private sector and the others either working in governmental or quasi-governmental organisations. In addition, all the participants work in large organisations within the service industry in Bahrain.

4.4.2. Variables of Community of Practice

Table 4-3 presents all the variables found in the interviews. It shows the frequency of the time each variable was mentioned by the participants. The labels used to identify these variables were aligned with the literature where it is possible.

The first objective of this study is to discover the existence of CoP concept within the service industry in Bahrain. It was noticed that all the interviewees never heard of the concept before. For instance, one of the respondents said that:

> *"Communities of practice, is it a new concept? … it is the first time I heard this term."* (**Interviewee 1**)

Only one of the ten interviewees guessed the right definition of CoP. He defined it as:

> *"… a group of people where they have common interest and they are trying to improving the way they work, way they collect knowledge, information, data, that sort of thing. They are having common target common objective."* (**Interviewee 3**)

On the other hand, an interviewee commented that:

> *"it is very interesting topic and I can relate to it, you have come to the right person."* (**Interviewee 2**)

Interestingly, one of the interviewee admitted that they are applying this concept at his work, but it is the first time he heard about this expression. The researcher did not explain the CoP concept to the participants unless they asked about it. Therefore, the participants will not be given an indication of what answers are expected from them. This will eliminate the bias of the data collected. For those who asked about the meaning of the CoP concept, the researcher gave them a brief definition of CoP and its origin since the majority realized it is a new concept.

As depicted in Table 4-2, Wenger (1998b) showed the relationships between communities of practice and the official organisation. From the interviews, it is noticed that there is an *unrecognised* relationship between CoPs and the Kingdom of Bahrain service organisations. Although, Roberts (2006, 633) argued that

"communities of practice that exist independently of business organisations may take on an increasingly important role in the creation and transfer of knowledge." Wenger (1998b) indicated that the challenge of the unrecognised relationship is "lack of reflexivity, awareness of value and of limitation". Consequently, it is vital to introduce CoP concept to the service organisations in Bahrain to benefit from their positive outcomes.

The Existence of Community of Practice and its Characteristics:

It is argued that the first question captured the existence and the characteristics of CoP (internal and external) in Bahrain service industry. The question was adapted from several authors (Bouty 2000; Teigland 2002; McCallister and Fisher 1978)

Table 4-2: CoPs Relationships to Official Organisation

Relationship	Definition	Challenges typical of the relationship
Unrecognized	Invisible to the organisation and sometimes even to members themselves	Lack of reflexivity, awareness of value and of limitation
Bootlegged	Only visible informally to a circle of people in the know	Getting resources, having an impact, keeping hidden
Legitimized	Officially sanctioned as a valuable entity	Scrutiny, over-management, new demands
Strategic	Widely recognized as central to the organisation's success	Short-term pressures, blindness of success, smugness, elitism, exclusion
Transformative	Capable of redefining its environment and the direction of the organisation	Relating to the rest of the organisation, acceptance, managing boundaries

Source: Wenger (1998b)

- The first part of the question that is (**when you faced a problem or were unsure about specific situation at work, who do you contact for help or advice (from inside or/and outside of your organisation)? And who contacts you for the same purpose?**) looked to uncover the existence of a mutual relationship between the interviewees and individuals within and outside their organisation. It is found that there are connections and networks between the interviewees and the people working with them in the same organisation and outside their organisation. They all agreed that they seek the help and advice from the members of these networks whenever they faced a

problem at their work. Bouty (2000) verified that resources are exchanged outside the organisation when people meet at conferences or meetings and call each other for help when they faced a work related problem. It is also noticed that it is a two-way communication. As the interviewees contact people for help and advice and at the same time those people contacted them for the same purpose. As a result, they benefit from each other's knowledge and experiences. This supports one of the CoP indicators specified by Wenger (1998a) that is called "sustained mutual relationships". Examples of quotes that support this are:

- *"I contact him for advice or discuss work related issues and he does the same thing with me."* **(Interviewee 2)**

- *"It is always a two way communication."* **(Interviewee 4)**

- *"It is a two way communication and cooperation as those people also contact me if they need my help and advice."* **(Interviewee 5)**

- *"It is a two way communication as they also contact me when they need my advice."* **(Interviewee 6)**

- The second part of the question (**what is their relationship to the organisation?**) aimed to identify the different categories of networks the interviewees were involved in. From the literature, it is noted that there are two types of networks internal and external (Braun 2002).

  o Regarding the internal network, this study divided them in two categories; co-located and non co-located employees. From the interviews, it is found that all the interviewees are involved in co-located employees networks and they depended on them when they faced work related problems. For instance, interviewees said that:

- *"If it is a simple problem we try to solve it internally by contacting the employee who is reporting to me."* **(Interviewee 1)**

- *"But the first people I contact when there is a problem is within my department ..."* **(Interviewee 3)**

- *"If you have to go the higher management, sometimes I go to my boss, sometimes to my colleagues ..."* **(Interviewee 6)**

- *"... I get help from my secretary or one of my subordinates who are the managers here ..."* **(Interviewee 7)**

◻ *"... I will talk mostly to my manager who is in top of me."* **(Interviewee 10)**

In addition, the majority of the interviewees are also involved in non co-located networks. This is proved from the following interviewees quotes:

◻ *"I consider myself I have very good network across all our offices ..."* **(Interviewee 2)**

◻ *"I do discuss the matter with people not only from the same department but from other departments within the organisation."* **(Interviewee 3)**

◻ *"... somebody from other divisions ..."* **(Interviewee 6)**

◻ *"In terms of problems faced within the organisation I refer to the transport department and the director of administration."* **(Interviewee 7)**

◻ *"If the problem is inside the work we will find out in which discipline ... For example, if it is marketing I go to marketing group."* **(Interviewee 9)**

o At the same time all the interviewees are involved in the second type of networks that is external networks. However, they only seek assistance from outsiders if they lack the knowledge required to solve the problem they are facing, or to benefit from the feedback received from individuals outside their organisation such as customers. The study divided these networks into four classes, they are customers, suppliers, partners, and rivals. Three of the interviewees stated that they are involved in customers' networks. Similarly, three of them are members in suppliers' networks. Furthermore, all of them are members in partners' networks. It has been noticed that knowledge is exchanged between employees working in rival organisations (Rogers 1982; von Hippel 1987). More precisely, Brown and Duguid (2001) argued that managers' connection with other managers in competitive organisations is vital to circulate managerial knowledge, though; all of the interview participants did not contact people working in rival organisations. This is discussed by Gelauff (2003) as a limitation of sharing knowledge or as he referred to it "knowledge spillovers" outside communities of practice boundaries to organisation

competitors. In addition, Bouty (2000) stressed that employees are reluctant to share their knowledge with rivals if this will undermine their organisation's economic interests. It is believed that this is due to lack of trust, as they are afraid that the exchange of their confidential knowledge might be used against their organisation well-being. To give an example, one of the interviewees said that

◻ *"I do not think I discuss work related issues with outside parties very much as it confidential."* (**Interviewee 2**)

▪ The last part of the question (**and what is their field of study or work experience?**) underlines one of the important characteristic of CoP that is the members of this network should be in the same work-related or interest-related field (Lesser and Storck 2001). This part also proves the CoP definition provided in this study that is CoP members should share or be interested in the same practice and knowledge. It is discovered that all of the people involved in the interviewees' network have similar work experience or field of study. Although all of them are connected to people who have different field of study or work experience, they do share the same interest. As noticed from the literature that CoP members should have common interest in a certain field (Brown and Duguid 1991; Jubert, 1999; Lesser and Everest 2001; Wenger 1998a, b; Wenger, McDermott and Snyder 2002). Therefore, there is an indication that this characteristic existed within these networks.

Despite the existence of the networks mentioned above, it is not clear if these networks are considered CoPs. Consequently, sub-questions were formed to indicate whether the characteristics obtained from the literature are found in these networks. The characteristics are as follow:

1. Members' needs:

Hildreth et al. (2000) and Kimble et al. (2001) suggested that "the official group evolved from a need which is driven by the members themselves". It is argued that the question (**how did you start contacting each other for help in solving work related problems?**) will uncover this CoP feature. From the interviews' answers, it is found that six of the participants start contacting each other out of a need that is when they have a problem. For example:

◘*"I contact those people when I need their help."* (**Interviewee 5**)

While the others stated that they start their connections from seeing individuals in conferences and meetings. Through these gatherings they start to know each other abilities and experiences and from that they start building their own network. Thus, there is a sign that CoP members start contacting each other to fulfil a need.

2. Frequency of meeting and way of communication:

The target of this question (**how often do you see each other and where?**) is to find how often participants meet other individuals within their networks and what means of communication are used. This CoP feature specified by Cadiz, Griffith and Sawyer (2006) is known as "open communication". The authors argued that CoP members should be free to communicate through face-to-face and emails to establish trust that motivate them to share information. Additionally, Brown and Duguid (2001, 206) stressed that the sharing of knowledge is facilitated through different communication means such as "conferences, workshops, newsletters, listserves, web pages, and the like". It is found from interviewees' answers that five of them see other network members working in the same organisation on a daily basis. Six of them said they weekly meet individuals from outside their organisation. Two of the interviewees revealed that they see other members of their network occasionally. And five of them said they see each other when there is a problem. Regarding the way of communication, all of them used face-to-face communication that is their preferred way of communication. Supported quotes are:

◘ *"... if it is an urgent matter like a crisis face-to-face meeting will be more convenient."* (**Interviewee 1**)

◘*"Face-to-face communication is the most used way to contact those people."* (**Interviewee 3**)

◘ *"The way of communication is face-to-face with people inside the organisation. But with outsiders is different even though I always prefer to discuss this matter by inviting them in a meeting and set with them to discuss it."* (**Interviewee 4**)

◘*"Generally, I used face-to-face communication with employees working inside ..."* (**Interviewee 5**)

◘*"We stress on face-to-face communication ..."* (**Interviewee 8**)

□*"There are number of meetings that I arrange to see key people ..."*
(Interviewee 9)

Nine of the participants used the telephone as an effective way to contact others especially outside their organisation. Alternatively, six of them sent email messages to communicate with individuals both inside and outside their organisation boundaries. That proves the existence of electronic networks within the service industry in Bahrain. The quotes that support that argument are:

□*"There is a quality circle a site on the computer that we can go and visit if we are not sure about the problem on hand and we think that may be others faced this problem before and have experience in how to deal with it."* **(Interviewee 3)**

□*"I do have a couple of external suppliers who I met in exhibition in Europe and I started to subscribe in their database that provide me with all the information I need ..."* **(Interviewee 7)**

□*"... we also used email quiet a lot we rely on them for seek of speed ..."* **(Interviewee 8)**

□*"... I also use emails for people who are outside of Bahrain."* **(Interviewee 10)**

It is argued that there is a slight indication that the second CoP feature existed within these networks.

3. <u>Common purpose:</u>

Having a sense of common purpose is another CoP feature exposed by Hilderth et al. (2000) and Kimble et al. (2001). When the interviewees were asked (**in your opinion, what is the gaol/ purpose of these relationships?**), they all agreed that they share the same goal with members of their networks. The majority of them stated that their common goal is to achieve organisational goals and objectives. For instance, they stated that:

□*"We share a common goal that is to achieve the overall goals and objectives of the organisation we are working in."* **(Interviewee 1)**

□*"The main purpose is ... attaining the company goals."* **(Interviewee 3)**

□*"The goal which is essentially objectives for the organisation ..."* **(Interviewee 9)**

Two of them said their common goal is to solve problems. To give an example,

□*"The goal of these relationships is to find ways to solve the problem we faced as fast and easy as we can."* **(Interviewee 5)**

Other goals specified by participants are enjoy talking and discussing with others and improve their knowledge. This shows that there is an indication of the existence of this CoP feature.

4. Terminology:

Several theorists agreed that CoP members share same terminologies (Wenger 1998a; Hilderth et al. 2000; Kimble et al. 2001; Peltonen and Lamsa 2004; Cadiz Cadiz, Griffith and Sawyer2006). Therefore, this question (**what kind of shared vocabulary and expressions do you use for communication?**) addressed the existence of specific terminologies between the interviewees and the members of their networks. All the interviewees said that they are sharing common terminologies between them. More specifically, four of them said they share same jargons and expressions. Four of the participants stated that they share same stories with their networks members. Shared vocabulary and phrases are used by four of the interviewees. And only one participant stated that they use nicknames. The quotes that support this are:

□*"There are some expressions that we used it in the military some terminologies that outsiders do not know what we are talking about."* **(Interviewee 4)**

□*"… we do share same stories together."* **(Interviewee 5)**

□*"… as for this group we do share similar stories and phrases that we only know what it means."* **(Interviewee 6)**

As a result, it can be claimed that participants and members of these networks share similar terminologies between them.

5. Engaging in doing things together:

Another CoP indicator identified by Wenger (1998a, b) is shared ways of engaging in doing things together. To discover the existence of this indicator, the following question has been asked: **what kind of activities do you do together?** It is shown that all the participants are engaged with the member of their networks in doing activities outside the boundaries of their organisation. The majority of them get together for lunches or dinners. Other activities that are listed according to their

popularity are: sport, special occasions/events, and other social activities. Therefore, it is argued that this CoP indicator exists within these networks.

In conclusion, it can be argued that there is a suggestion that all the five questions regarding the existence of CoP characteristics are found. Moreover, it is noticed from the participants' answers that there is a sign of other CoP features found in the literature that also exist within these networks. Three of Wenger (1998a) CoP indicators are found in the interviews scripts, they are as follows:

- The rapid flow of information and propagation of innovation:

Examples from interviewees' answers are:

> *"There is group of us go to lunch that I join two or three times a week to discuss of solve or get good advice."* He also said that *"It is a very effective way of catching up of what is going on."* **(Interviewee 2)**
>
> *"There is a quality circle, a site on the computer that we can go and visit … Also if there is something happened out of the norm and we find a solution to it and we think this is unique we also put it."* **(Interviewee 3)**
>
> *"We all work together in exchanging view and ideas …"* **(Interviewee 7)**

- Very quick setup of a problem to be discussed:

The quotes support that are:

> *"When we face a problem we meet together to discuss this problem …"* **(Interviewee 1)**
>
> *"If we know the problem we discuss with all people involved in the problem to find a solution."* **(Interviewee 3)**
>
> *"We get for a meeting and set together and discuss the problem and try to find a solution to it."* **(Interviewee 4)**
>
> *"Whenever we have a problem the first thing we think of even if I am confident of the solution I would immediately contact my colleagues and other people involved in the area we are discussing and we try to come up with the solution."* **(Interviewee 8)**

- Knowing what others know, what they can do, and how they can contribute to an enterprise:

The examples found are:

□*"The employees working in the organisation are capable ..."* He also added that *"Due to the long experience and working knowledge with different groups and environment, I know who to consult for any issue in any given area."* **(Interviewee 1)**

□*"They give me very good advice."* **(Interviewee 2)**

□*"... people I contact when there is a problem is within my department we have a group of people who have experience."* **(Interviewee 3)**

□*"... I know them and the type of knowledge they have that I trusted."* **(Interviewee 5)**

□*"I contacted those people as I know they have the experience I need to solve this problem."* **(Interviewee 6)**

□*"Different level of people who work with me are extremely useful and supportive ..."* **(Interviewee 9)**

□*"I contact people who are experts in the area of the problem."* **(Interviewee 10)**

Learning:

This is one of CoP features in which CoP members share their knowledge and learn from each other (Soekijad, Huis in 't Veld, and Enserink 2004; Cadiz, Griffith and Sawyer 2006). The examples found from the interviews scripts are:

□*"If I have a new idea, I will distribute it via the email to all the employees working in the bank to benefit from it."* He added that *"We do share ideas and exchange knowledge."* **(Interviewee 1)**

□*"So we share the knowledge within the department and the company has to inform people about it."* Moreover, he said that *"... at the same time it is continues learning process from the situations we deal with."* **(Interviewee 3)**

□*"We learn everyday"* **(Interviewee 6)**

□*"... everyday is a new learning curve for me as every day I learn new things."* He also added that *"... we exchange views and ideas."* **(Interviewee 7)**

The Level of Importance of Internal and External Cops

The second question that was adapted from Cross et al. (2006) was: **to what extent does each of those individuals provide you with the knowledge required to accomplish your work?** The focus of this question is on building an understanding for the level of importance of internal and external CoPs. It is found that nine of the interviewees agreed that people inside their organisation are more helpful to solve work-related problems. Some of the reasons they indicated are:

> ◻*"People inside the organisation are more important as you need to get things done and they understand what you are talking about."* **(Interviewee 2)**
>
> ◻*"... the person from inside the organisation as he knows the situation better."* **(Interviewee 3)**
>
> ◻*"... I depend on the people inside to provide me with the knowledge I need for my work as I know them and the type of knowledge they have that I trusted."* **(Interviewee 5)**
>
> ◻*"I think the people within the organisation you need because they are within the field they have the expertise ..."* **(Interviewee 8)**

Three of the interviewees stated that both people inside and outside their organisation provide them with the knowledge they required to accomplish their work. The importance of external networks from the participants' point of view is due to gaining the knowledge they lack inside the organisation whether it is general or industry-related information and to benefit from their customers' and suppliers' feedback and criticism. However, one participant declared that people outside the organisation are more knowledgeable and he depends on their ideas to solve work problems. Consequently, there is a suggestion that importance of internal and external networks are mixed.

4.4.3. Variables of Knowledge Creation

<u>Kind of Knowledge Received</u>

To find out the kind of knowledge (whether tacit or explicit) received from members' networks, the participants have been asked the following question: **what kind of knowledge did you receive from these individuals? Is it in the form of skills and abilities or documents and reports?** As shown from interviewees' answers six of the respondents received both tacit knowledge (skills, abilities, and verbal knowledge) and explicit knowledge (documents, reports, and procedures) from other network members. While two of the interviewees received only tacit knowledge, two of them received only written knowledge. Consequently, there is evidence that the knowledge received from these networks is a mix of both tacit and explicit knowledge.

<u>Knowledge Creation Process</u>

Data was sought regarding how new knowledge is created within these networks. Participants were asked a question that was adapted from Fay et al. (2000): **would you please talk about a situation where you received knowledge from these individuals to solve work related problem**. Fuller, Jawecki and Muhlbacher (2007) argued that innovation is created within CoPs through four steps: interact and communicate, develop a pool of collective knowledge, alternating experimentation and improvisation, and find solution to the problem. The authors explained that from the literature (e.g., Brown and Duguid 1991; Wenger 2004) for the first step CoP members will talk to each other, ask questions, bring up problems, offer solutions, build their answers, or discuss and laugh on their mistakes. From the interview scripts, it is noticed that all the interviewees do the same thing when they face any problem at their work. For instance, some of interviewees' answers for this question were:

- *"… talking to each other"* **(Interviewee 1)**
- *"… discuss this matter"* **(Interviewee 4)**
- *"I do asked others …"* **(Interviewee 6)**
- *"… throwing the difficulties we are facing …"* **(Interviewee 8)**
- *"… we come up with solutions …"* **(Interviewee 8)**

The second step is collecting all the knowledge, learning, and actions from the previous step to create a pool of knowledge that all CoP members can access (Fuller, Jawecki and Muhlbacher 2007). This step is also done by all the interview participants. Examples of their answers that support that are:

- *"... gather all the information"* **(Interviewee 3)**
- *"they provide me with this information ..."* **(Interviewee 7)**
- *"then when I get maximum information ..."* **(Interviewee 9)**

The third step as explained by Fuller, Jawecki and Muhlbacher (2007) is when CoP members share stories that are related to the unique situation they face. Only one interviewee follows this step in order to solve work related problems, she said that:

- *"Also we do benefit from previous experiences to solve work related problems. I used these experiences to emphasize my point of view."* **(Interviewee 5)**

The last step which is finding a solution to the problem is also proven to be done by all participants. Supported quotes are:

- *"... achieve the target ..."* **(Interviewee 1)**
- *"... I approach a way or a solution ..."* **(Interviewee 4)**
- *"... then I was able to complete the presentation."* **(Interviewee 7)**
- *"... we come up with solutions which at the end help us a lot in implementing our project."* **(Interviewee 8)**

In conclusion, it was evident from the interviews that the steps of knowledge creation process were followed by the participants to some extent to find solutions to work related problems.

The Creation of New Knowledge

The aim of this question (**what is the level of uniqueness and innovation of the solutions you come up with?**) is to figure out if the solutions created through participants' networks are unique (i.e. new knowledge is created). A number of variables driven from the literature (Choo et al. 2007) were used to discover if new knowledge is created. Most of the participants agreed that the solutions they came up with were unique and innovative and new ideas were generated. That is supported from interviewees' quotes as follow:

- *"Sometimes we come up with innovative ideas."* **(Interviewee 1)**

◻*"I think of new business ideas new things we do come up with from the informal network."* **(Interviewee 2)**

◻*"Sometimes we do get new things from the solutions we come up with."* **(Interviewee 3)**

◻*"Sometimes, there are few occasions where the solutions are unique."* **(Interviewee 6)**

◻*"There are many innovative solutions we come up with."* **(Interviewee 9)**

On the other hand, only one interviewee stated that

◻*"it is just routine solutions. It is not unique."* **(Interviewee 10)**

4.4.4. Variables of Social Capital

As indicated in the literature several scholars believed that social capital aspects moderate the impact of knowledge exchange (Kankanhalli, Tan, and Wei 2005; Teigland and Wasko 2003; Wasko and Faraj 2005). As a result, it is assumed that social capital has a moderating role on the amount of knowledge received from networks members. In order to figure that the level of social capital within the networks members is needed to measure its effect on knowledge received that will eventually affect the knowledge creation process. The participants were asked: **thinking about the relationship you have with those individuals, what is the level of trust, norms, and identification between you?** A number of variables are used to measure the level of social capital that was driven from the literature. The variables used to measure trust are adapted from Kankanhalli et al. (2005; developed based on Mishra 1996). The majority declared that they have high level of trust with other members in their network. The rest of them have low level of trust with others, for instance, some interviewees said that

◻*"I do not trust all of them."* **(Interviewee 6)**

◻*"I trust my external people more than my internal."* **(Interviewee 7)**

◻*"Sometimes people will hide some of the knowledge they have."* **(Interviewee 10)**

Further, new trust measures were found from the interview scripts they are:

- **Employee capability:**

  "The employees working in the organisation are capable therefore the knowledge they pass is trusted." **(Interviewee 1)**

- **Body language:**

  "... from their body language and the way they said is not convincing at all." **(Interviewee 2)**

- **Correct information:**

  "For example, I will not ask an IT person to solve a credit problem." **(Interviewee 1)**

  "Trust has to be there as otherwise we will get wrong information ..." **(Interviewee 3)**

  "... I trust these people and I know that the information they provide me is right ..." **(Interviewee 7)**

- **Good advice:**

  *"There are certain people within the organisation who I trust quiet a lot as they have supported me when they advice me on how to do and what to do when I in certain situation ..."***(Interviewee 7)**

- **Required views and ideas:**

  *"People are very trustworthy especially if they feel that this is the way their views and ideas are required."***(Interviewee 8)**

- **Level of relationship:**

  *"The higher the relationship the higher the level of trust and the lower the relationship the lower the level of trust ..."***(Interviewee 10)**

On the subject of norms, the variables were extracted from Kankanhalli, Tan and Wei (2005; developed based on Goodman and Darr 1998 and Leonard-Barton 1995). It is found that the level of norms in these networks is relatively high. Only two of the interviewees showed that they are not open to conflicting points of view. For example one of them said

> *"I argue with people who have different point of view. If I am not convinced I will do what I think is right."***(Interviewee 6)**

Variables used to measure identification were adapted from Kankanhalli, Tan and Wei (2005; adapted from Cheney 1983). A moderation level of identification was found between networks members. For instance, one of the interviewees said that

◻*"regarding the feel of belonging and proud it is something very hard to produce ..."*(**Interviewee 8**)

All the interviewees agreed that trust, norms, and identification have an effect on their decision to accept or reject the received knowledge. However, it is noticed that almost all of them emphasize on the role of trust more than norms and identification.

4.4.5. Variables of Corporate Sustainability

The objective of this study is to investigate the role of knowledge created within these networks on corporate sustainability. Hence, interviewees were asked: **in your opinion, what are the benefits of these solutions on your organisation?** All the interviewees agreed that the effect of these solutions is positive as it enhances organisation performance, employees' productivity, and the growth of the organisation. Moreover, as stated by one of the respondents', employee loyalty towards the organisation will increase. From these answers a new measure of the benefits of the new knowledge created is recognised. This new measure is called non economic performance, examples from the interviews quotes are:

◻*"Solutions always help in minimising costs, time and efforts and help the organisation manage its works in a smooth manner."* (**Interviewee 1**)

◻*"But generally I think that the solutions have positive impact on the company."* (**Interviewee 3**)

◻*"There is positive relationship between the solutions we come up with and the performance of the department."* (**Interviewee 5**)

◻*"It positively affects the performance of the organisation."* (**Interviewee 6**)

◻*"Definitely the solutions we come up with they are beneficial for the organisation well-being."* (**Interviewee 9**)

◻*"Of course it is a positive effect. It will increase their productivity, so having the right solution or decision might raise you to certain level."* (**Interviewee 10**)

To measure corporate sustainability the Triple Bottom Line (TBL) will be used. Thus, the interviewees were asked about the effect of the solutions on their

organisation's social performance, environmental performance, and economic performance.

- o Looking at the social performance of their organisations, interviewees were asked: **do you think the solutions provide new insights towards organisation's social responsibility? Do you think the solutions give new ideas for projects that will benefit the society, please give an example?** The majority agreed that there were new ideas generated through knowledge received from their networks members. Examples of social responsibility projects are: increase the quality of education, contribute to the growth of the country, and sponsor university students.

- o Regarding environmental performance, the interviewees were asked: **what is the effect of the solutions on the organisation's role towards the environment? Do you recall a solution that was beneficial to solve a problem related to the environment?** It was found that most of the respondents believed that the solutions they came up with were beneficial to the environment. Some of the creative solutions were used either to protect the environment or to help clean it. For example:

  ▪ *"... helped in reductions of use of paper, which is in turn reduced the demand on cutting trees."* He also added that *"The use of solar and unclear powers has helped in reduction in use of gas energy which has high pollution deficiencies."***(Interviewee 1)**

- o Finally, the participants were asked about the effect of the solutions on their economic performance (**do you think the solutions help the organisation to increase its profits? Can you please give examples?**) They all agreed that there is major effect on the economics of their organisations. Examples of these effects are: increase profit, decrease cost, and enhance organisation productivity and performance. Quotes supported that are as follow:

  ▪ *"Again, good solutions have helped a lot in the increase of organisation's profits and decrease in its expenses."* **(Interviewee 1)**

  ▪ *"As I mentioned before the bank benefit economically of course from these solutions."* **(Interviewee 2)**

  ▪ *"Of course the solving of these problems will enhance the performance of the organisation and that will eventually increase the profit of the organisation."* **(Interviewee 9)**

In conclusion, it can be argued that there is a hint of positive relationship between the solutions (knowledge creation) and organisation's social, environmental, economic performance, and non economic performance (corporate sustainability).

4.4.6. Final Modified Model

Figures 4-1 to 4-10 presented the model of each of the ten interviewees. It is noted from the figures that all the interviewees contacted their co-located employees and business partners for help and advice when they faced work related problems, alternatively, only two of them contacted their customers and none of them contacted their competitors. Regarding social capital, they all agreed that levels of trust, norms, and identification are important for them to accept the knowledge they received from their networks' members. Interestingly, only one of the participants indicated that they follow all four steps of the knowledge creation process suggested by Fuller, Jawecki and Muhlbacher (2007). As it is shown in the following figures 4-1 to 4-10, six of the interviewees stated that their organisations' social, environmental, economic, and non economic performances are affected by the knowledge created via their networks.

The variables of ten models were combined in Figure 4-11. It is noticed that this model is quite similar to the initial research model obtained from the literature. The only difference found is in the categories of communities of practice. From the literature it was argued that a rival CoPs exists within organisations (Schrader 1991; Teigland 2003; von Hippel and Schrader 1996). However, from the interview scripts there is a hint that these CoPs do not exist in Bahrain service industry. Also, all the participants agreed that they did not contact their organisation competitors due to knowledge confidentiality. In addition, a new measure for corporate sustainability is found from the interviews that is called non economic performance.

Table 4-3: Interviews Findings

	Inter1	Inter2	Inter3	Inter4	Inter5	Inter6	Inter7	Inter8	Inter9	Inter10
CoP Existence										
Internal CoP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Co-located	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
o *My boss/manager*					✓	✓				✓
o *Colleagues*			✓			✓		✓		
o *Subordinates*	✓						✓			
• Non co-located		✓	✓	✓	✓	✓	✓		✓	✓
o *Specific department*	✓			✓	✓					
o *Across our offices*		✓								
o *Other departments/divisions*			✓			✓	✓		✓	
External CoP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Customers		✓						✓	✓	
o *Investors*		✓								
• Suppliers	✓	✓					✓			
o *Vendors*	✓									
• Partners	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
o *Business groups*		✓								
o *Bigger companies worldwide*			✓							
o *Ministries*					✓			✓		
o *Friends & cousins*						✓				
o *Consultants*									✓	✓
o *Professional associations*	✓			✓			✓		✓	
• Rivals										
Others contact you for same purpose	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

	Inter1	Inter2	Inter3	Inter4	Inter5	Inter6	Inter7	Inter8	Inter9	Inter10
Field of study or work experience										
• Similar	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Different	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CoP Characteristics										
• *Members' needs*										
- When there is a problem	✓		✓	✓	✓			✓		✓
- Communication, common links		✓					✓		✓	
- Close relations					✓					
- Regular bases						✓				
• *Communication*										
- *Frequency*										
▪ Daily	✓		✓			✓		✓		✓
▪ Weekly	✓	✓			✓	✓			✓	✓
▪ Occasionally		✓					✓			
▪ When needed	✓		✓	✓	✓		✓			
- *Means of communication*										
▪ Face-to-face	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
▪ Telephone	✓	✓	✓	✓	✓	✓	✓	✓		✓
▪ E-mail	✓		✓	✓			✓	✓		✓
• *Common purpose*										
- Organisation goals & objectives	✓		✓	✓			✓	✓	✓	
- Enjoy talking & discussing		✓								
- Solve problems				✓	✓					
- Common interest						✓				
- Improve knowledge										✓
• *Terminology*										
- Called by first name (nickname)	✓									
- Share same stories		✓		✓	✓	✓				

	Inter1	Inter2	Inter3	Inter4	Inter5	Inter6	Inter7	Inter8	Inter9	Inter10
- Jargons & expressions		✓	✓	✓						✓
- Vocabulary & phrases						✓	✓	✓	✓	
• *Doing things together*										
- Sport activities	✓		✓				✓		✓	✓
- Special occasions/events	✓		✓		✓	✓				
- Lunches & dinners		✓	✓	✓	✓	✓	✓		✓	✓
- Social activities		✓	✓	✓				✓		
Importance of CoP										
Internal CoP	✓	✓	✓	✓	✓	✓	✓	✓	✓	
• Interact daily	✓									
• Know them & their knowledge					✓			✓	✓	
• Work information/know the situation		✓	✓			✓	✓	✓		
External CoP							✓	✓	✓	✓
• Lack of expertise	✓			✓	✓					
• Feedback		✓						✓	✓	
• Updated knowledge			✓							
• General information/industry information						✓	✓			
• Experienced/Knowledgeable			✓							✓
Kind of Knowledge Received										
Tacit knowledge	✓	✓	✓	✓		✓		✓	✓	✓
• Skills		✓				✓		✓		
• Abilities						✓				
• Verbal knowledge	✓		✓			✓			✓	
Explicit knowledge	✓	✓	✓	✓	✓		✓		✓	✓
• Documents	✓				✓		✓			
• Reports			✓		✓		✓		✓	

	Inter1	Inter2	Inter3	Inter4	Inter5	Inter6	Inter7	Inter8	Inter9	Inter10
• Procedures	✓									
Knowledge Creation Process										
Interact and communicate	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Develop a pool of collective knowledge	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Alternative experimentation & improvisation					✓					
Solution to problem	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Creation of New Knowledge										
Yes	✓	✓	✓	✓	✓	✓	✓	✓	✓	
• Enhancing personal abilities & knowledge			✓			✓	✓			
• Unique & innovative solutions	✓			✓	✓	✓		✓	✓	
• Generating ideas	✓	✓	✓		✓		✓	✓	✓	
No (routine)						✓	✓			✓
Social Capital Level										
Trust										
• Capable/knowledgeable employees	✓							✓		
• Body language		✓								
• Correct information	✓		✓				✓			
• Good advice							✓			
• Required views & ideas								✓		
• Level of relationship										✓
• Giving credit for other's knowledge		✓			✓	✓				
• Share the best knowledge	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Norms										
• Cooperation & collaboration	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

	Inter1	Inter2	Inter3	Inter4	Inter5	Inter6	Inter7	Inter8	Inter9	Inter10
• Openness to conflicting views	✓	✓	✓	✓	✓			✓	✓	✓
Identification										
• Sharing the same values & goals	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Feel of belonging & proud		✓	✓	✓	✓	✓	✓			✓
Social Capital Moderating Role										
Yes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
No										
Corporate Sustainability										
• *Non economic performance*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
- Employee loyalty		✓								
- Positive impact/benefits			✓	✓				✓	✓	
- Performance/productivity	✓				✓	✓				✓
- Growth							✓			
• *Social performance*	✓	✓	✓		✓	✓	✓	✓	✓	✓
- Quality of education	✓	✓							✓	
- Sponsor university students		✓								
- Renovate old houses		✓								
- Health care	✓		✓							
- Help charitable organisations					✓					
- Country growth		✓	✓			✓	✓	✓		
• *Environmental performance*	✓	✓	✓		✓			✓	✓	✓
- Plant of trees & flowers		✓			✓					
- Protect environment	✓		✓					✓	✓	
- Cleaning environment					✓					✓
• *Economic performance*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
- Increase profit	✓	✓	✓		✓		✓	✓	✓	✓
- Decrease cost	✓		✓							
- Productivity/performance	✓			✓		✓	✓	✓	✓	
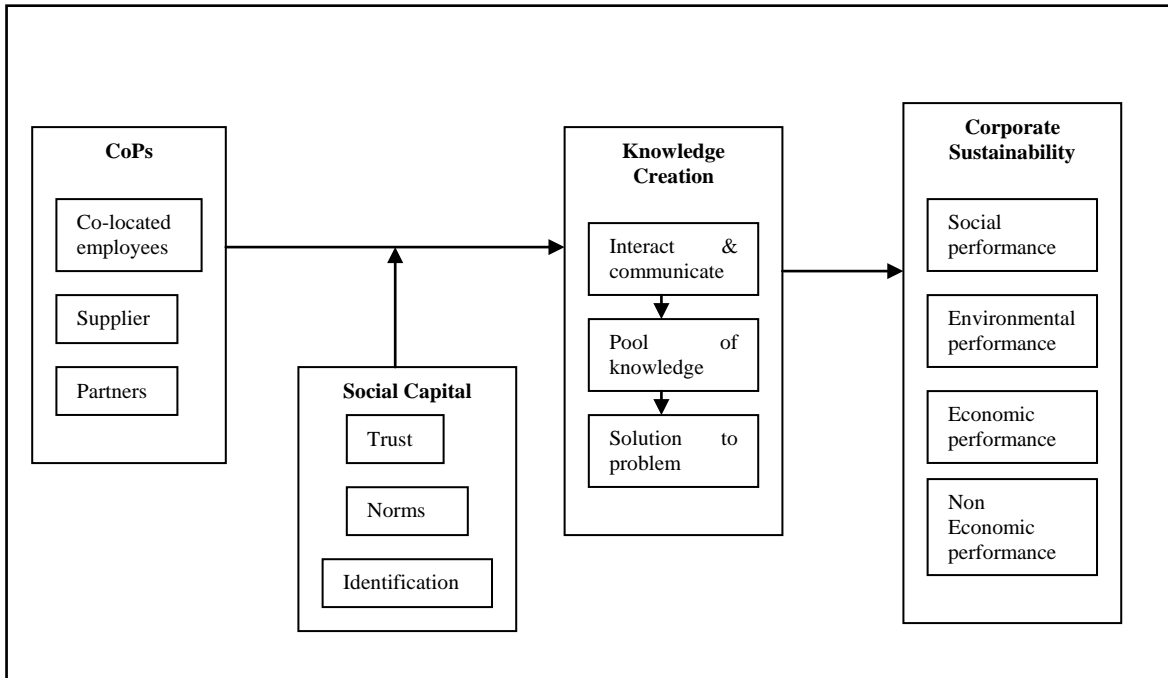
Figure 4-1: CoP Model of Interviewee 1
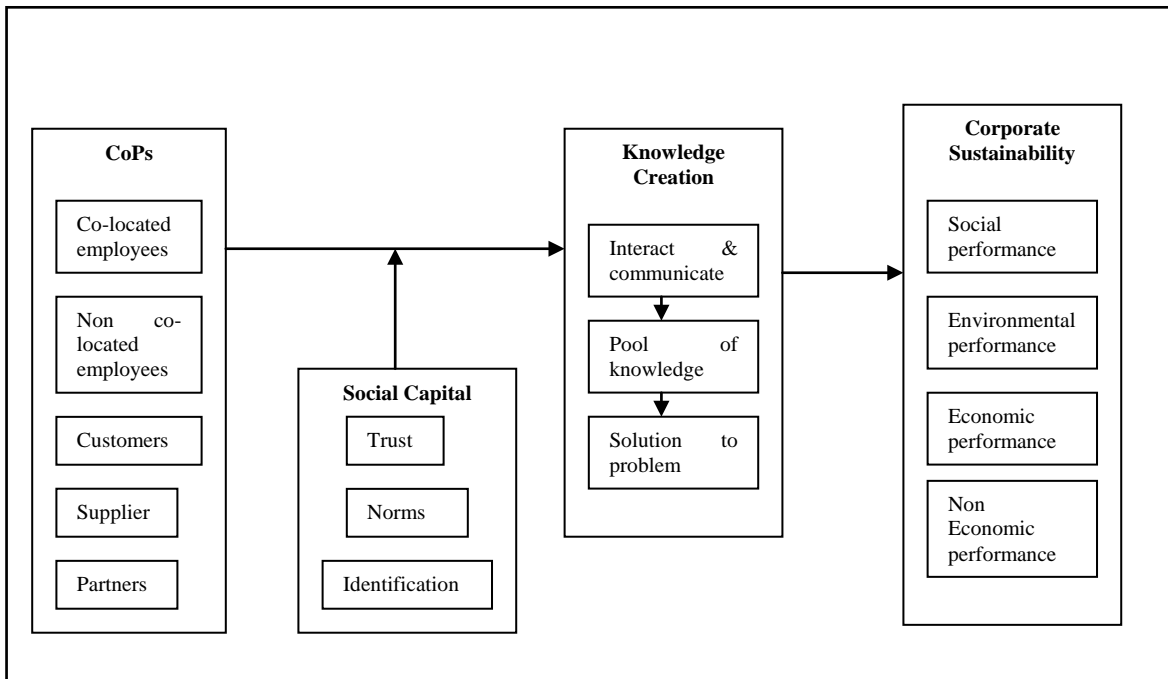
Figure 4-2: CoP Model of Interviewee 2
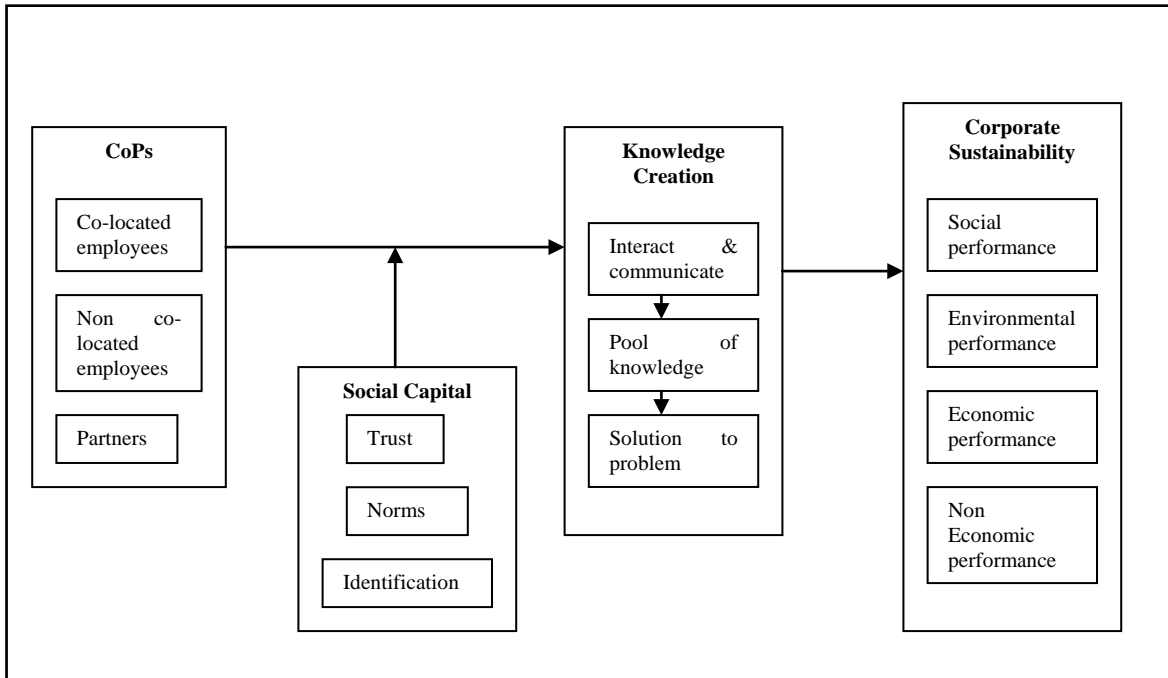
Figure 4-3: CoP Model of Interviewee 3
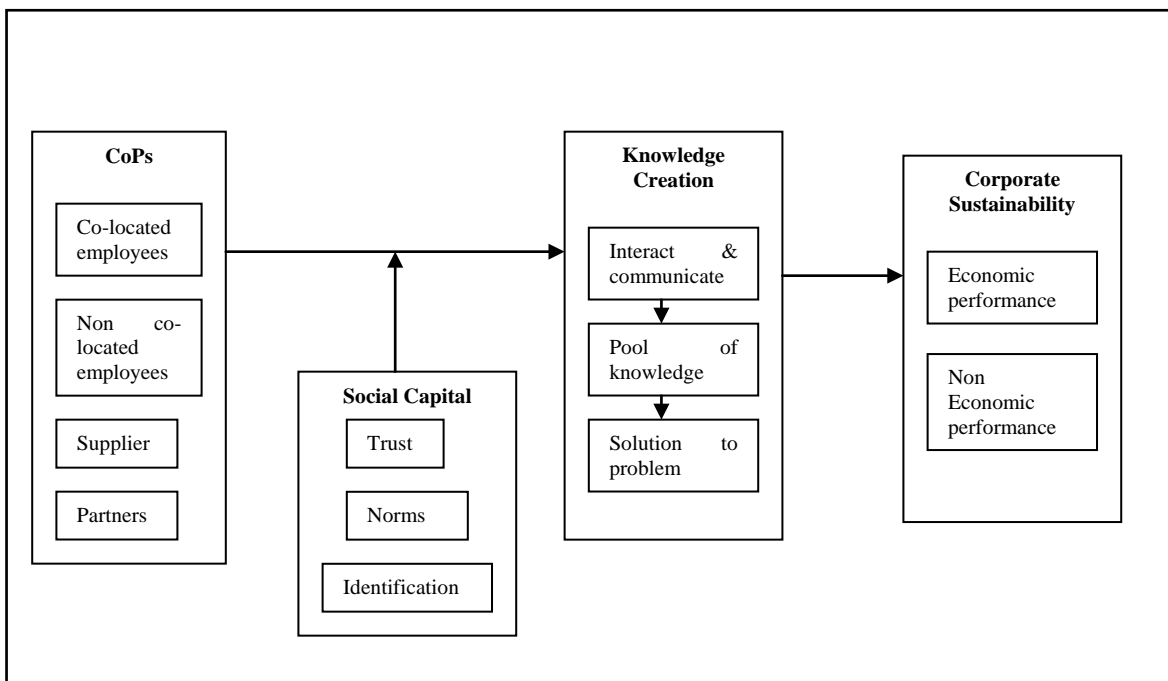
Figure 4-4: CoP Model of Interviewee 4
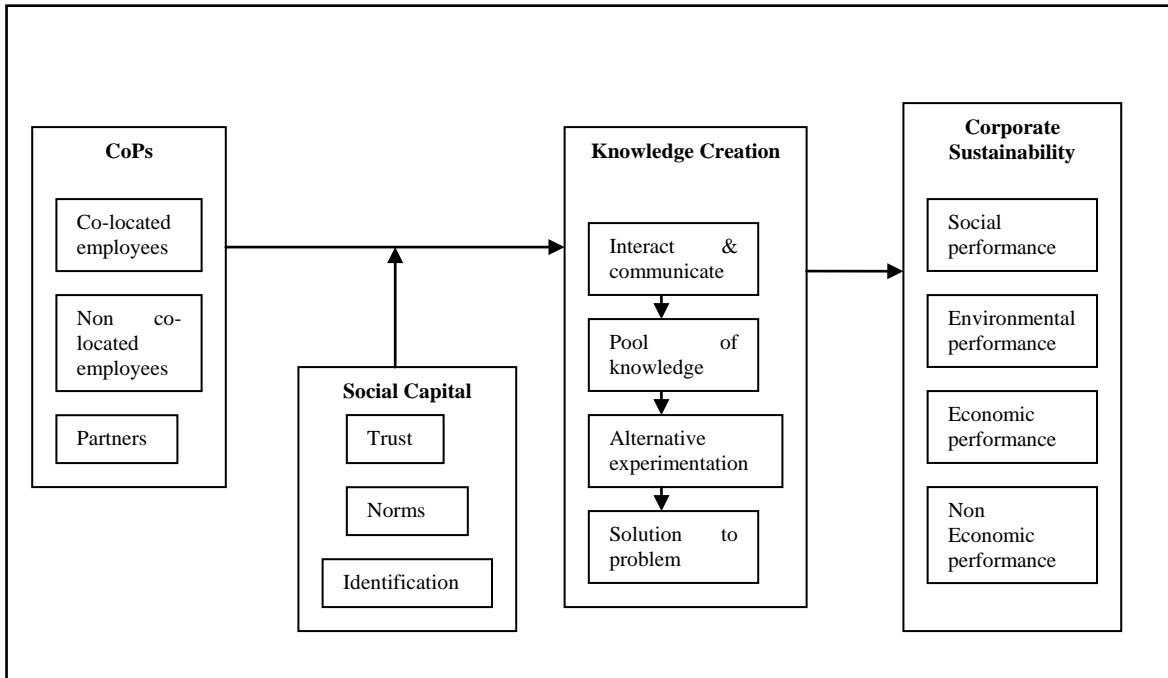
Figure 4-5: CoP Model of Interviewee 5
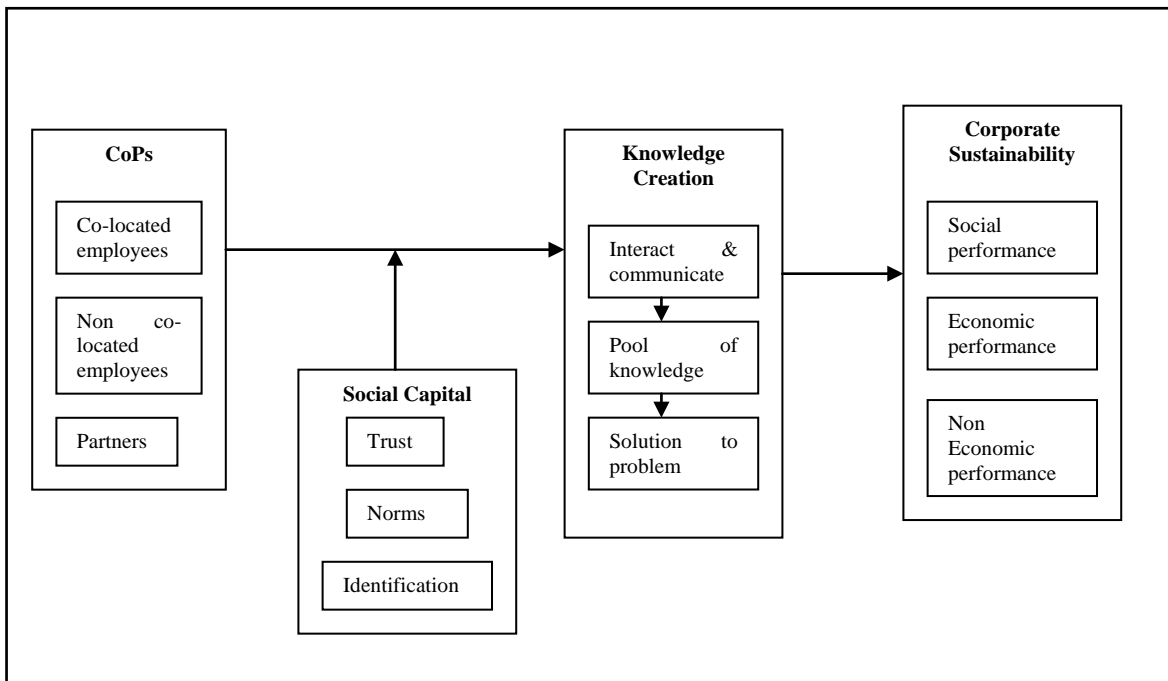
Figure 4-6: CoP Model of Interviewee 6
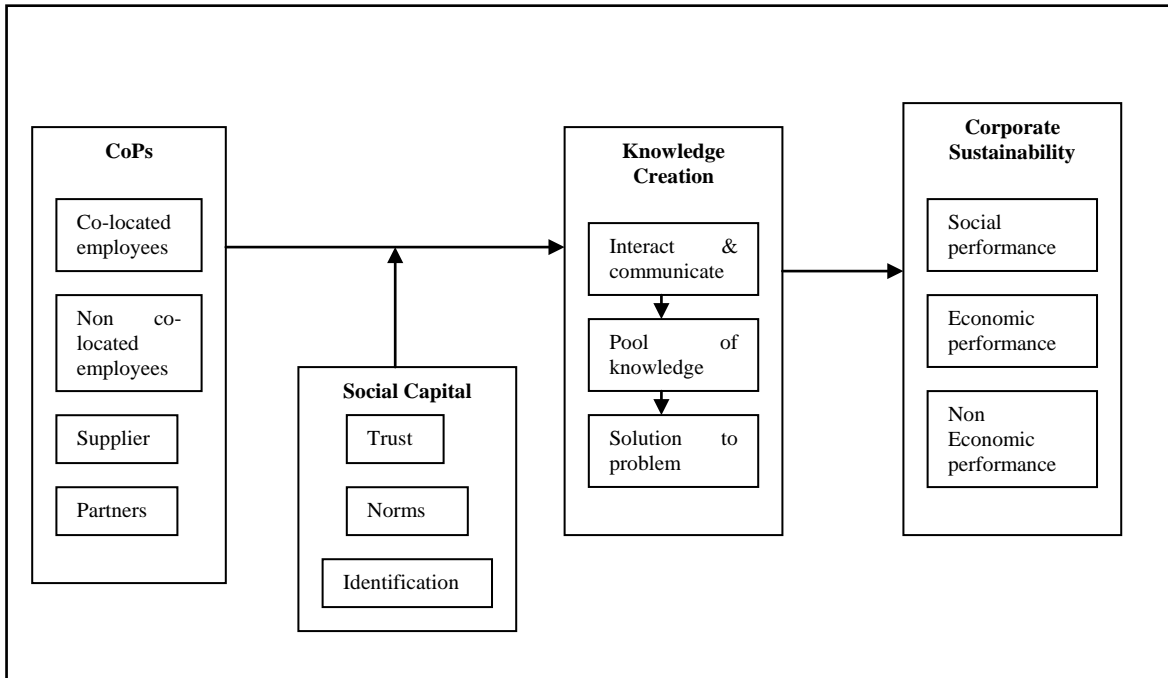
Figure 4-7: CoP Model of Interviewee 7
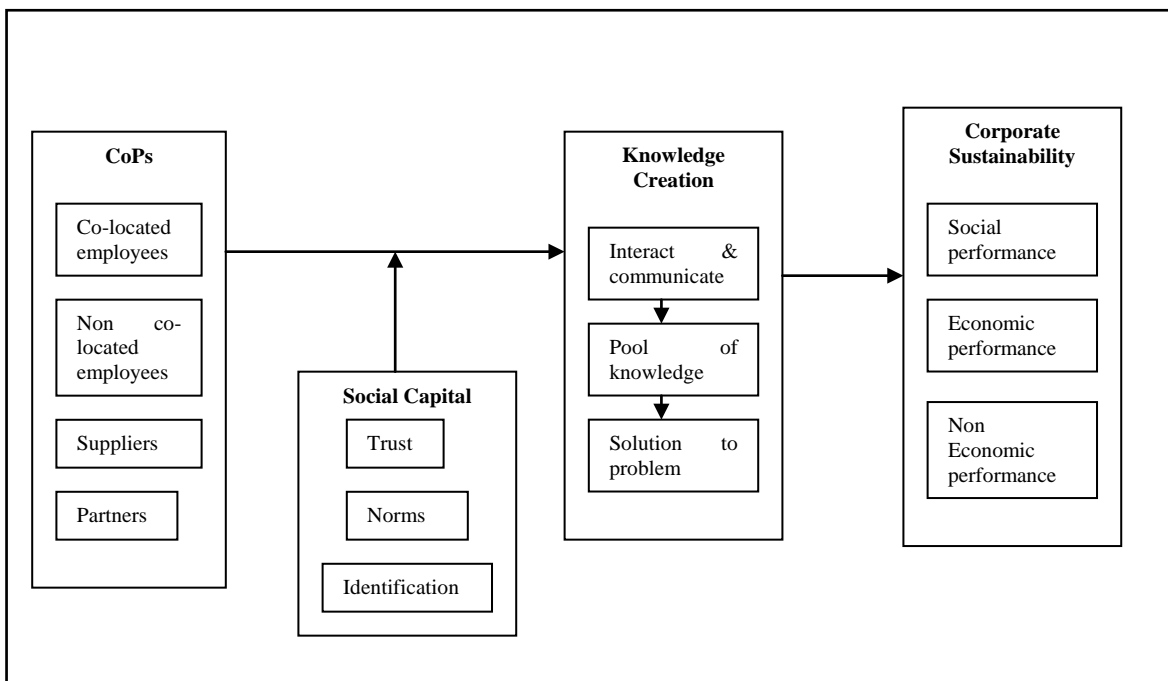
Figure 4-8: CoP Model of Interviewee 8
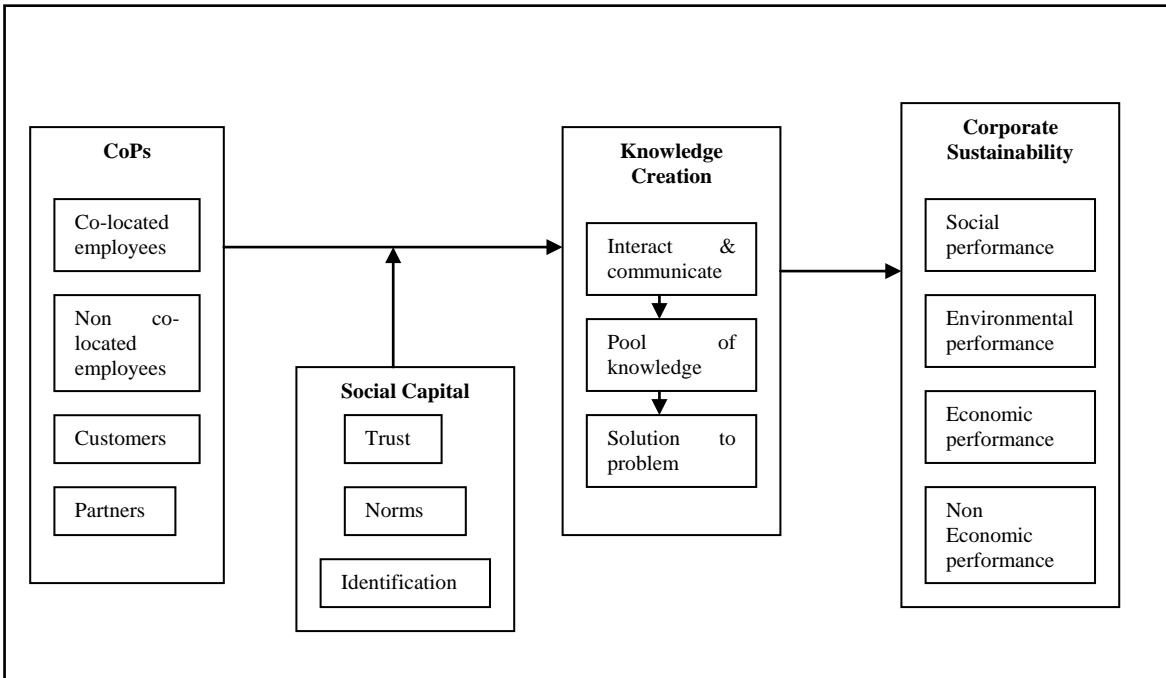
Figure 4-9: CoP Model of Interviewee 9
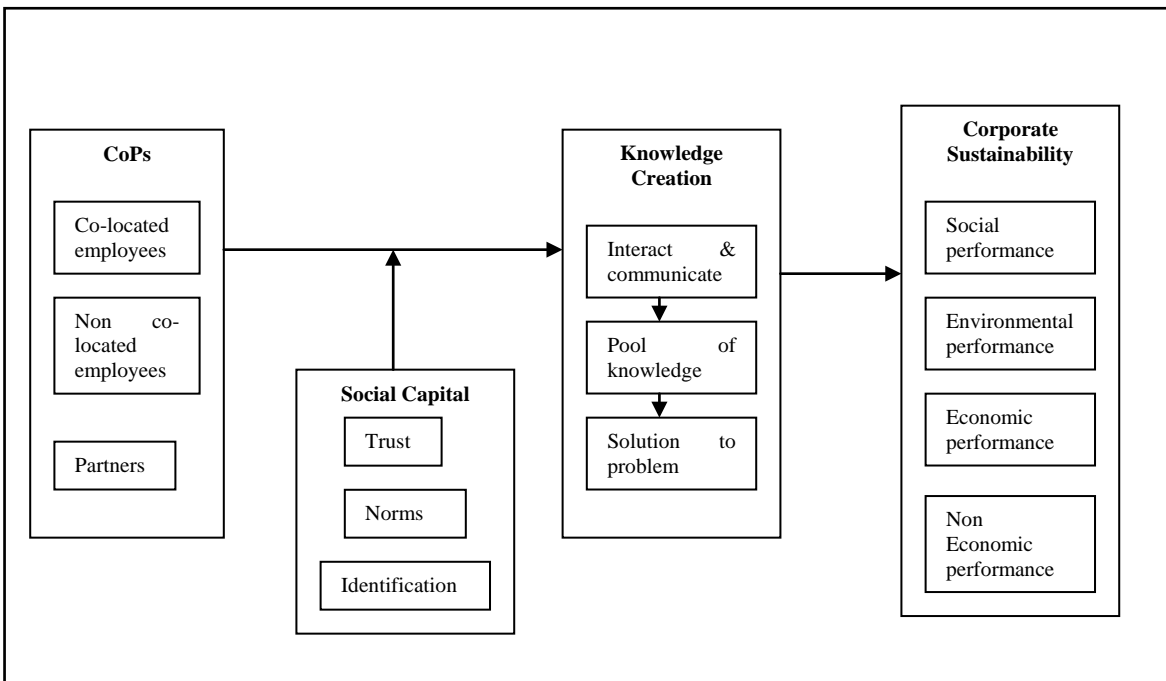
Figure 4-10: CoP Model of Interviewee 10
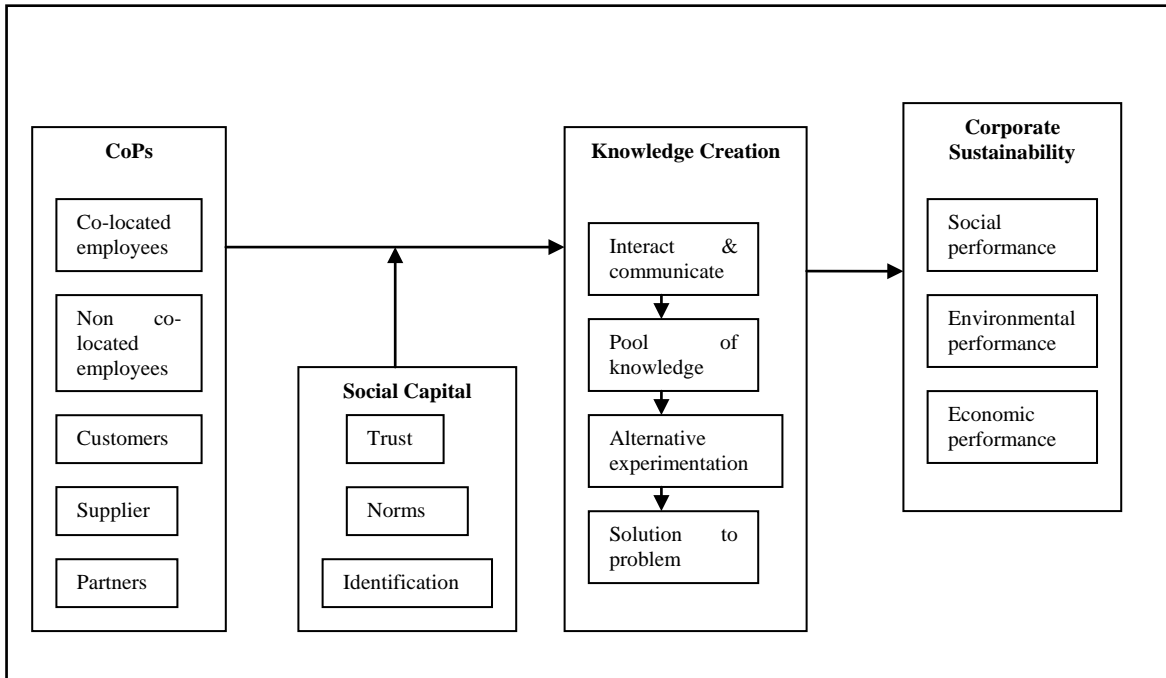
Figure 4-11: Combined CoP Models

Figure 4-12 presented the study modified model that combined Figure 4-11 and literature review (initial) model. In Figure 4-12 it is observed that two new variables are added to the combined model (Figure 4-11) and the initial model, these variables are knowledge received and new knowledge. From the field study it is understood that the knowledge creation process starts with the knowledge received from different CoPs categories. Therefore, the knowledge received from the CoPs – not CoPs directly – influences the creation of knowledge. The outcome of the knowledge creation process – presented by the fourth step of the process "solution to problem" –then impacts organisations' performance (i.e. social, environmental, economic, and non economic performance). Similar to any system, the knowledge creation process should start with an input (that is knowledge received from different CoPs categories) then, the knowledge is processed through the knowledge creation process (presented by the four steps) and finally, the outcome of the process (which is new knowledge created) is used.

Through this field study, new measures to calculate the level of trust (one of social capital dimensions) between the members of these networks are generated. Moreover, there is a

hint that a number of CoP characteristics that were indicated through the literature may exist in the networks interview participants involved in.

4.5. Summary

To sum up, based on this field study, it can be argued that there is a hint of possible link between the knowledge received from the members of the CoP networks (co-located employees, non co-located employees, customers, suppliers, and partners) on the knowledge creation process and the outcome of the knowledge creation process (i.e. new knowledge) may have possible relationship with organisation's social, environmental, economic, and non-economic performance (corporate sustainability).
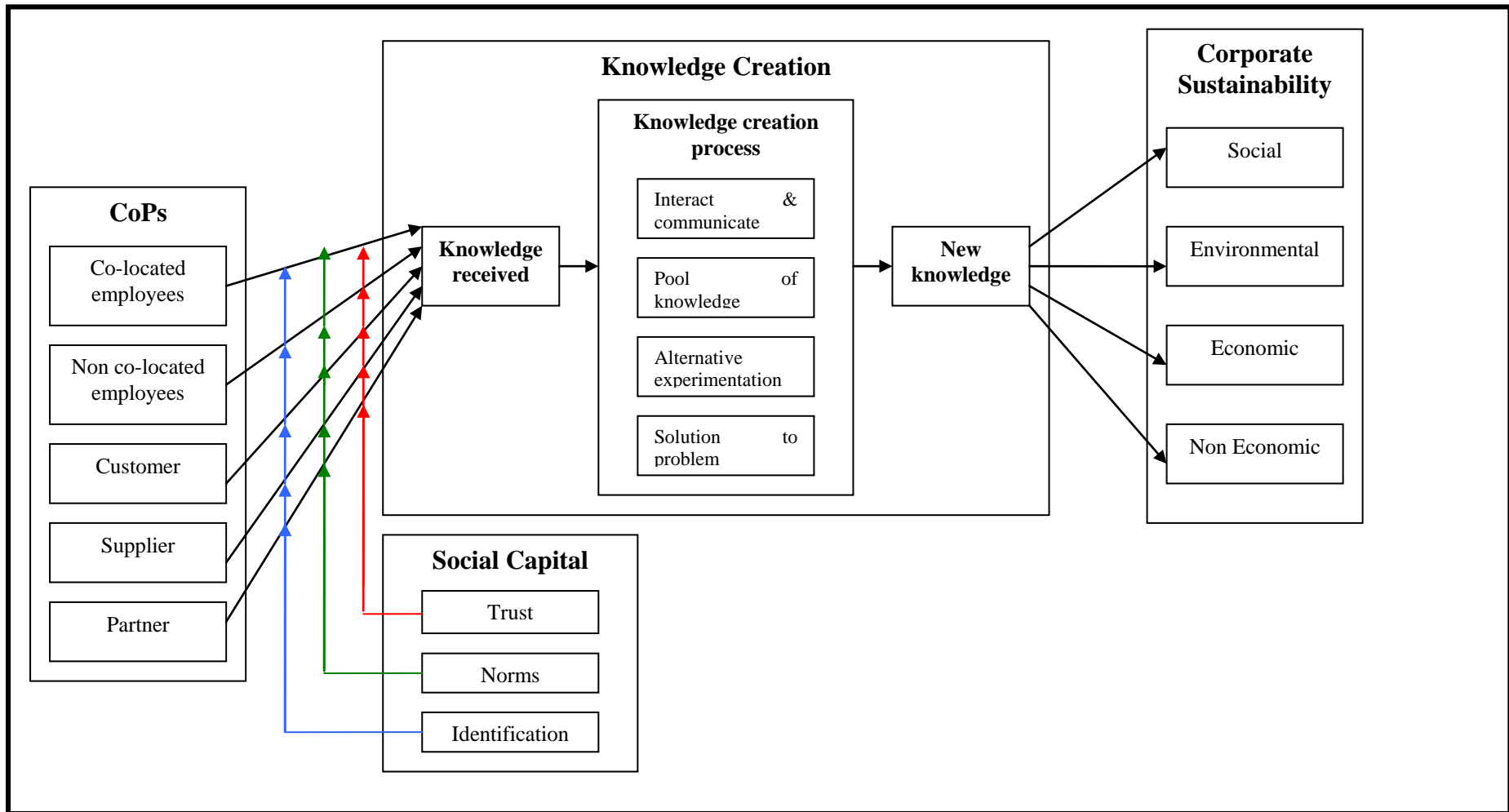
Figure 4-12: Study Modified Model

CHAPTER FIVE

Hypothesis and Questionnaire Development

5.1. Overview

The objective of this chapter has two folds: first, it addresses the theoretical and empirical evidences regarding the study hypotheses and defines variables relationships, and second, it provides the basis for questionnaire development and measurements used to identify the study variables. The research model as discussed previously contains four major concepts in which each concept consists of various variables. The connections between different variables that represent a relationship is identified and highlighted in this chapter.

5.2. Hypothesis Development

The hypotheses are divided into four key areas: communities of practice, knowledge creation, social capital, and corporate sustainability. Under each of these main areas, a number of hypothesis are identified and some theoretical and empirical evidences from the literature and the field study are highlighted.

5.2.1. Hypothesis Related to Communities of Practice

It is posited that improvement in the flow of information is one reason for generating preferable outcomes of actions from interactions and networking (Lane and Lubatkin 1998; Lin 1999). Chae et al. (2005, 64) supported this idea as they declared that "relationship networks encourage knowledge sharing and creation, since they give individuals access to other people from whom they can acquire knowledge." Kimble, Hildreth and Wright (2001) suggested that studying the way knowledge is created and

shared is necessary. It is stressed that the existence of a suitable context for employees to share tacit and explicit knowledge in the organisation will influence the creation of new knowledge (Scarso and Bolisani 2008; Sharkie 2003). CoPs are suitable environment to create and share knowledge (Arora 2002; Chua 2006; Lesser and Everest 2001; Lesser and Storck 2001; Roberts 2006; Wang, Yang and Chou 2008; Wenger 1998a, b).Further, Kimble, Hildreth and Wright (2001) discovered that communities of practice are the appropriate starting point to understand knowledge creation and sharing. Several scholars discovered the positive impact of communities of practice on the sharing and distribution of knowledge within these communities (Braun 2002; Brown and Duguid 1991; Chu and Khosla 2008; Duguid 2005; du Plessis 2008; Gelauff 2003; Hildreth, Kimble and Wright 2000; Kogut and Zander 1992; Probst and Borzillo 2008; Soekijad, Huis in 't Veld and Enserink 2004; Wang, Yang and Chou 2008; Wenger 1998a, b). Additionally, communities of practice influence knowledge creation (du Plessis 2008; Kodama 2005; Wenger 1998a, b; Zorn and Taylor 2003) and innovation (du Plessis 2008). Breu and Hemingway (2002) realized that the creation, holding, and sharing of knowledge among community members is empirically proved by a number of scholars like Orr (1987) and Hutchins (1991).

More interestingly, it is noticed that the transfer of tacit knowledge and learning in communities of practice have positive impact on individual, group, or organisational performance (Schenkel and Teigland 2008). As indicated by Kranendonk and Kersten (2007, 953) "the members of a CoP obtain new experiences, meaning, insight, and knowledge." Therefore, it can be understood that communities of practice will provide the required time, space, and motivation to share knowledge between the members. On the other hand, limiting knowledge exchange within the boundaries of an organisation may lead to losing important sources of knowledge (Mounier-Kuhn 1994; Saxenian 1996).

Within external communities of practice, translation of experience that continues into knowledge and then transfering that knowledge across the boundaries is vital for organisations to create and transfer experiences and knowledge (Dixon 2000). Constant, Kiesler and Sproull (1994) found that past studies highlighted the existence of knowledge sharing within computer networks even beyond organisational

boundaries. Nonaka (1994) proposed that communities may cross the organisation boundaries to reach customers, suppliers, distributors, and competitors. Several researchers believed that innovation is supported within communities of practice but is hindered across these communities (Brown and Duguid 1998, 2001; Kogut and Zander 1992; Liebeskind 1996; Swan, Scarbrough and Maxine 2002). Alternatively, Swan, Scarbrough and Maxine (2002) expressed that the integration of knowledge occurs within the interstices of communities and networks of practice frequently promote radical innovation. Kerno (2008, 72) also recognised that "communities of practice have also been suggested as a novel and innovative approach for connecting an organisation to its broader environment." In the context of this study, the broader environment includes customers, suppliers, and business partners. Arora (2002) declared that the complexity and conflict that occur between members of communities of practice across organisational functions encourage the creation of new synergy. He explained that finding answers to problems or projects is accomplished by integrating individuals' different perspectives. Wasko and Faraj (2005, 36) expressed that "organisational members benefit from external network connections because they gain access to new information, expertise, and ideas not available locally, and can interact informally, free from the constraints of hierarchy and local rules."

Although contradicting results occur regarding the role of CoPs and NoPs in managing knowledge effectively (Chae et al. 2005), Brown and Duguid (2000, 1991) and Duguid (2005) stressed that CoPs and NoPs positively affect knowledge sharing and creation.This is supported by Mu, Peng and Love (2008) as they claimed that organisations must benefit from both internal and external knowledge sources to enhance the production of innovation. Additionally, knowledge sharing within and outside the communities of practice boundaries (Soekijad, Huis in 't Veld and Enserink 2004) will overcome some knowledge exchange problems (Brown and Duguid 1991). It is recognised that due to the positive effect of communities of practice on the creation and sharing of knowledge within and outside the organisation, an increasing number of organisations are employing them as strategic tools (Wang, Yang and Chou 2008). Chae et al. (2005) discovered that both CoPs and NoPs are important sources of receiving useful knowledge. Therefore, it is assumed that both internal and external communities of practice will affect the creation of new

knowledge through facilitating the transfer and exchange of knowledge between the members.

From the field study (described in Chapter Four), it is noticed that there is a hint that individuals in Bahrain service industry have connections and networks with others inside and outside the boundaries of their organisations. When there is a work related problem, these individuals are contacted for assistance and advice. Therefore, knowledge received from these networks is used to find solutions that solve work problems.

Consequently, it is hypothesised that:

Hypothesis 1: participating in communities of practice (CoPs) positively influences the knowledge received from them that is used in the knowledge creation process in the context of Bahrain's service industry.

Wenger (1998a) indicated that knowledge flows regularly between employees working in the same office to accomplish their job. In addition, Teigland and Wasko (2003) discovered that one vital source of knowledge is co-located employees because they interact with each other regularly as they are located in the same space. It is realised that strong collegial ties are requirement for knowledge exchange within an organisation (Constant, Sproull and Kiesler 1996), Nevertheless, Teigland and Wasko (2003) claimed that the development of new and creative ideas are hinder between co-located employees as they share common language, rules of behaviour, and identity. It is found that individual's performance enhanced through efficient integration that facilitates knowledge exchanged between co-located employees (Teigland and Wasko 2003).

The results of the field study showed that there is an indication that individuals in Bahrain service industry seek advice and help from co-located employees' (such as manger, secretary, and subordinates) networks when there is a work related problem.

The existence of relationships between employees working in different organisational units is a prerequisite to share and exchange knowledge among them (Szulanski 1996). It is proposed that communities of practice occur across business units where

employees in different business units will exchange vital knowledge (Wenger 1998a, b). Further, Tsai (2001) claimed that knowledge is transferred between different organisational units that significantly affecting units competitiveness in the marketplace as it motivates innovative activities. An organisational unit ability to create value and achieve economic goals is facilitated through a network of interunit links (Coleman 1990; Tsai and Ghoshal 1998). Tsai (2001) agreed with that as he declared that the dissemination of best practices that support the increase of organisational unit-cost efficiency is facilitated through knowledge transfer within networks of interunit links.

Similarly, there is a hint from the field study outcomes that participants contacted non co-located employees for support and guidance if they faced a problem at work.

Von Hippel (1988) suggested that connections with customers are considered a source of innovation that promotes the creation of related knowledge (Nonaka 1994).

It is noticed that some of the field study interviewees seek help and advice from their customers. Thus, there is a clue that customers' networks provide individuals within Bahrain service industry with the knowledge they require to solve work problems.

It is believed that connections with suppliers are considered a source of innovation (von Hippel 1988) that facilitates the creation of relevant knowledge (Nonaka 1994). Wenger (1998b) suggested that connections with suppliers help employees to keep pace with continuous changes occuring in the marketplace.

There is a suggestion that suppliers' networks also exist in Bahrain service industry and the knowledge shared among these networks is used to solve work related problems.

As indicated by Mu, Peng and Love (2008, 86) "a firm's networking partners are, in many cases, the most important sources of new ideas and information that potentially could result in performance-enhancing technology and innovations." They explained that combining and recombining of ideas, integrating solutions from different sources, generating new ideas, and motivating creativity and unique solutions to problems are

the benefits of interacting with different partners. As mentioned by Inkpen (1996), the existence of alliances with business partners is important for organisations to obtain knowledge about their partners' capabilities and skills. Organisation's ability to access partners' tacit and explicit knowledge will contribute to promoting the creation of new knowledge (Corno, Reinmoeller and Nonaka 1999).

A better understanding of industry benchmarks and competitive trends is achieved through organisation interactions with partners (Mu, Peng and Love 2008). It is postulated that knowledge and innovation transferred from the academic sphere is fundamental to apply human capital in the industrial or policy-making spheres in an efficient and suitable manner (Adam and Roncevic 2003). Thus, it can be argued that business partners like universities and educational institutions play an important role in providing knowledge for the organisation.

As all the participants of the field study agreed that they seek help from business partners, it is suggested that partners' networks are vital source for solving problems faced at work.

As a result of the above discussion, the following five hypotheses are suggested:

Hypothesis 1a: *participating in co-located employees CoP positively influences the knowledge received from them that is used in the knowledge creation process (CLE→KRC) in the context of Bahrain's service industry.*

Hypothesis 1b: *participating in non co-located employees CoP positively influences the knowledge received from them that is used in the knowledge creation process (NCLE→KRC) in the context of Bahrain's service industry.*

Hypothesis 1c: *participating in customers CoP positively influences the knowledge received from them that is used in the knowledge creation process (CUS→KRC) in the context of Bahrain's service industry.*

Hypothesis 1d: *participating in suppliers CoP positively influences the knowledge received from them that is used in the knowledge creation process (SUP→KRC) in the context of Bahrain's service industry.*

Hypothesis 1e: *participating in business partners CoP positively influences the knowledge received from them that is used in the knowledge creation process (PRT→KRC) in the context of Bahrain's service industry.*

It is proposed that CoP relations include CoPs distinctive characteristics as specified in the literature review chapter. Group goals and actions in virtual communities are supported by sharing codes and language that produce common understanding (Tsai and Ghoshal 1998). Nahapiet and Ghoshal (1998) argued that intellectual capitals – that is knowledge – are positively impacted by sharing common language in which it supports getting access to other individuals' information, understanding the benefits of sharing information, and preventing knowledge overlap. Chiu, Hsu and Wang (2006) agreed with that as they believed that common language encourages knowledge exchange and improves the quality of knowledge shared among participants. Therefore, it is proposed that sharing codes and language between communities of practice members will create common understanding of community goals and actions to eventually attain these goals. Nahapiet and Ghoshal (1998) argued that combination and exchange are inspired by common language and codes. They further explained that sharing language provides a suitable context for individuals to discuss and exchange information (Huysman and Wulf, 2005), ask questions, and conduct business in society. It is found that the combining of information is supported by shared vocabulary (Boland and Tenkasi 1995).

The field study outcomes indicated that members of the networks existed in Bahrain service industry share common terminologies in form of jargons, expressions, vocabularies, and phrases.

Shared vision between organisation members motivates them to share their resources (Tsai and Ghoshal 1998). This idea is supported by Cohen and Prusak (2001) who noticed that the quality and quantity of knowledge shared among community members are motivated by mutual values and goals. As individuals share the same viewpoints and facing similar situations, they are more willing to share ideas and ask questions (Lesser and Everest 2001).

The outcome of the field study showed that members of the networks within Bahrain service industry shared similar goal that is to attain organisational objectives. Therefore, there is a clue that networks in Bahrain service industry have a sense of common purpose among their members.

Sharing common identity within the group encourages members to share their experience (Davenport and Hall 2002). Wenger (1998a) articulated that in mutual engagement – that is one of CoP characteristics – CoP members continue interaction with each other via different means of communication that enhance the sharing of knowledge between them. Another CoP characteristics identified by Wenger (1998a) is the share of common understandings that facilitates information exchange and interpretation between CoP members. Within communities, knowledge transfer, communication, and learning is promoted by the production of common tacit knowledge facilitated by sharing a common practice (Brown and Duguid 1991). Chae et al. (2005, 67) found from the case study results that knowledge sharing, creation, and learning are affected by transactive memory that is knowing "who is good at what, who is doing what and who knows who" (Wenger 1986). Moreover, the share of common practice motivates the exchange of knowledge among individuals (Brown and Duguid 2000).

The field study provided a hint that networks' members in Bahrain service industry frequently meet face-to-face on a daily basis. They are also engaged in doing activities outside their organisations such as sport and social activities. In addition, they know what others know, what they can do, and how they can contribute to the organisation.

The above discussions result in the following hypothesis:

Hypothesis 2: CoP relations positively influence the knowledge received from CoPs that is used in the knowledge creation process (CoPR→KRC) in the context of Bahrain's service industry.

5.2.2. Hypothesis Related to Knowledge Creation

Scarso and Bolisani (2008) suggested that type of knowledge exchanged, reason for exchange, and means and procedures employed for the exchange within CoPs need to be explored. However, Chae et al. (2005) discovered that the relationship between the type of knowledge (tacit or explicit) received and the type of network (CoPs or NoPs) is not easy to understand.Past empirical studies support the assumption that communities of practice promote knowledge sharing within the community (Barley 1996; Hutchins 1991; Orr 1996). The type of knowledge transferred – in this study tacit versus explicit – and the mechanisms used for the transfer are vital to increase the effectiveness and efficiency of knowledge transfer process (Scarso and Bolisani 2008).

Chu and Khosla (2008) expressed that tacit and explicit knowledge is stored and distributed among CoPs in which knowledge management value is maximized by encouraging innovation. Similarly, it is argued that tacit and explicit knowledge is exchanged within CoPs (Brown and Duguid 2001; Duguid 2005; Preece 2003) where tacit knowledge is dominant because of the type of knowledge transferred in these CoPs such as stories, comments, and opinions (Preece 2003). In their article Glisby and Holden (2003) referred to Kreiner and Lee presentation at the third World Congress on the Management of Intellectual Capital in Ontario 1998 as they declared that tacit knowledge is the primary knowledge created within communities of practice. It is suggested that socialization process of transferring tacit to tacit knowledge can take place in communities of practice (Arora 2002; Nonaka 1994). The sharing and transfer of tacit knowledge are influenced by informal organisational structures – or communities of practice (Dewhurst and Navarro 2004; Kogut and Zander 1992; Wang, Yang and Chou 2008). It is claimed that start up and problem solving are capabilities that represent significant tacit knowledge (Rebentisch and Ferretti 1993). In the case of choosing explicit knowledge in CoPs, the focus will be on storing, accessing and reusing knowledge, whereas if tacit knowledge is preferred then the emphasise will be on exchanging, interacting, and taking opportunities for sharing practices (Chu and Khosla 2008). It is suggested that innovation is

encouraged through a balance strategy between tacit and explicit knowledge (Jordan and Jones 1997).

According to Beckett (2001) organisations, that are successful over long periods of times, indicate that, not only they must achieve excellence in their current operations, but they must also understand future options and pursue strategic innovation (Lucier and Torsilieri 1997). Furthermore, Martin (1997) and others consider knowledge as a resource that is critically linked with innovation and productivity. In addition Beckett (2000) noted that, knowledge creation could affect and influence the speed of innovation and re-using knowledge to enhance operational productivity. However, the transfer of knowledge is regarded as critical to the competitive position of the organisation. Therefore, the organisation must act on and facilitate the transfer of knowledge with urgency. Further Nonaka and Takeuchi (1995) have confirmed that knowledge is critical to the organisation may be considered critical knowledge and could encompass both tacit and explicit components. In addition, Soo, Devinney and Midgley (2000) reported that the following four factors may be critical to knowledge management:

1. Knowledge acquisition through informal networking combined with formal knowledge capturing.
2. Creativity in problem solving as a key driver of new knowledge creation.
3. Availability of adequate individual and organisational absorptive capacity.
4. Knowledge as an input to innovative while financial performance as output.

Previous studies discovered that weak ties (that represent external communities of practice) encourage the transfer of explicit knowledge (Hansen 1999; von Hippel 1994), while strong ties (that represent internal communities of practice) support tacit knowledge transfer (Hansen 1999; Szulanski 1996). Moreover, Burt (1992) articulated that information diffusion efficiency is supported by weak ties in which redundancy is decreased.

It is implied from the field study that tacit (skills, abilities, and verbal) and explicit (documents, reports, and procedures) knowledge is received from the networks within Bahrain service industry. It is also revealed that the knowledge received is used as an input in the knowledge creation process as participants in the field study explained

that they used the knowledge obtained from the members of their networks to solve work problems.

Therefore the following hypothesis is proposed:

Hypothesis 3: the knowledge received from CoPs positively influences the knowledge creation process in the context of Bahrain's service industry.

As mentioned previously in Chapter Two, Fuller, Jawecki and Muhlbacher (2007) expressed that community members interact and communicate constantly, in which members talk about their work (Lave and Wenger 1991; Wenger 1998a), ask questions, bring up problems (Brown and Duguid 2001; Nonaka, Toyama and Konno 2000; Wenger 1998a, b), provide solutions, produce answers, laugh at mistakes, or discuss work changes (Brown and Duguid 1991; Wenger 2004). Community of practice members' benefit directly from solutions produced within the community (von Hippel 1999).

Brown and Duguid (2000) stressed that a pool of collective knowledge is developed in which each member updated others about their knowledge, learning, and actions. The amount of knowledge collected in this step exceeds any member's individual knowledge and it is open for all members to access (Fuller, Jawecki and Muhlbacher 2007, 61). Similarly, Kimble, Hildreth and Wright (2001) claimed that when a problem occurs, community members will gather domain knowledge by interacting and working together to solve this problem. Ibert (2007) expressed that sharing stories between members of community of practice creates an informal repository of knowledge.

According to Fuller, Jawecki and Muhlbacher (2007), the knowledge creation process starts with interaction and communication and then developing a pool of collective knowledge. After that a third step is followed in which, a sequence of alternating experimentation and invention is done when an unfamiliar situation arises where community members share and reflect stories related to the situation in hand (Fuller, Jawecki and Muhlbacher 2007). It is discovered that the development of a practice is improved when technicians share stories and exchange practice and experience among them (Orr 1990).

Communities of practice are effective tools to solve work related problems (Lesser and Everest 2001). More precisely, it is indicated that an effective tool to deal with unstructured problems within organisations is community of practice (Lesser and Storck 2001). Communities of practice encourage a context of free-flowing and creative means of sharing experiences and knowledge between the members that eventually create new approaches to solve problems (Wenger and Snyder 2000). However, Merali and Davies (2001) recognised that knowledge created as a result of solving problems in groups is likely to remain private because of the following: (1) the time and effort to analyse and record the solutions; (2) lack of context to express these solutions; (3) not recognising individual's contributions to the organisational knowledge pool; and (4) individual fear of losing power when sharing solutions.

Members of a community of practice collaborate to solve problems by storytelling, hence tacit knowledge transfer motivated by CoPs (Gertler 2003).

Several authors agreed that in the process of knowledge creation, a pool of all the knowledge collected from different individuals is gathered to solve a problem (Bathelt, Malmberg and Maskell 2004; Foley 2000; Fong 2003; Fuller, Jawecki and Muhlbacher 2007; Kimble, Hildreth and Wright 2001; Nahapiet and Ghoshal 1998).

After collecting all the knowledge related to a problem, alternative solutions are obtained from individuals who exchange stories related to that problem (Bathelt, Malmberg and Maskell 2004; Fuller, Jawecki and Muhlbacher 2007; Li and Kettinger 2006).

The last step in a knowledge creation process is to find a solution to the problem that can be achieved after the interaction, collection, and experimenting the solutions (Fuller, Jawecki and Muhlbacher 2007; Li and Kettinger 2006; Nonaka and Toyama 2003; Nonaka, Toyama and Konno 2000).

Regarding the field study results, there is an intimation that the four steps of the knowledge creation process are presented in Bahrain service industry. However, only one of the interviewees claimed that they do the third step "alternative experimentations". It is also noticed from the interviewees' responses that they first

"communicate and interact" with other members of their networks to receive knowledge that is collected "pool of knowledge" and eventually used it to find "solution(s) to the problem".

The above discussions result in the following seven hypotheses:

Hypothesis 3a: *the knowledge received positively influences knowledge creation first step "interacts and communicate" (KRC→INCO) in the context of Bahrain's service industry.*

Hypothesis 3b: *the knowledge received positively influences knowledge creation second step "pool of knowledge" (KRC→PLK) in the context of Bahrain's service industry.*

Hypothesis 3c: *the knowledge received positively influences knowledge creation third step "alternative experimentations" (KRC→ATX) in the context of Bahrain's service industry.*

Hypothesis 3d: *the knowledge received positively influences knowledge creation fourth step "solution to problem" (KRC→SLP) in the context of Bahrain's service industry.*

Hypothesis 3e: *interacts and communicate will lead to pool of knowledge (INCO→PLK) in the context of Bahrain's service industry.*

Hypothesis 3f: *pool of knowledge will lead to alternative experimentations (PLK→ATX) in the context of Bahrain's service industry.*

Hypothesis 3g: *alternative experimentations will lead to solution to problem (ATX→SLP) in the context of Bahrain's service industry.*

Von Krogh and Grand (2000) suggested that knowledge transfer and new knowledge creation should be viewed together. Nonaka (1994) claimed that the development of new ideas is enhanced through informal community of social interaction. Du Plessis (2008) reported that innovation is produced as a result of knowledge creation and

sharing across organisational boundaries. It is expressed that improving efficiency and creating value in organisations is promoted by knowledge creation process (Nonaka and Konno 1998; Nonaka, Toyama and Konno 2000). Tsai and Li (2006) stressed that there is a positive relationship between knowledge creation process and organisational performance. It is proposed that organisational learning and innovation is encouraged by knowledge creation, codification, and sharing (Summer 1999). More specifically, Cross et al. (2006) mentioned that the establishment of innovative products or processes are promoted by communities of practice. In communities of practice learning and innovation are motivated through the exchange of ideas between the members (Brown and Duguid 1991; Wenger 1998a). In addition, "communities of practice are formed to create new mechanisms to create, capture, and share knowledge that is critical to their success in order to ensure organisational success. With these platforms in place, this network of communities of practice emerges as the source to build and deliver knowledge" (du Plessis 2008, 66). Escriba-Esteve and Urra-Urbieta (2006) stated that the transfer of knowledge creates new capabilities that positively affect rganisational performance.

As in Bahrain service industry, the field study provides some evidence that unique solutions and innovative ideas are the results obtained from the knowledge creation process.

It is therefore hypothesised that:

Hypothesis 4: knowledge creation process will positively influence the creation of new knowledge in the context of Bahrain's service industry.

A number of scholars proposed that the build and exchange of knowledge between members to solve problems enhances their capabilities (Preece 2003; Ward and Peppard 2002). It is realised that through problem identification, new knowledge is created (Nickerson and Zenger 2004).

Creative solutions to problems – that is new knowledge – are produced when employees combine their ideas in the cross functional teams and structures developed within organisations (Foley 2000).

During the process of the evolutionary information-processing theory of knowledge creation stemmed from Li and Kettinger (2006) tentative knowledge occur, in which temporary solutions are found and evaluated to meet the goal.

Nonaka (1994) stressed that innovation is explained by finding solutions to new defined problems. It is argued that a solution to a problem leads to creating new knowledge (Li and Kettinger 2006; Nonaka and Toyama 2003; Nonaka, Toyama and Konno 2000).

In the context of Bahrain's service industry, there is no clear evidence that the three first steps in the knowledge creation process assist the formation of new knowledge. However, they all agreed that the last step "solution to problem" leads to the creation of new knowledge.

As a result the following four hypotheses are assumed:

Hypothesis 4a: *interacts and communicate positively influences the creation of new knowledge (INCO→NWK) in the context of Bahrain's service industry.*

Hypothesis 4b: *pool of knowledge positively influences the creation of new knowledge (PLK→NWK) in the context of Bahrain's service industry.*

Hypothesis 4c: *alternative experimentations positively influence the creation of new knowledge (ATX→NWK) in the context of Bahrain's service industry.*

Hypothesis 4d: *solution to problem positively influences the creation of new knowledge (SLP→NWK) in the context of Bahrain's service industry.*

5.2.3. Hypothesis Related to Social Capital

Organisational environment is suitable to create knowledge as it is supported by the development of social capital (Nahapiet and Ghoshal 1998). Other researchers agreed

with this idea as they stressed that knowledge motivates social capital development (Laszlo and Laszlo 2002; Preece 2003). Adler and Kwon (2002) indicated that the motivation of information access, quality, relevance, and timelines are the first benefits of social capital. This is also supported by Preece (2003) who stated that there is a positive relationship between social capital and communication between communities' members. The existence of social capital between a multinational corporation units supported information transfer to the corporation as a whole (Nebus 1998). Alternatively, Lesser and Prusak (2000) argued that the creation and management of social capital is facilitated through knowledge sharing. It is suggested that the development of social capital is motivated by knowledge management (McElroy, Jorna and van Engelen 2006). Nahapiet and Ghoshal (1998) proposed that social capital provides the required conditions for exchange and combination that will eventually lead to knowledge development. Nahapiet and Ghoshal (1998, 250) mentioned that "social capital is created and sustained through exchange and in which, in turn, social capital facilitates exchange." Grant (1996b) stressed that knowledge development is supported by social capital that provides required conditions for knowledge exchange and combination. Gelauff (2003, 3) expressed that "members of a network with a large amount of social capital will more easily share knowledge and build up knowledge together." The flow of human capital is facilitated by social capital that is considered a suitable mechanism that offers solutions of social problems by recombining and reconfiguring human capital (Adam and Roncevic 2003). It is empirically approved that in organisations resource exchange and production innovation are motivated by social capital (Tsai and Ghoshal 1998). Du Plessis (2008) argued that the existence of problems in an organisation knowledge management program is related to low level of social capital.

Gelauff (2003) suggested that knowledge is linked to social capital through communities of practice. He stated that the flow of knowledge in communities of practice is supported by social capital. Davenport and Hall (2002) agreed with that as they believed that social capital affects the level of knowledge diffusion within communities of practice. It is noticed that the high level of social capital promotes efficient retrieval of knowledge, this is because common codes are shared between individuals that resulted from their common understanding (Cowan, David and Foray 2000; Lave and Wenger 1991; Brown and Duguid 1991). In fact, within communities

the dissemination of ideas, knowledge, and information are encouraged by social capital (Productivity Commission 2003), however, high levels of social capital in one group may hinder its benefit to reach the community as a whole. Nahapiet and Ghoshal (1998, 245) noticed that social capital is "central to the understanding of institutional dynamics, innovation, and value creation." In this regard, Woodhouse (2006) declared that the dissemination of innovation between community members is facilitated by high levels of social capital. Social capital and community of practice theories are similar in which both explain individuals' willingness and ability to share knowledge, nevertheless, community of practice theory argued that individuals' ability to share knowledge is restricted to the share of specific practice (Cohen and Prusak 2001). Thus, Cohen and Prusak (2001) believed that social capital theory is broader than CoP theory. Merali and Davies (2001, 93) added that "communities of practice and social networks both highlight the importance of the link between social capital and knowledge resources for effective knowledge management." It is recognised that social capital is produced in communities of practice through which relationships, values, and norms are developed (du Plessis 2008).

Several scholars emphasised the importance of social capital in transferring knowledge within and between organisations (Yli-Renko, Autio and Tontti 2002; Wide´n-Wulff and Ginman 2004; Nahapiet and Ghoshal 1998; Inkpen and Tsang 2005; Styhre 2008). Bonding social capital limits the share of knowledge across communities of practice, in contrast, bridging social capital supports the sharing of knowledge among communities of practice (Gelauff 2003). Motivating the exchange of know-how or tacit knowledge between CoPs via bridging social capital will enhance organisation's capabilities (Gelauff 2003). It is realized that both bonding and bridging social capital are vital for a community as bonding social capital enables individuals to 'get by' while bridging social capital allows them to 'get ahead' (Woolcock and Narayan 2000).

Rhodes et al. (2008) pointed out that there is a relationship between organisational knowledge transfer and type of network, either inside or outside the organisation boundaries. However, it is not specified in the literature – to the best of researcher knowledge – what is the role of each type of network on the type or amount of knowledge transferred and thus received from different networks members. Mu, Peng

Love (2008, 88) expressed that "the existing relationships between partners substantially influence the stock of social capital, and interaction between social members has a great impact on their later interaction, which reflects the path-dependent nature of social relationship process: what the firm did and will do is determined in part by the relationships it has built and the networks in which it is embedded." It is confirmed that co-workers' motivation to share insights and know-how with each other is related to the level of social capital in the organisation (Styhre 2008).

Cooperation required to create and disseminate knowledge is developed by social capital norms and trust (Gelauff 2003). Continuous connections and build of a common context of meanings develops trust that is articulated through social capital concept (Daniel, Schwier and McCalla 2003). It can be argued that communities of practice facilitate the connections between its members that build a shared context of meanings and understandings. The role of social capital whether moderating or directly influencing knowledge exchange is not clearly identified in the literature (Kankanhalli, Tan, and Wei 2005). Several scholars believed that social capital aspects moderate the impact of knowledge exchange (Kankanhalli, Tan, and Wei 2005; Teigland and Wasko 2003; Wasko and Faraj 2005), while others found that social capital is an outcome (Lesser and Strock 2001; Teigland and Wasko 2004). Following the first assumption, this study presumed that social capital moderates the amount of knowledge received from CoPs members.

It is noted from the field study that there is an implication that social capital (trust, norms, and identification) levels are reasonable and influence the acceptance of knowledge received from Bahrain service industry networks' members.

The preceding discussions result in the following hypothesis:
Hypothesis 5: social capital moderates the amount of knowledge received from communities of practice (CoPs) in the context of Bahrain's service industry.

It is argued that to encourage knowledge creation within organisations, a culture of high levels of care and trust is required to share tacit knowledge (Sharkie 2003). In addition, mutual trust promotes the exchange of tacit knowledge (Cooke and Morgan

2000; Morgan 2004). Gelauff (2003) claimed that trusting others for not misusing the shared knowledge is created by social capital. Kankanhalli, Tan and Wei (2005) agreed with that as they stressed that being afraid of using their knowledge inappropriately limit contributors' willingness to share knowledge within low general trust contexts. Gammelgaard and Ritter (2005, 137) stated that "the notion of trust is important because only qualified sources will be accounted for in the knowledge transfer process." Chiu, Hsu and Wang (2006) acknowledged the role of trust in the exchange of knowledge (Nelson and Cooprider 1998) and the sharing of knowledge within virtual communities (Ridings, Gefen and Arinze 2002).

It is believed that within a collective, there is a positive relationship between trust and members engagement in cooperative activities and knowledge exchange (Ford 2003; Fukuyama 1995; Gambetta 1988; Huysman and Wulf 2005; Leonard and Onyx 2003; Mu, Peng Love 2008; Nahapiet and Ghoshal 1998; Putnam 1993, 1995; Ring and Van de Ven 1992, 1994; Saxenian 1985; Tyler and Kramer 1996; Wasko and Faraj 2005). The transfer and dissemination of knowledge and innovation are based on the existence and maintenance of different networks that are based on trust between the members (Giddens 2000). Knowledge sharing is encouraged by trust that produces and sustains exchange relationships (Blau 1964). It is claimed that trust positively affects the flow of knowledge and innovation production by facilitating knowledge sharing among employees (Productivity Commission 2003).

One of the advantages of high level of trust among a community is a decrease in transactions' cost as the probability of opportunism and the need for costly monitoring processes are reduced (Putnam 1993). Another advantage of trust articulated by Choo, Linderman and Schroeder (2007, 442) that team members "feel psychologically safe to discuss problems and issues openly without feeling that they are being judge[d]." It is noticed that trusting others' ability motivates the give and receive of information in online settings (Ridings, Gefen and Arinze 2002). Furthermore, the development of new knowledge is facilitated by trust that handles complexity and diversity within a system (Luhmann 1979).

Roberts (2006) recognised that the dissemination of knowledge within and between organisations is motivated by trust. Trust is the most dominating facilitator of

knowledge exchanged between organisations (Gottschalk 2000). It is discovered that partners' willingness to share knowledge is encouraged by trust that significantly decreases transaction's cost related to knowledge sharing (Mu, Peng Love 2008). Moreover, Bouty (2000) found that scientists are more willing to exchange knowledge with other scientists across their organisation boundaries when the level of trust is high. More precisely, storytelling and narration of happenings related to work support the level of trust between community of practice members that enable them to learn from others' mistakes and found breakthroughs (Roberts 2006).

The role of trust – and social capital in general – on knowledge exchange varies among researchers. Chae et al. (2005) discovered that trust mediates the relationship between strong ties and knowledge received. They also noticed that the receipt of tacit knowledge required trust more than explicit knowledge. This is supported by Roberts (2000) who claimed that the successful transfer of tacit knowledge is encouraged by trust, familiarity, and shared understanding. Conversely, Jones, Hesterly and Borgatti (1997) expressed that positive interactions resulted from high levels of trust between members of a network. Thus trust is an outcome of network interactions. Nonaka, Toyama and Konno (2000) combined these two roles as they assumed that trust among organisational employees play two roles, first as an output of the knowledge creation process and second as a moderator of how to facilitate knowledge creation process. From the above, it can be argued that trust plays a moderating role in the process of receiving knowledge from different CoPs' members that include co-located employees, non co-located employees, customers, suppliers, and business partners.

Further, the field study outcomes suggested that trust plays an important role in the acceptance or rejection of the knowledge received from the members' networks existed in Bahrain service industry.

Productivity Commission (2003) indicated that knowledge flow and innovation are encouraged by social norms. It is articulated that the existing shared norms promote knowledge sharing between individuals (Huysman and Wulf, 2005). As stated by the Productivity Commission (2003, 15) norms "can work to reduce 'transaction costs' by generating expectations, informal rules of thumb and common understandings that

allow people to conduct their personal interactions and business dealings efficiently." Many researchers agreed in their definition of social capital that norms positively impact cooperation among individuals (Coleman 1990; OECD 2001; Putnam 1993; Woolcock 2001; Woolcock and Narayan 2000; World Bank 2000; World Health Organisation 1998). It is realised that bonding social capital is developed through shared goals, norms, and values (Pigg and Crank 2004; Preece 2003) that eventually facilitate cooperation (Gelauff 2003).

The creation of knowledge is supported by norms of cooperation that motivates individuals to exchange knowledge (Nahapiet and Ghoshal 1998). Cooperation between different networks members is a requirement to support knowledge and innovation transfer and dissemination (Giddens 2000). Gelauff (2003, 7) declared that "social capital may establish cooperation within communities of practice, because it encompasses norms that promote cooperation and create trust." It is noticed that the success of knowledge-intensive firms is affected by social norms of openness and teamwork (Starbuck 1992). Willingness to value and responding to diversity, openness to criticism, and tolerance of failure and other norms impact the creation of knowledge (Leonard-Barton 1995). It is presumed that norms moderate the amount of knowledge received from CoPs different categories.

It is noticed that there is a hint that the level of norms existed in Bahrain service industry affect the acceptance of the knowledge received from interviewees' networks' members.

It is argued that high levels of identification within networks positively affect the interaction between the network members (Jones, Hesterly and Borgatti 1997). According to Nahapiet and Ghoshal (1998, 256) identification "acts as a resource influencing both the anticipation and exchange and the motivation to combine and exchange knowledge." It is found that the existence of identification within a group positively impact collective processes and outcomes that enhance individuals willingness to exchange (Kramer, Brewer and Hanna 1996). Lewicki and Bunker (1996) agreed with that as they discovered that identification encourages the opportunity to exchange and the actual frequency of cooperation between individuals. It is stressed that having a sense of identity with the organisation and its mission

motivates knowledge sharing among employees (Nonaka 1991). On the other hand, several researchers indicated that information sharing, learning, and knowledge creation are hindered by distinct and contradictory identities (Child and Rodrigues 1996; Pettigrew 1973; Simon and Davies 1996).

Individuals' participation and assisting others in electronic networks are influenced by the degree of identification between network members (Wellman and Gulia 1997). It is proposed that having a sense of social unity and togetherness raise individuals' willingness to share knowledge (Chiu, Hsu and Wang 2006).It is discovered that high levels of identification is significantly related to the amount of knowledge exchanged between scientists across organisational boundaries (Bouty 2000). In contrast, Kankanhalli, Tan and Wei (2005, 118) argued that "when identification is strong, the effort required for knowledge sharing may not be a deterrent to knowledge contributors because the concern for organisational outcomes may dominate." As one of social capital indicators and as specified above, it can be assumed that identification moderates the amount of knowledge received from different CoPs members.

Although the level of identification within Bahrain service industry is not high, there is a clue that it impacts the reception of knowledge.

From the above discussions, the following three hypotheses are suggested:

Hypothesis 5a: *level of trust moderates the amount of knowledge received from CoPs in the context of Bahrain's service industry.*

Hypothesis 5b: *level of norms moderates the amount of knowledge received from CoPs in the context of Bahrain's service industry.*

Hypothesis 5c: *level of identification moderates the amount of knowledge received from CoPs in the context of Bahrain's service industry.*

5.2.4. Hypothesis Related to Corporate Sustainability

It is articulated that there is a significant relationship between knowledge transfer and organisation performance (Gadman and Cooper 2005). Organisations require knowledge to attain their long run strategy and predict their future needs (Sharkie 2003). Kodama (2005) agreed with that as he believed that organisations should innovate to improve their processes and performance. Sharkie (2003) proposed that knowledge creation and radical innovations are vital to support knowledge benefits for the organisation.Previous studies highlighted the role of knowledge transfer on organisation performance (Argote 1999; Levin 2000; Teece 1977; Winter and Szulanski 2001). Salomon and Martin (2008) acknowledged that organisation performance is promoted by knowledge transfer that impacts the growth of the organisation. Laszlo and Laszlo (2002) observed that organisation's performance is significantly related to knowledge. Sharkie (2003) claimed that knowledge generation, capture and dissemination that produced capabilities is essential for organisation's success. Choo, Linderman and Schroeder (2007) argued that organisation's performance is influenced by knowledge creation. It is noticed that knowledge management definition underscored the importance of knowledge processes on organisation performance as it is identified as "any process of creating, acquiring, capturing, sharing and using knowledge, wherever it resides, to enhance learning and performance in organisations" (Scarbrough,Swan and Preston1999). It is realised that employees' knowledge, knowledge resides in business processes and customer relationships are the promoters for improving organisation's capacity to innovate (Stewart 1997).

Sharkie (2003) explained that tacit knowledge is a vital source of competitive advantage as it is hard to imitate by competitors, thus, sharing this knowledge among organisation managers and employees is fundamental for organisation sustainable competitive advantage. More specifically it is argued that tacit knowledge residing in communities of practice is difficult to imitate (Grant and Gregory 1997). As a result, it is assumed that tacit knowledge shared and received by communities of practice members will facilitate the creation of new knowledge that is essential for a corporate's sustainable competitive advantage.

It is highlighted that there is a positive relationship between CoPs and organisation benefit (Chu and Khosla 2008). It is found that there is a direct relationship between communities of practice and organisational outcomes (Chua 2006; Kotter 1982, 1985; Kanter 1983, 1989). As discussed by Chua (2006) organisations can gain sustainable competitiveness by improving their performance by implementing CoPs as a strategy. More importantly, organisation's visions for future development are impacted by communities of practice (Nonaka 1994). Business needs and objectives are achieved through communities of practice that are supported by knowledge that facilitate their development and growth (Chiu, Hsu and Wang 2006). Scarso and Bolisani (2008) reported that organisations are able to utilise individuals' knowledge scattered in the organisation through communities of practice. According to Wenger (1998a) the importance of communities of practice in developing knowledge is essential for employees to perform their job. According to Brown and Duguid (2001, 207) "the knowledge arising from all of its different communities – as they interact with their part of the firm's environment, develops local solutions to their problems, and draws in knowledge from their network connections – will become increasingly important and firms will have to engage in a dynamic balancing act."

Chu and Khosla (2008, 4) suggested that there are four different business strategies for CoPs that is presented in Figure 5-1: (1) encourage innovation learning by innovation, creation, and generation of common interests; (2) support responsiveness by directly obtaining problem-oriented solution; (3) enhance core competency as skills are promoted, experts easily located, and effectively disseminated agreements and customs; and (4) improve working efficiency through reusing and sharing tacit and explicit knowledge and increase organisation productivity. Schenkel, Teigland and Borgatti (2001, 2) argued that "communities of practice provide firms with a vital source of incremental innovation as community members continuously create knowledge to improve the practice." It is agreed that innovation is achieved through communities of practice (Arora 2002; Chu and Khosla 2008). However, it is argued that individuals' benefits from participating in informal communities do not necessarily influence the achievement of organisational goals (Chen and Edgington 2005). Organisation competitiveness is inspired by the sharing of knowledge and information within networks of practice (Tsai and Ghoshal 1998; von Hippel 1988).

It can be concluded that there is a hint of a positive relationship between new knowledge and organisation competitive advantage that leads to sustainability.

The field study revealed that there is an intimation of a positive relationship between knowledge created in Bahrain service industry networks and organisations' social, environmental, and economic performance.
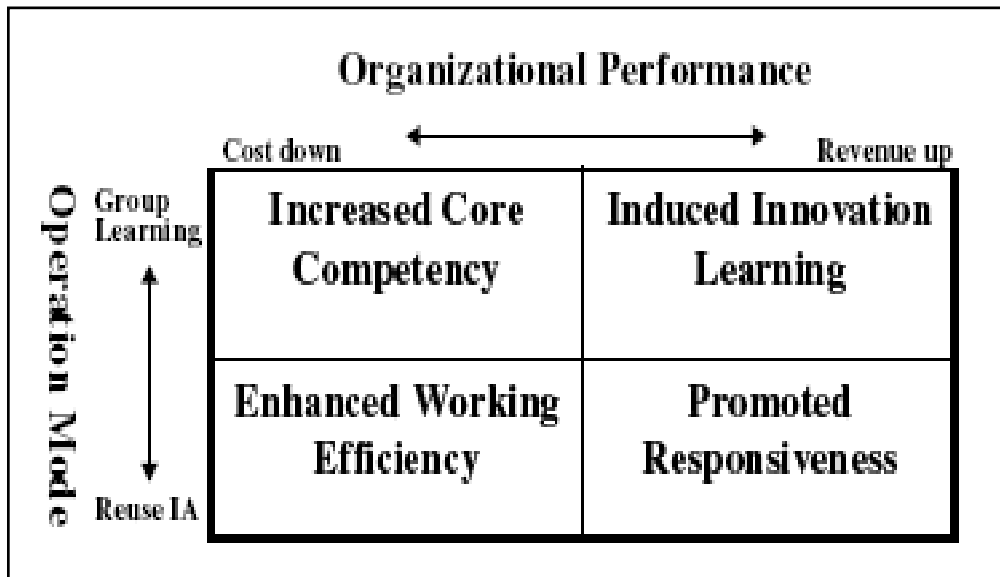
Figure 5-1: Four Organisation Performance of CoPs (source: Chu and Khosla 2008)

As per the above discussion, it is hypothesised that:

Hypothesis 6: the new knowledge created positively influences corporate sustainability in the context of Bahrain's service industry.

It is discovered that organisations improve their ability to respond to the needs of society through facilitating the access to employees' knowledge (Robinson et al. 2008).

Most of the interviewees of the field study agreed that the knowledge created in their networks plays an important role to generate new ideas for social responsibility projects such as contribution to the growth of the country.

Elkington (1994) argued that defining and managing the process of environmental communications is vital for organisations to maintain their position in the marketplace

and sustain their competitive advantage by satisfying customers and consumers needs. As mentioned previously, knowledge plays an important role in improving organisation's performance (e.g. Argote 1999; Gadman and Cooper 2005; Kodama 2005; Levin 2000; Teece 1977; Winter and Szulanski 2001). As one of corporate sustainability aspects, it is assumed that environmental performance is positively influenced by new knowledge created as a result of CoPs members' interaction.

It is observed that there is a clue that the knowledge created in Bahrain service industry networks provides creative solutions to protect or clean the environment.

According to Hockerts (2001) one of the opportunities of competition is cost advantages. Rhodes et al. (2008) recognised that the effect of knowledge transfer improves organisation's financial performance that includes: improve profit, reduce cost, and increase market share. Salomon and Martin (2008) provided several studies that highlighted the influence of knowledge transfer and organisation economic performance, for example, decrease production costs (Darr, Argote and Epple 1995; Darr and Kurtzberg 2000), and improves profitability (Ingram and Simons 2002). Additionally, it is discovered that reduction in redundancies and costs are attained by new knowledge and skills that influence the creation of new products and services or enhancing existing ones (Gold, Malhotra and Segars 2001; Grant 1996a; Lee and Choi 2003). Robinson et al. (2008) added that accessing knowledge will enhance stakeholder value by attracting investors that will increase organisation's profitability. Consequently, there is a hint that organisation economic performance is motivated by new knowledge created within communities of practice.

As all the field study participants agreed that the solutions created in their networks positively influence organisation's profit and productivity, there is an indication that knowledge created in these networks affect organisation's economic performance.

Organisation's non-financial-process/innovation performance that include improve organisational processes and customer satisfaction is influenced by knowledge transfer (Rhodes et al. 2008). It is recognised that organisation's capabilities are also positively affected by communities of practice (Chu and Khosla 2008). Teigland and Wasko (2003) realised that the creation of new capabilities enable the organisation to

sustain its competitive advantage. This is explained by Wenger and Snyder (2000) as they realised that, in the long run, participating in communities of practice motivates the building of these communities and their practices that ultimately enhance participants' capabilities to sustain organisation success.

An advantage of communities of practice is providing rapied answers to customers' inquiries, this is because individuals with required expertise to solve problems are indentified easily within these communities (Dewhurst and Navarro 2004; Lesser and Storck 2001). Moreover, employees' ability to access knowledge across the organisation beneficially influences new employees training and the creation of new knowledge that support organisation's capability (O'leary 2001). Robinson et al. (2008, 799) argued that organisations can benefit from accessing knowledge that will "drive innovation, [and] help to attract new or retain valuable customers (customer capital)". Accordingly, Wenger and Snyder (2000, 140) expressed that communities of practice "drive strategy, generate new lines of business, solve problems, promote the spread of best practices, develop people's professional skills, and help companies recruit and retain talent."

Salomon and Martin (2008) found that a range of studies explored the impact of knowledge implementation and transfer on organisation's growth and performance. Examples of these impacts that are related to an organisation's non economic performance are: improve productivity and quality (Bohn and Terwiesch 1999; Hatch and Dyer 2004; Szulanski 1996; Terwiesch and Bohn 2001), and increase innovative output (Hatch and Mowery 1998; Salomon 2006; Salomon and Shaver 2005). As articulated by Robinson et al. (2008, 794) knowledge management can "promotes continuous improvement, facilitates innovation in business processes and products, embraces people as architects at the centre of the knowledge creation process, and enhances stakeholder relationship management." Therefore, it can be understood that the new knowledge created from knowledge received from CoPs and gone through the knowledge creation process positively affects organisation's non economic performance.

Participants of the field study agreed that organisation's performance and employee's loyalty are influenced by the solutions created in their networks. Thus, there is a hint

that knowledge created in these networks has an impact on organisation's non economic performance.

As a result, the following hypotheses are proposed:

Hypothesis 6a: *the new knowledge positively influences organisation social performance (NWK→SCP) in the context of Bahrain's service industry.*

Hypothesis 6b: *the new knowledge positively influences organisation environmental performance (NWK→ENP) in the context of Bahrain's service industry.*

Hypothesis 6c: *the new knowledge positively influences organisation economic performance (NWK→ECP) in the context of Bahrain's service industry.*

Hypothesis 6d: *the new knowledge positively influences organisation non economic performance (NWK→NECP) in the context of Bahrain's service industry.*

5.3. Questionnaire Development

5.3.1. CoPs, Knowledge Creation and Corporate Sustainability Questionnaire

Based on the existing literature review and from the outcomes of the field study interviews – described in Chapter Four, a questionnaire is developed to measure the study research model presented in Chapter Three. A six-point Likert scale was used when it is appropriate, as it is argued that participants choosing a neutral default option will be prevented (Bowling, 2002; Polgar and Thomas 2000). Hence, the prevention of undecided answers will eliminate a phenomenon called "acquiescent response mode" in which participants' choice of middle responses all the time will be avoided (Polgar and Thomas 2000, 132). In the six point Likert scale, 1 indicated *Strongly Agree* and 6 indicated *Strongly Disagree* was used to measure respondents'

answers. A fairly simple English language was used and in some cases another simple word is used if difficult terms and vocabularies occur. The respondents were asked to fill in all the questions in the survey for the purpose of allowing the use of Partial Least Squares (PLS) to analyse the collected data.

According to Bordens and Abbott (2008), grouping related items in a questionnaire helps respondents to concentrate on one item at a time that will make it easier and convenient for them to complete the survey. Thus, the study questionnaire is divided into five sections (the Appendix represents the full questionnaire distributed among study participants). The first section of the questionnaire covered participants demographic information that included questions about their gender, age, education, position (this question is employed to ensure that the participants are either in middle or top level management positions that is the targeted population of the study), years of experience within their current organisation, and number of years they have been working in their current position. In addition, three general information questions about their organisation were provided in this section (organisation industry, sector, and number of employees working in the organisation) the purpose of these questions is to ensure that the correct targeted organisations are involved in the study. Bahrain Chamber of Commerce where connected to certify large organisation in the Kingdom of Bahrain. The Chamber of Commerce advised the researcher that the number of employees working in the organisation is used to know the size of the organisation and for large organisations the number of employees ranges from + 800 to + 5000 employees. As mentioned earlier the study focused on large public and private organisations within the Kingdom of Bahrain service industry.

The second section of the questionnaire focused on first key concept of the study that is community of practice. The section divided into four sub-sections A, B, C, and D. In sub-section (A) respondents were asked about the individuals they contacted for help and support when they faced a work related problem. From the literature and the field study interviews a list of the expected individuals (manager, subordinates, colleagues, employees working in other departments, employees working in other branches, customers, investors, suppliers, vendors, business partners, governmental ministries, consultants, and others) to be connected were provide and the participants were asked to choose as many as appropriate. As understood from the literature,

communication in communities of practice is a two way contact. As a result, in sub-section (B) participants were asked about the individuals who contacted them for help when they faced a problem at work (the same choices provided in sub-section A). In a scale of 1 to 5 where 1 is *Very Important* and 5 is *Not at all Important* participants in sub-section (C) were asked to identify the level of importance, each of the individuals contacted for help in accomplishing their work. The last sub-section (D) asked about participants' opinion regarding the characteristics of the relationship they have with the individuals they contacted in sub-sections (A) and (B). Six statements highlighted various CoP characteristics found in the literature is provided in this sub-section.

Section three is divided into three parts (A, B, and C). In part A the type and frequency of knowledge received from individuals selected in the second section were identified. Four different statements were used to specify the different type of knowledge received (tacit or explicit and obtained formally or informally) and a five scale (1 = Always, 2 = Often, 3 = Sometimes, 4 = Rarely, and 5 = Never) were employed to explore the frequency of each type of knowledge received. The knowledge creation process – discussed in Chapter Two – is clarified in part (B) where participants asked to provide their opinion about the different steps followed when they first noticed a problem until they find a solution to it. In part (C) the participants were asked about the solution or the outcome of the knowledge creation process.

In section four, the level of social capital represented by three indicators that are trust, norms, and identification were measured within Bahrain service industry. Moreover, the moderating role of social capital on participants' acceptance and used of knowledge received from others is also assessed.

In the last section, the impact of the outcome of the knowledge creation process (i.e. new knowledge) on organisation social, environmental, economic, and non economic performance is considered. In which, four statements related to social performance, two is related to environmental performance, three is related to economic performance, and four is related to non economic performance.

5.3.2. Measurement Instrument Development

Based on the study model illustrated in Figure 4-12, a measurement instrument is developed to measure the four key variables (Community of practice, knowledge creation, social capital, and corporate sustainability). A multiple-item measures are applied for each of the main four variables. The measures were adapted from the past studies found in the literature (Chapter Two) and the filed study interviews (Chapter Four).

Community of Practice

Community of practice is one of the major variables of this study and the aim of the questionnaire is to identify: (1) the existence of this network within the Kingdom of Bahrain service industry (part A and B); (2) figure which of CoPs different categories are most important for employees within Bahrain service industry to assist them to perform their work (part C); and (3) highlighted if the CoP characteristics discovered in the literature review is applicable for the networks existed in Bahrain service industry (part D). CoPs categories that are classified in Chapter Two are: (1) internal CoPs that include co-located and non co-located employees; and (2) external CoPs that include customers, suppliers, and business partners. The different categories of CoPs were derived from the literature (Bouty 2000; Teigland 2002) and the field study interviews result in thirteen measures in total which are used to measure the existence of CoPs in Bahrain service industry as shown in Table 5-1.

Table 5-1: Community of Practice Dimensions

Part 1	Part 2	Dimensions	Source
Variables			
Co-located employees			
COP1MNG	COP2MNG	Your manager	Field study
COP1SUB	COP2SUB	Your subordinates	Field study
COP1COLG	COP2COLG	Your colleagues	Field study
Non co-located employees			
COP1EMDPT	COP2EMDPT	Employees working in other departments	Field study
COP1EMBRN	COP2EMBRN	Employees working in other organisation branches	Bouty 2000; Teigland 2002
Customers			

COP1CUS	COP2CUS	Your customers	Bouty 2000; Teigland 2002
COP1INV	COP2INV	Your investors	Field study
Suppliers			
COP1SUP	COP2SUP	Your suppliers	Bouty 2000; Teigland 2002
COP1VEN	COP2VEN	Your vendors	Field study
Partners			
COP1PART	COP2PART	Your business partners	Bouty 2000; Teigland 2002
COP1GMIN	COP2GMIN	Governmental ministries	Field study
COP1CNST	COP2CNST	Consultants	Field study
COP1OTH	COP2OTH	Others	

The second objective is to highlight the importance of each of the different CoPs categories to participants' ability to perform their work. The question was adapted from Cross et al. (2006) is employed to measure the importance of CoPs (see Table 5-2).

Table 5-2: Community of Practice Importance Measures

Variables	Dimensions	Measures	Source
Co-located employees			
IMPMNG	Your manager	The importance of contacting manager	Field study
IMPSUB	Your subordinates	The importance of contacting subordinates	Field study
IMPCOLG	Your colleagues	The importance of contacting colleagues	Field study
Non co-located employees			
IMPEMDPT	Employees working in other departments	The importance of contacting employees in other departments	Field study
IMPEMBRN	Employees working in other organisation branches	The importance of contacting employees in other branches	Bouty 2000; Teigland 2002
Customers			
IMPCUS	Your customers	The importance of contacting customers	Bouty 2000; Teigland 2002
IMPINV	Your investors	The importance of contacting investors	Field study
Suppliers			
IMPSUP	Your suppliers	The importance of contacting suppliers	Bouty 2000; Teigland 2002
IMPVEN	Your vendors	The importance of contacting vendors	Field study
Partners			

IMPPART	Your business partners	The importance of contacting partners	Bouty 2000; Teigland 2002
IMPGMIN	Governmental ministries	The importance of contacting governmental ministries	Field study
IMPCNST	Consultants	The importance of contacting consultants	Field study

To clarify that the type of network existed between participants and the individuals they contacted for help is a CoP, six CoP characteristics found in the literature are employed. The six measures used to distinguish these features are presented in Table 5-3:

Table 5-3: Community of Practice Characteristics Measures

Variables	Measures	Dimensions	Source
COPFTUR1	Know what others know	Awareness of the knowledge and skills of contacted individuals	Cross et al. 2006
COPFTUR2	Open communication	Easiness of communication with contacted individuals	Cadiz, Griffith and Sawyer 2006
COPFTUR3	Terminology	Share unique vocabulary and use common terms and jargons	Cadiz, Griffith and Sawyer 2006
COPFTUR4	Learning	Share the intention of learning from each other	Cadiz, Griffith and Sawyer 2006
COPFTUR5	Engaging in doing things together	Engagement in social and sports activities and get togethers	Field study
COPFTUR6	Common purpose/Members' need	Share the vision of helping each other solve professional problems	Chiu, Hsu and Wang 2006

<u>Knowledge creation</u>

Knowledge creation is divided into three parts: (1) knowledge received from different CoPs categories; (2) the knowledge creation process that consists of four steps; and (3) the outcome of the knowledge creation process that is new knowledge. Four measures derived from the literature (Teigland and Wasko 2003) are used to figure

out the type of knowledge received from the individuals participants contacted for help and the frequency of receiving each type of knowledge (see Table 5-4).

Table 5-4: Types of Knowledge Received Measures

Variables	Measures	Dimensions	Source
KR1	Formal/explicit knowledge	Receive formal, written communications in the form of reports or documents	Teigland and Wasko 2003
KR2	Informal/explicit knowledge	Receive informal, written communications in the form of reports or documents	Teigland and Wasko 2003
KR3	Formal/tacit knowledge	Receive formal, verbal communications in the form of information or skills	Teigland and Wasko 2003
KR4	Informal/tacit knowledge	Receive informal, verbal communication in the form of information or skills	Teigland and Wasko 2003

Regarding the knowledge creation process, nine measures found in the literature (Fuller, Jawecki and Muhlbacher 2007) and field study interviews scripts were used to measure the four steps participants followed when they faced a work related problems until they discovered a solution to it (Table 5-5).

Table 5-5: Knowledge Creation Process Measures

Variables	Measures	Dimensions	Source
KP1	Interact and communicate	Talk about work and bring up problems related to it	Fuller, Jawecki and Muhlbacher 2007
KP2	Interact and communicate	Offer solutions for the problems at work	Fuller, Jawecki and Muhlbacher 2007
KP3	Interact and communicate	Learn from mistakes and discuss changes at work	Fuller, Jawecki and Muhlbacher 2007
KP4	Pool of knowledge	Develop a pool of collective knowledge	Fuller, Jawecki and Muhlbacher 2007
KP5	Pool of knowledge	Gather all the information about the problem	Field study
KP6	Alternative experimentation	Conduct a series of alternating experimentation and invention	Fuller, Jawecki and Muhlbacher 2007
KP7	Alternative experimentation	Share and reflect stories of similar situations at work	Fuller, Jawecki and Muhlbacher 2007
KP8	Solution to problem	Work together to come up with a solution for the problem	Fuller, Jawecki and Muhlbacher 2007
KP9	Solution to problem	Set together and deal with the difficulties faced at work to find a solution to it	Field study

The outcome of the knowledge creation process is measured by five measures found in the literature (Choo et al. 2007; Teigland and Wasko 2004) and the interviews that are indicated in Table 5-6.

Table 5-6: New Knowledge Measures

Variables	Measures	Dimensions	Source
NK1	New insights	Acquired knowledge that lead to develop new insights	Teigland and Wasko 2004
NK2	New tasks	Acquired knowledge that lead to perform new tasks	Choo et al. 2007; Teigland and Wasko 2004
NK3	New knowledge	Contributed new knowledge	Teigland and Wasko 2004
NK4	Creative solutions	Acquired knowledge that lead to develop creative solutions	Choo et al. 2007; Teigland and Wasko 2004
NK5	Routine solutions	Come up with routine solutions	Field study

Social capital

The level of social capital in Bahrain service industry is measured by three key indicators: trust, norms, and identification. For each of these indicators a number of measures derived from the literature (Chiu, Hsu and Wang 2006; Kankanhalli, Tan and Wei 2005) and the field study are used to measure the level of social capital and the role it plays in the acceptance of knowledge received from different CoPs categories as shown in Table 5-7.

Table 5-7: Social Capital Measures

Variables	Measures	Dimensions	Source
SCT1	Trust	Use other's knowledge appropriately	Kankanhalli et al. 2005 (developed based on Mishra 1996)
SCT2	Trust	Share the best knowledge	Kankanhalli et al. 2005 (developed based on Mishra 1996)
SCT3	Trust	Not take advantage of others even when the opportunity arises	Chiu et al. 2006 (adapted from McKnight et al. 2002; Ridings et al. 2002; Tsai & Ghoshal 1998)
SCT4	Trust	Keep the promises they make to one another	Chiu et al. 2006 (adapted from McKnight et al. 2002; Ridings et al. 2002; Tsai &

			Ghoshal 1998)
SCT5	Trust	Capability of individuals	Field study
SCT6	Trust moderating role	Level of truthfulness is vital to accept the knowledge received	Field study
SCN1	Norms	Norm of cooperation and collaboration	Kankanhalli et al. 2005 (developed based on Goodman & Darr 1998)
SCN2	Norms	Norm of teamwork	Kankanhalli et al. 2005 (developed based on Starbuck 1992)
SCN3	Norms	Norm of openness to conflicting views	Kankanhalli et al. 2005 (developed based on Leonard-Barton 1995)
SCN4	Norms	Norm of acceptance of mistakes	Kankanhalli et al. 2005 (developed based on Leonard-Barton 1995)
SCI1	Identification	Share same values	Kankanhalli et al. 2005 (adapted from Cheney 1983)
SCI2	Identification	Work toward the same goal	Kankanhalli et al. 2005 (adapted from Cheney 1983)
SCI3	Identification	There is a sense of belonging	Kankanhalli et al. 2005 (adapted from Cheney 1983)

<u>Corporate sustainability</u>

As mentioned earlier, corporate sustainability is divided into four measures: social performance, environmental performance, economic performance, and non economic performance. The measures obtained from the literature (Chiu, Hsu and Wang 2006; Choi and Lee 2002; Choo, Linderman and Schroeder 2007; GRI 2002) and interview scripts are used to measure the effect of new knowledge created on corporate sustainability (see Table 5-8).

Table 5-8: Corporate Sustainability Measures

Variables	Measures	Dimensions	Source
CSSOP1	Social performance	Enhance employees loyalty for the organisation and decrease the level of employee turnover	Global Reporting Initiative (GRI 2002)
CSSOP2	Social performance	Enhance employees training and education programs provided by the organisation	Global Reporting Initiative (GRI 2002)
CSSOP3	Social performance	New insights for social responsibility projects	Global Reporting Initiative (GRI 2002) + Field study
CSSOP4	Social performance	Develop actions in response to incidents of corruption	Global Reporting Initiative (GRI 2002)
CSENP1	Environmental performance	Reduce paper consumption, improve energy efficiency, and reduce machine numbers	Global Reporting Initiative (GRI 2002)
CSENP2	Environmental performance	Protect and clean the environment	Global Reporting Initiative (GRI 2002)
CSECP1	Economic performance	Organisation more profitable compared with key competitors	Choi & Lee 2002 (adapted from Deshpande et al. 1993 and Drew 1997)
CSECP2	Economic performance	Encourage the procedures for local hiring	Global Reporting Initiative (GRI 2002)
CSECP3	Economic performance	Increase revenues and decrease costs	Global Reporting Initiative (GRI 2002)
CSNECP1	Non economic performance	Met or exceeded customers' expectations	Choo et al. 2007
CSNECP2	Non economic performance	Improving the organisation's processes	Choo et al. 2007
CSNECP3	Non economic performance	Organisation more innovative compared with key competitors	Choi & Lee 2002 (adapted from Deshpande et al. 1993 and Drew 1997)
CSNECP4	Non economic performance	organisation growth and continue operation in the future	Chiu et al. 2006 (adapted from Alavi & Leidner 2001; Bock & Kim 2002; Kolekofski & Heminger 2003; Lesser 2000)

5.4. Summary

This chapter covered the six main hypotheses and sub-hypotheses (total of twenty nine hypotheses) of the study that describe the relationships between the four key variables of the study: community of practice, knowledge creation, social capital, and corporate sustainability. The measures used to identify the research model relationships are also highlighted in this chapter. All eighty eight variables are discussed and measured.

CHAPTER SIX

Pilot Study and Analysis of the Main Survey

6.1. Overview

In this chapter two stages of the study research process are covered. The quantitative pilot study and its results are highlighted in sections 6.2 and 6.3. In section 6.4 the administration of the study's main quantitative survey is discussed. Section 6.5 presents the analysis of the main survey that includes the demographic information section of the questionnaire and two parts (A and B) of the community of practice section. Finally a summary of the chapter is provided.

6.2 Empirical Pilot Study

A pilot study was conducted to test the clarity of the questions (Polgar and Thomas 2000), participants' level of understanding of the survey questions, and the required time to complete the survey. In addition, the pilot study was employed to pre-test the adequacy of the study questionnaire by assessing the sufficiency and feasibility of the questions and examine the efficiency of the method used to distribute the survey (Teijlingen and Hundley 2001) and assist the researcher to clarify survey instructions (Bordens and Abbott 2008). Twenty seven completed questionnaires were collected for this pilot study. The participants were middle to top managers in large public and private organisations within the Kingdom of Bahrain service industry. Simple frequency analysis of SPSS was used to analyse the data collected from the survey. The results of this pilot study are used to refine the final study questionnaire and to test the competence of analysing survey variables.

This phase of the study was carried out through the following steps:

A) Developing the Questionnaire: The development of the questionnaire is discussed in Chapter Five of this thesis and it is used in the pilot study.

B) Sample Selection and Data Collection: The targeted participants of the pilot study were in top and middle level management positions within the Kingdom of Bahrain service industry. The pilot study was distributed among sixty participants and twenty seven questionnaires (45% response rate) were returned to the researcher. The questionnaire was distributed among participants by person to maximize the response rate. Accordingly, they were given one week to fill in the questionnaire. The researcher followed up participants through telephone calls to collect completed surveys.

C) Data Analysis: The sample size was small; therefore, no sophisticated statistical analyses were performed. Simple SPSS frequency analyses were employed to find the important variables related to CoPs, knowledge creation, social capital and corporate sustainability. The idea was to see if the sample results are reasonable and make sense.

6.3. Results of Empirical Pilot Study

6.3.1. The Questionnaire

The purpose of the pilot study is to test the research model after it was refined through the field study that was carried out in the earlier stage of this study. The modified research model contains four major variables, they are: communities of practice, knowledge creation, social capital and corporate sustainability. The research model is designed to answer the two major research questions: verify the role of CoPs in creating knowledge that is essential for corporate sustainability and the influence of social capital on CoPs. The survey was first tested by one potential participant to obtain his feedback and opinion in which positive feedback was received.

6.3.2. Demographic Information

The first section in the study survey asked questions related to the demographic information of participants. The purpose of the general information questions is to validate the data collected (Bordens and Abbott 2008). Therefore, the correct targeted group (middle to top level management individuals working in the service industry) have been selected to participate in the study. In particular, the current position question was employed to justify participants working in the middle to top level management. Additionally, industry of the organisation question used to ensure that participants are working in Bahrain service industry. Other questions such as gender, age, and level of education were collected for demographic information (as illustrated in Table 6-1).

Table 6-1: Demographic Information of the Pilot Study

Gender	All the participants were male (92%) expect two female respondents.
Age group	The percentages of respondents age groups are as follow: ■ 29% of them are between 20 to 30 years old ■ 18% of them are between 31 to 40 years old ■ 33% of them are between 41 to 50 years old ■ 11% of them are between 51 to 60 years old ■ And 7% of them are over 60 years old
Level of education	More than half of the respondents have Bachelor's degree, 22% of them have Master's degree, and 15% have Doctorate degree.
Current position	25% of the participants are currently working as Heads of departments and 18% of them as Managers in their organisations. Alternatively, 44% of them stated other positions such as officer and supervisor.
Number of years working for the organisation	22% of the participants are working for less than two years in their organisations, 29% working between two to five years, and 33% working for more than fifteen years.
Number of years working in the current position	22% of the participants are working for less than one year in their current positions, 33% working between one to three years, and 26% working for more than six years.
Industry of the organisation	Almost half (40%) of the participants are in the Government, Administration and Defence industry, 18% in Construction industry, and 15% in others.
Organisation sector	Most of the respondents (77%) are working in the public (governmental agencies) sector.

Number of employees working in the organisation	More than half of the respondents (63%) stated that there are between 1000 to 2000 employees working in their organisation and 26% of them declared that there are more than 5000 employees.

6.3.3. Variables of the survey

The survey was divided into four main sections according to the research model. Explanation of the findings in these sections will be discussed in details in this part.

6.3.3.1. Communities of Practice (CoPs)

The purpose of this section is to discover the existence of the different types of CoPs in the Kingdom of Bahrain service industry. Moreover, the importance of each CoPs types and CoPs characteristics were investigated.

CoPs existence and categories (parts A and B):

As it is previously mentioned in this study, CoPs members conducted a two-way communication to get knowledge from each other. As a result, parts (A) and (B) asked participants about the individuals they contacted when they faced a problem at work and who contacted them for the same purpose. The results are as shown in Table 6-2:

Table 6-2: Pilot Study Results for the Existence of CoPs Categories

Variables	% of Respondents Contacted with	% of Respondents Contacted by
Internal CoPs		
Co-located employees:		
Managers	70	70
Subordinates	44	55
Colleagues	74	81
Non co-located employees:		
Employees working in other departments	33	59
Employees working in other organisation branches	29	26
Total % for Internal CoPs	**50**	**58**
External CoPs		
Customers	18	40
Investors	3	7
Suppliers	22	7

Vendors	7	7
Partners	7	11
Governmental ministries	40	33
Consultants	44	37
Total % for External CoPs	**20**	**20**
Others: *University instructors, and family members **Students and the general public	11*	3**

From the results shown in the above table, it is observed that co-located employees are the most noticeable type of CoPs in the Kingdom of Bahrain service industry. Moreover, almost for all CoPs categories the percentage of people contacted the participants (contacted by) is higher than the percentage of participants contacted others for support (contacted with). In contrast, it is noticed that the percentage for the existence of external CoPs is relatively low (20%) in both ways of communication (contacted with and contacted by). A number of implications or assumptions are derived from this result:

(a) the percentage of co-located employees is high because it is easier to contact them and they are more familiar with the work and its related problems;

(b) the percentage of individuals "contacted by" is higher than "contacted with" due to the position of the survey participants in the middle or top level management. Therefore, participants' years of experience and level of education allow them to be a good source for problem solving; and

(c) the reason behind the low percentage of external CoPs is the easiness of contact with internal CoPs and the confidentiality of the transferred knowledge.

Importance of different CoPs categories (part C):

This part investigated the importance of the different types of existed CoPs in the Kingdom of Bahrain service industry. The results are illustrated in Table 6-3:

Table 6-3: Pilot Study Results for the Importance of Different CoPs Categories

Variables	**Important/ Not Important**	**% of Respondents Importance**
Internal CoPs		
Co-located employees:		
Managers	Important	76
Subordinates	Important	68
Colleagues	Important	77

Non co-located employees:		
Employees working in other departments	Important	50
Employees working in other organisation branches	Not important	74
Total % for Internal CoPs	**IMPORTANT**	**59**
External CoPs		
Customers	Not important	63
Investors	Not important	68
Suppliers	Not important	61
Vendors	Not important	66
Partners	Not important	66
Governmental ministries	Important	64
Consultants	Important	63
Total % for External CoPs	**NOT IMPORTANT**	**56**

It is interpreted from the above table that internal CoPs are the most important category of community in Bahrain service industry, as they have the highest percentage of respondents. On the other hand, more than half of the participants pointed out that external CoPs did not give them the required support they need to accomplish their job.

CoPs characteristics (part D):

The last part examined the availability of CoPs characteristics founded in the literature. Six main characteristics that were gathered from the literature (Cross et al. (2006; Cadiz, Griffith and Sawyer2006; Nahapiet and Ghoshal 1998; Tsai and Ghoshal 1998) and from the field study interviews were explored in this survey to check whether the connections and networks highlighted in the first three parts are considered CoPs or not.

Table 6-4: Pilot Study Results for CoPs Characteristics

Variables	Disagree/ Agree	% of Respondents
Knowing what others know, what they can do, and how they can contribute to an enterprise.	Agreed	92
Frequency of meeting and way of communication (open communication).	Agreed	92
Terminology.	Agreed	77
Learning.	Agreed	77
Engaging in doing things together.	Disagreed	59
Common purpose and Members' needs.	Agreed	70

From the results demonstrated in Table 6-4, it is observed that more than half of the participants disagreed that they were engaged in doing things together outside their organisation such as social and sports activities. While knowing what others know and open communications have the highest percentage (92%) of agreement among respondents.

6.3.3.2. Knowledge Creation

This section is divided into three parts: part (A) examined the type of knowledge received from CoPs members, part (B) explored the knowledge creation process, and part (C) investigated the outcome (new knowledge) of the knowledge creation process.

Knowledge received (part A):

This part examined the type of knowledge received from contacting with different CoPs members. Following Polanyi's (1966) classification of knowledge as tacit and explicit, the study asked about the type of knowledge received and how (formally or informally). The results are pointed out in Table 6-5:

Table 6-5: Pilot Study Results for the Type of Knowledge Received from CoPs Members

Variables	Always/ Rarely	% of Respondents
Formal written communications.	Rarely	59
Informal written communications.	Always	59
Formal verbal communications.	Always	78
Informal verbal communications.	Always	68

It is noticed that 59% of the respondents received written communications from CoPs members either formally or informally, while 73% of them received verbal communications.

Knowledge creation process (part B):

According to Fuller, Jawecki and Muhlbacher (2007), the knowledge creation process consists of four steps: interact and communicate, develop a pool of collective

knowledge, alternating experimentation and improvisation, and find solution to the problem. The results are explained in Table 6-6:

Table 6-6: Pilot Study Results for Knowledge Creation Process

Variables	Disagree/ Agree	% of Respondents
Interact and communicate:		
Talk about work and bring up problems related to it	Agreed	74
Offer solutions for the problems we face	Agreed	85
Laugh at mistakes and discuss changes at work	Agreed	55
Total % for interact and communicate	**AGREED**	**71**
Pool of knowledge:		
Develop a pool of collective knowledge	Agreed	74
Gather all the information about the problem	Agreed	66
Total % for pool of knowledge	**AGREED**	**70**
Alternative experimentations:		
Conduct series of alternating experimentation and invention	Agreed	59
Share and reflect stories of similar situations at work	Agreed	81
Total % for alternative experimentations	**AGREED**	**70**
Solution to problem:		
Work together to come up with solution	Agreed	92
Get together and throw difficulties at work and solutions to it	Agreed	81
Total % for solutions to problem	**AGREED**	**86**

From the above results, it is clear that a high percentage (74%) of participants agreed that they follow all the steps involved in the knowledge creation process. Hence, there is a hint that the knowledge creation process steps are followed when individuals face work related problem.

New knowledge (part C):

This part tested the outcome of the knowledge creation process. Five items were used for this purpose that was driven from the literature (Teigland and Wasko 2004; Choo et al. 2007) and the field study interview results.

Table 6-7: Pilot Study Results for the Creation of New Knowledge

Variables	Disagree/Agree	% of Respondents
Develop new insights.	Agreed	81
Perform new tasks.	Agreed	85
Contributed new knowledge.	Agreed	85
Develop creative solutions	Agreed	92
Come up with routine solutions	Agreed	85

It is clear from Table 6-7 that a high percentage (86%) of participants agreed that they create new and creative solutions from the knowledge creation process. The last item in this part used to check the validity of the answer, and interestingly, 85% of the participants agreed that they come up with routine solutions. It is understood from the results that both unique and routine solutions are obtained from the knowledge creation process.

6.3.3.3. Social Capital

The aim of this section of the survey is to explore the level of social capital within CoPs different categories and its moderating role (Kankanhalli, Tan, and Wei 2005; Teigland and Wasko 2003; Wasko and Faraj 2005) on the amount of knowledge received from CoPs members. Three indicators (trust, norm, and identification) are used to measure the level of social capital and its moderating role.

Table 6-8: Pilot Study Results for Level of Social Capital and its Moderating Role

Variables	Disagree/Agree	% of Respondents
Trust:		
Use other's knowledge appropriately	Agreed	66
Share the best knowledge that they have	Agreed	74
Not take advantage of others	Disagreed	52
Always keep promises	Agreed	74
They are capable therefore the knowledge they pass is trusted	Agreed	89
Level of truthfulness is vital to accept the knowledge received	Agreed	78
Total % for trust	**AGREED**	**71**
Norm:		
Norm of cooperation and collaboration	Agreed	78
Norm of teamwork	Agreed	78
Norm of openness to conflicting views	Agreed	66

Norm of acceptance of mistakes	Agreed	70
Total % for norm	**AGREED**	**73**
Identification:		
Share same values	Agreed	81
Working toward the same goal	Agreed	81
There is a sense of belonging	Agreed	78
Total % for identification	**AGREED**	**80**

It is noticed from Table 6-8 that the level of social capital among pilot study participants is relatively high (74%). Moreover, 78% of the respondents agreed that the level of truthfulness of the knowledge received from others affect their decision to accept this knowledge and use it.

6.3.3.4. Corporate Sustainability

The objective of this section is to study the role of knowledge created within different CoPs categories on corporate sustainability. To measure corporate sustainability, the Triple Bottom Line (TBL) is used, wherein, the participants were asked about the affect of the solutions on their organisation social performance, environmental performance, economic performance, and non economic performance.

Table 6-9: Pilot Study Results for Corporate Sustainability

Variables	**Disagree/ Agree**	**% of Respondents**
Social performance:		
Enhance employees loyalty for the organisation and decrease level of turnover	Agreed	74
Enhance employees training and education programs provided by the organisation	Agreed	85
New insights for social responsibility projects	Agreed	92
Develop actions in response to incidents of corruption	Agreed	89
Total % for social performance	**AGREED**	**85**
Environmental performance:		
Reduce the use of vehicles by expanding the use of communication technologies	Agreed	85
Reduce paper consumption, improve energy efficiency, and reduce machines	Agreed	85
Protect and clean the environment	Agreed	85
Total % for environmental performance	**AGREED**	**85**
Economic performance:		
The organisation is more profitable compared with	Agreed	81

key competitors		
Encourage the procedures for local hiring	Agreed	85
Increase revenues and decrease costs	Agreed	92
Total % for economic performance	**AGREED**	**86**
Non economic performance:		
Met or exceeded customers' expectations	Agreed	96
Improving the organisation's processes	Agreed	85
The organisation more innovative compared with key competitors	Agreed	96
The organisation grow and continue its operations in the future	Agreed	92
Total % for non economic performance	**AGREED**	**92**

In conclusion, results presented in Table 6-9 showed that there is a great agreement among respondents (87%) that the outcomes of the knowledge creation process have positive effect on corporate sustainability. In particular, the effect on the non economic performance is quite high (92%).

6.3.3.5. Discussions

As stated earlier, one of the reasons behind conducting the pilot study is to pre-test the adequacy of the questionnaire. It is believed that the empirical results are reasonable. For the existence of internal and external CoPs and their importance, it is noticed that the existence of internal CoPs and their importance is greater than the percentage for external CoPs. This result was expected for several reasons: (1) it is easier of individuals to contact employees working in the same organisation; (2) it is safe to exchange confidential organisational knowledge among the employees; (3) and the employees are familiar with the work, its conditions, and its related problems. The percentages of CoPs characteristics are quite high, this is expected as the field study outcomes suggested that CoPs existed within Bahrain service industry.

As discussed earlier, tacit and explicit knowledge are received from the participants' networks members, although the percentages of verbal communications received (either formally or informally) are higher than written communications. This is sensible as from the literature it is argued that the two types of knowledge are exchanged and transferred within CoPs (Brown and Duguid 2001; Chu and Khosla 2008; Duguid 2005; Preece 2003). The percentages of the four knowledge creation

process steps are relatively high, this is logical as from the field study results provided a hint of the existence of these steps within Bahrain service industry. Further, the percentages of the creation of new knowledge are high that is similar to the field study outcomes, in which all the interviewees agreed that the solutions resulted from the knowledge creation process lead to creative and new ideas.

Regarding the levels of trust, norms, and identification, it is noticed that the percentages in Bahrain service industry are quite high. However, it was not expected that the percentage of identification (80%) is higher than trust (71%) because the field study results indicated that trust is the most important factor affecting interviewees' decision to accept the knowledge received from their network members.

The pilot study results showed that the new knowledge created within networks existed in Bahrain service industry has an impact on organisation's social, environmental, economic, and non economic performance. It is expected that the percentages of economic and non economic performances to be higher than social and environmental performances.

6.3.3.6. Feedback and Comments

The last section of the pilot study survey asked participants to provide their feedback about the clarity and easiness of the questions, the fittingness and appropriateness of the questions, the time required to complete the questionnaire, and any other comments or suggestions regarding the survey. Almost all the participants provide feedback about the questionnaire except two of them.

Clear and easy:

The majority stated that the questions were clear and easy to understand. Some of the respondents' answers were:
- *"It is clear and direct to the goal of your research as I can tell"*
- *"Very clear and well organized"*
- *"... it gives a good, clear, and pointed questions to answer"*

On the other hand, one of the participants indicated that the questions are not clear and one of them said they are clear to some extent.

Make sense and appropriate:

Nearly all the participants think that the questions are making sense and appropriate except two of them who stated that the questions are to some extent appropriate. Examples of the participants' answers were:

- *"… you provide a good explanation"*
- *"Yes they are generally relevant to all organisations"*
- *"Yes the questions are accurate"*

Required time:

Regarding the required time to complete the survey, the longest time was one hour and a half and the shortest time was 10 minutes. 28% of the participants answered the questions in fifteen minutes, 32% answered it in half an hour, 12% in twenty minutes, 12% answered the questions in one hour, and 8% in forty to fifty minutes.

Comments and suggestions:

Some of the respondents provided some negative comments and suggestions, they are:

- Order of the answers in section one of the survey.
- The choices for agree and disagree answers.
- The length of the survey (too many questions).
- English language.

Besides the researcher noticed that the method followed in the pilot study to distribute the survey (personal contact) was not efficient.

Changes and modifications resulted from the pilot study:

The researcher responded to the comments and suggestions offered by the participants, and the following changes have been made for the survey that will be used for the final data collection stage:

- In section one, all the multiple-choice answers were rearranged to have it in ascending order below each other. It is realised that the order of answer choices will impact respondents' completion and results of the survey (Creative Research Systems 2006).
- In section two part (A) the question did not specify if the problem was related to work. Therefore, the researcher added to the question "work related problem".

- In section five, one of the indicators used to measure the organisation environment performance was deleted.
- All the agreement scales are changed from disagree to agree (from positive to negative). It is suggested that positive to negative scales (i.e. agree-disagree choices) should always be presented in this order (Creative Research Systems 2006).
- Some of English terms have been changed to simpler words for respondents to understand it easily. As indicated by Polgar and Thomas (2000, 132) "it is important to tailor the level of wording of questions to accord with the intended respondents."
- The format of the survey has been changed to reduce the number of pages (catalogue style).

6.4. The Administration of the Main Survey

The study primary survey was conducted among more than 80 organisations in the Kingdom of Bahrain service industry (both public and private sector). The organisations were selected based on Bahrain Chamber of Commerce list of the top 100 organisations in the Kingdom of Bahrain. A review of the list was made to separate the organisations in the service industry (that is the targeted industry for this study) from the other industries. In addition, the 2008 Bahrain Telephone Directory and the official Electronic Government website were used to get a list of the governmental ministries (20 ministries) in the Kingdom. The survey was distributed to 620 managers in the middle and top level management positions within these organisations. The questionnaire was distributed personally through the researcher by contacting the Human Resource (HR) Department managers (in other cases employees working in the HR were contacted) in the selected organisations and gave them a number of questionnaires to be distributed among the managers working in their organisations. The reason for choosing the HR departments in the targeted organisations is that they have records of the managers working in their organisations, thus it is easier to contact them. Three individuals were employed to help the researcher distribute and collect the survey. Follow up calls and face-to-face meetings with the HR managers were conducted to collect the survey (and most

importantly to ensure that all the items presented in the questionnaire were answered for the PLS analysis). The purpose of the multiple contacts with respondents is to reduce the nonresponse bias by increasing the return rate (Bordens and Abbott 2008). Cluster sampling procedure is the sampling design applied in this study (Creswell 2003).   In applying the cluster sampling procedure, the researcher samples the organisations in Bahrain service industry, contacts the HR manager to get the names of the individuals working in the top and middle level management within these organisations, and then samples within these clusters or organisations.

At the end of the second month of the distribution of the questionnaire, 333 questionnaires were returned to the researcher. There were 34 organisations out of the 80 organisations did not participate in the survey (see Table 6-10 for reasons of not participating).   Moreover, from the 620 distributed questionnaires there were 287 unreturned. The reasons for the unreturned questionnaires are as follow:

- Management policies did not allow their employees to involve in such studies due to confidentiality reasons.
- Participants are busy and do not have time to fill in the questionnaire.
- Many expected participants were on holiday (July and August is the summer vacation time in the Kingdom of Bahrain).
- Participants have lost the questionnaire copy given to them.

Eventually, the final response rate was 54%. In fact, Babbie (1990, 182) argued that "a response rate of at least 50 percent is generally considered adequate for analysis and reporting."

Table 6-10: Reasons for Organisations not Participating in the Survey

Reasons	Percentage (%)
The HR manager not available and there are no other person to assist the researcher.	24%
There is no answer from the HR manager.	19%
Wrong telephone number provided.	15%
The management reject to participate in the study.	32%
Managers working in the organisation are extremely busy and unable to participate in the study	10%

6.5. The Data Analysis of the Main Survey

6.5.1. Non-Response Bias

Lewis, Templeton and Byrd (2005, 393) stated that "non-response bias in the returned sample should be assessed to insure that the sample data adequately reflects the population." According to Creswell (2003) a bias occurs when the nonresponds answer the survey and a change in the results are noticed. T-test can be used to calculate the non-response bias (Rainer and Harrison 1993, cited in Lewis, Templeton and Byrd 2005). Therefore, the researcher employed a t-test for the first and second wave of the data collected to calculate the non-response bias of the main survey. Four variables were selected randomly to calculate the non-response bias. Based on the results obtained from the t-test, it is noticed that there are no differences between the first wave and the second wave. Therefore, it can be argued that the collected sample data sufficiently reflects the population of Bahrain service industry.

6.5.2. Demographic Information

The first section of the questionnaire indicated general information about the participants' gender, age, level of education, current position, years working in their organisation, years in the current position, and the industry, sector, and number of employees working in their organisation. This is all represented in tables listed below.

Gender

As shown in Table 6-11, more than half of the participants (60.7%) are male.

Table 6-11: Survey Respondents by Gender

Gender	Frequency	Percentage (%)
Male	202	60.7
Female	131	39.3

Age

From the table blow it is noticed that almost half of the participants (42%) are between 20 – 30 years old.

Table 6-12: Survey Respondents by Age

Age	Frequency	Percentage (%)
20 – 30 years old	140	42
31 – 40 years old	94	28.2
41 – 50 years old	62	18.6
51 - -60 years old	32	9.6
Over 60 years old	5	1.5

Level of Education

It is indicated in Table 6-13 that 70.5% of the participants had at least a bachelor's degree, wherein, 17.4 having Master's degree, 2.4% having a doctorate degree, and 1.2 having other education degrees such as advanced diploma and high diploma.

Table 6-13: Survey Respondents by Level of Education

Level of Education	Frequency	Percentage (%)
Secondary (high) school	16	4.8
Diploma	82	24.6
Bachelor's degree	165	49.5
Master's degree	58	17.4
Doctorate	8	2.4
Other	4	1.2

Current Position

As illustrated in Table 6-14 more than 60% of the respondents are in other positions like Coordinator, Assistant Manager, Team Leader, Officer, Executive, Specialist, Senior, Consultant, Supervisor, Branch Manager, School Head-Teacher, Deputy Manager, Senior Manager, Head of Section, Assistant Director, Deputy Director, Deputy Chief Executive, and Head of Group. This is expected as position titles differ from one organisation to the other. On the other hand, only 36.6% of the participants chose the positions provided in the questionnaire.

Table 6-14: Survey Respondents by Current Position

Current Position	Frequency	Percentage (%)
Head of Department	41	12.3
Manager	35	10.5
Director	20	6
General Director	5	1.5
Vice President	10	3
President	2	0.6
Chief Executive	4	1.2
Executive Director	5	1.5
Other	211	63.4

Number of Years Working in the Organisation

It is noted from Table 6-15 that 30.9% of the respondents had been with the current organisation for less than 2 years while 21% work for the current organisation for more than 15 years. Alternatively, 47.4% of them had been with the current organisation for more than 5 years.

Table 6-15: Survey Respondents by Number of Years Working in the Organisation

Years Working in the Organisation	Frequency	Percentage (%)
Less than 2 years	103	30.9
+2 to 5 years	72	21.6
+5 to 10 years	53	15.9
+10 to 15 years	35	10.5
More than 15 years	70	21

Number of Years in the Current Position

As depicted in the table below, 31.5% of the respondents had been in the current position for less than one year. At the same time, 19.8% of the participants had been in the current position for more than 6 years.

Table 6-16: Survey Respondents by Number of Years Being in the Current Position

Years in the Current Position	Frequency	Percentage (%)
Less than 1 year	105	31.5
+1 to 3 years	100	30
+3 to 6 years	62	18.6
More than 6 years	66	19.8

Industry

It is observed from Table 6-17 that the respondents are from different service industry in the Kingdom of Bahrain. It is also noticed that a highest percentage of 38.7% of the respondents work in the Finance, Investment, and Insurance industry. That is representing Bahrain growing financial sector. The Kingdom of Bahrain considered a major financial centre, in which there are around three hundred and seventy offshore banks and representative offices in Bahrain (GlobalEDGE 2008). Moreover, the financial sector has the largest contribution to the country GDP at more than 27% (Bahrain Economic Development Board 2008; Central Bank of Bahrain 2008; GlobalEDGE 2008). It is indicated that 16.8% of the respondents work in other industry, examples are: Telecommunication, Airline, Law, Environment, Television and Radio, Information, Parliament, Media, Real Estate, Development, and Information Technology.

Table 6-17: Survey Respondents by Industry

Industry	Frequency	Percentage (%)
Cultural and Recreational Services	5	1.5
Electricity, Gas, and Water	14	4.2
Finance, Investment, and Insurance	129	38.7
Government Administration and Defence	41	12.3
Health and Community Services	20	6
Personal and other Services	13	3.9
Construction	16	4.8
Transportation	4	1.2
Education	20	6
Communication	23	6.9
Agriculture	2	0.6
Other	46	13.8

Sector

Table 6-18 illustrated the organisation sector the respondents work in. Almost half of the respondents (48.9%) work in the private sector. 42.3% of the respondents work in the public (Government) sector.

Table 6-18: Survey Respondents by Sector

Sector	Frequency	Percentage (%)
Public (Government)	141	42.3
Private	163	48.9
Public + Private (Quasi-Government)	29	8.7

Number of Employees

Since the size of the Kingdom of Bahrain and its population is small. It is observed from Table 6-19 that 70.9% of the respondents' organisations have less than 1000 employees. In contrast, 11.1% of the respondent's organisations have more than 3000 employees.

Table 6-19: Survey Respondents by Number of Employees Working in the Organisation

Number of Employees	Frequency	Percentage (%)
Less than 1000 employees	236	70.9
1000 – 2000 employees	48	14.4
+2000 – 3000 employees	12	3.6
+3000 – 4000 employees	11	3.3
More than 4000 employees	26	7.8

6.5.3. Communities of Practice

The second section of the main survey explored the frequency of different CoPs categories within Bahrain service industry. Table 6-20 highlighted the frequency of internal (co-located employees and non co-located employees) and external (customers, suppliers, and business partners) contacted by the participants for help and advice that is related to their work. In addition, the frequency of internal and external CoPs contacted the participants for help and advice is shown in the table. It is noticed from Table 6-20 that the largest percentage (82%) of the respondents contacted their managers for help regarding problems related to their work. Alternatively, the lowest percentage (4%) of the respondents contacted their investors for help. It is observed that more than half (66%) of the respondents contacted by their colleagues for help and advice when they faced problems at their work. It is predicted that the percentage of respondents' contacted subordinates is higher than the percentage of subordinates contacted respondents. It is also predicted that the

percentage of participants contacted by subordinates is higher than the percentage of respondents' contacted subordinates. It was not predicted that the percentage of participants contacted by their managers is high as it is assumed that managers will not contact employees under their command if they face a work related problem. Examples of other individuals contacted for help are family members, reference books, the Internet, and individuals working in the same field.

Table 6-20: Survey Respondents by Frequency of Contacts with and by Different CoPs Categories

CoP categories	Contacted with Frequency	Percentage (%)	Contacted by Frequency	Percentage (%)
Internal CoPs				
Manager	273	82%	212	64%
Subordinates	134	40%	175	53%
Colleagues	217	65%	220	66%
Co-located employees	**624**	**62%**	**607**	**61%**
Employees in other departments	119	36%	167	50%
Employees in other branches	74	22%	104	31%
Non co-located employees	**193**	**29%**	**271**	**41%**
External CoPs				
Customers	45	14%	98	29%
Investors	14	4%	27	8%
Customers	**59**	**9%**	**125**	**19%**
Suppliers	43	13%	34	10%
Vendors	21	6%	23	7%
Suppliers	**64**	**10%**	**57**	**9%**
Business partners	24	7%	25	8%
Governmental ministries	43	13%	41	12%
Consultants	65	20%	38	11%
Partners	**132**	**13%**	**104**	**10%**
Others	18	5%	9	3%

The full data analysis of the main survey is presented in detail in Chapter Seven of this thesis.

6.6. Summary

The purpose of conducting the pilot study is to check the validity and clarity of the survey. A response rate of 45% (twenty seven) of participants completed the pilot study questionnaire. Middle and top level managers in large public and private organisations within the Kingdom of Bahrain service industry were the sample of the pilot study. Minor changes were made based on the pilot study participants' comments and feedback. The main survey of the study distributed among senior managers in Bahrain service industry both in the public and private sectors. 333 completed questionnaires returned to the researcher in which the response rate was 54%. The major findings of the first section of the questionnaire (participants' demographic information) and the first two parts of the questionnaire second section regarding existence of communities of practice within Bahrain service industry is discussed in this chapter.

CHAPTER SEVEN

Data Analysis Using Partial Least Squares (PLS)

7.1. Introduction

As mentioned before in Chapter Five, the main quantitative survey is divided into five sections. The analysis of the first section that is participants' demographic information was presented in the previous chapter. In addition, the first two parts of the survey second section that is related to the existence of communities of practice within Bahrain service industry was also discussed in Chapter Six. This chapter covered the other parts of survey second section and the other three sections that explored the study major variables: knowledge creation, social capital, and corporate sustainability. Partial Least Squares (PLS) analysis is utilised in this stage of the study. Through PLS model, the reliability and validity of the relationships between constructs are tested by assessing the reliability and validity of the measurement model. The hypotheses are then tested by assessing the structural model (Barclay, Higgins and Thompson 1995).

7.2. Main Quantitative Survey Results

As specified earlier in Chapter Six, in the main survey 620 questionnaires were distributed among top and middle level managers within 80 large organisations in the Kingdom of Bahrain service industry and 20 governmental ministries within the Kingdom. 333 completed questionnaires were returned to the researcher whereas the response rate was 54%. It can be argued that some of the reasons behind high response rate are as follows:
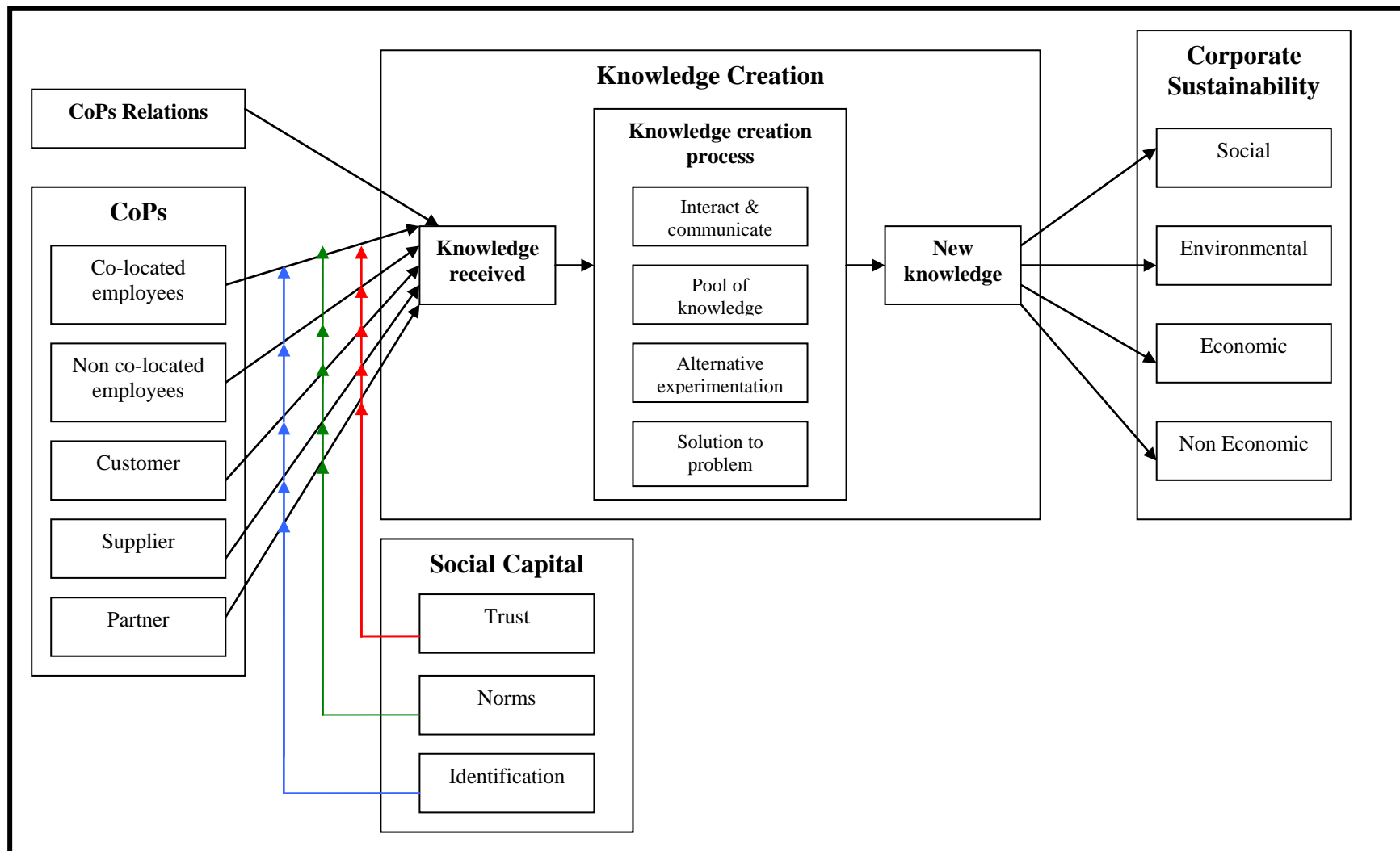
Figure 7-1: Final Research Model

a. employing an adequate follow up strategy to collect the survey;

b. building personal relationships with some of the participants and HR managers in the targeted organisations;

c. explaining for the participants the importance of the study to their organisations;

d. the nature of the Bahraini people of helping others and their awareness of the importance of research as they are well educated.

The results of the main survey are discussed in this section. First, it is important to indicate that from the findings of the main survey a new independent variable that is community of practice characteristics (that is called CoPs Relations "CoPR") is added to the modified research model. The final research model is illustrated in Figure 7-1.The PLS analysis showed that these characteristics are also affecting the amount of knowledge received from CoPs members. This will be explained in detail later in this chapter. From the literature review, it is found that CoPs characteristics such as terminology (Boland and Tenkasi 1995; Chiu, Hsu and Wang 2006; Nahapiet and Ghoshal 1998; Tsai and Ghoshal 1998), common purpose (Cohen and Prusak 2001; Lesser and Everest 2001; Tsai and Ghoshal 1998), engaging in doing things together (Wenger 1998a), and know what others know (Chae et al. 2005) influence the knowledge exchanged and transferred within CoPs. In the beginning of the study, the purpose of testing the existence of CoPs characteristics was to identify the type of networks in Bahrain service industry. However, based on the PLS analysis and the literature review, it is noticed that the community of practice characteristics (i.e. CoPs Relations) are not only employed to ensure the kind of networks existed in Bahrain, but they also have an effect on the knowledge received from them.

Partial least squares (PLS) is utilised in this study to test various hypotheses. The reasons for using PLS are (Barclay, Higgins and Thompson 1995): (1) it is recommended in predictive research models focus on theory development (Gefen, Straub and Boudreau 2000); (2) it is suitable for exploratory studies; (3) it is appropriate for relatively small sample size; and (4) it is proper to verify the reliability and validity of the relationships between the constructs by assessing the reliability and validity of the measurement model and structural model. Partial Least Squares is one of two approaches related to casual or structural equation modelling (SEM) that is

used to assess the "reliability and validity of the measures of theoretical constructs and estimating the relationships among these constructs" (Barclay, Higgins and Thompson 1995, 287). As mentioned by Chin (1998) the advantages of structural equation modelling (SEM) are: (1) multiple predictor and criterion variables relationships can be modelled; (2) latent variables that are unobservable can be formed; (3) observed variables' measurement errors are modelled; and (4) theoretical and measurement assumptions are statistically tested. Conversely, the disadvantage of SEM is the requirement of greater knowledge about the conditions and assumptions that result in a high level of complexity (Chin 1998). Partial Least Squares (PLS) using PLS GRAPH version 3.00 by Chin (1998) is employed to analyse the data collected in the main survey. The results of the PLS analysis are presented in this section to verify the items reliability (Barclay, Higgins and Thompson 1995).

Table 7-1 depicted the constructs of the study variables and the abbreviations of each of these constructs and number of items used to measure each construct. In total, this study contained 62 items. According to Rahim, Antonioni and Psenicka (2001) handling this big number of items is not easy in LISREL. In their paper, Rahim, Antonioni and Psenicka (2001, 200) stated that "Bagozzi and Heatherton (1994) suggested that two aggregate variables per factor are appropriate …". Therefore, in this study some of the constructs have only two items to measure them.

Table 7-1: Constructs, Abbreviations, and Number of Items of the Study Variables

Construct	Abbreviation	Number of Items
CoPs		
Co-Located Employees	CLE	3
Non Co-Located Employees	NCLE	2
Customer	CUS	2
Supplier	SUP	2
Partner	PRT	3
CoPs Relations	CoPR	6
Knowledge Creation		
Knowledge Received	KRC	4
Knowledge Creation Process:		
1.Interact & Communicate	INCO	3
2.Pool of Knowledge	PLK	2
3.Alternative Experimentation	ATX	2
4.Solution to Problem	SLP	2
New knowledge	NWK	5
Social Capital		

Trust	TRS	6
Norms	NRM	4
Identification	IDN	3
Corporate Sustainability		
Social Performance	SCP	4
Environment Performance	ENP	2
Economic Performance	ECP	3
Non Economic Performance	NECP	4

The variables of the study include two independent or as known in PLS exogenous constructs (Barclay, Higgins and Thompson 1995). The exogenous constructs are CoPs that comprise co-located employees (CLE), non co-located employees (NCLE), customers (CUS), suppliers (SUP), and business partners (PRT). The indicators of all of these exogenous constructs are considered formative as according to Barclay, Higgins and Thompson (1995, 291) formative indicators "expressed as a function of the variables; the variables 'form,' cause, or precede the construct." Furthermore, formative indicators are not correlated or measure the same dimension (Santosa, Wei and Chan 2005). The characteristics of formative indicators are (Bollen and Lennox 1991; Diamantopoulos and Winklhofer 2001, 271): "(1) the correlations among formative indicators are not explained by the measurement model, (2) omitting an indicator is omitting a part of the construct, (3) specific pattern of signs or magnitudes do not characterize the correlations among formative indicators, and (4) formative indicators do not have error terms." It is argued that all the above description and characteristics of formative indicators are applied for CoPs categories. The other exogenous construct is CoP characteristics or relations (COPR) in which the indicators are reflective that is "the observable variables are expressed as a function of the construct-the variables 'reflect' or and manifestations of the construct; the construct precedes the indicators in a causal sense" (Barclay, Higgins and Thompson 1995, 292).

All the other variables are considered endogenous constructs that is consistent with dependent variables (Barclay, Higgins and Thompson 1995). The endogenous constructs are: knowledge received (KRC), knowledge creation process that comprise interact and communicate (INCO), pool of knowledge (PLK), alternative experimentation (ATX), and solution to problem (SLP), new knowledge (NWK), and corporate sustainability that consist of social performance (SCP), environmental

performance (ENP), economic performance (ECP), and non economic performance (NECP). All endogenous constructs indicators are reflective as mentioned by Barclay, Higgins and Thompson (1995, 292) reflective indicators are "more consistent with how we typically view relationships between constructs and measures." There is one moderating variable that is social capital represented by three aspects trust, norms, and identification and these moderating variables are considered reflective as well.

To verify the reliability and validity of the relationships between the study constructs, PLS model assesses the reliability and validity of the measurement model and structural model (Barclay, Higgins and Thompson 1995). This chapter describes the assessment of the measurement model. According to Barclay, Higgins and Thompson (1995), assessing item reliability, internal consistency, and discriminant validity are examined in the measurement model for all reflective constructs. The item reliability is assessed by the item loadings, internal consistency reliability (ICR), and average variance extracted (AVE) (Barclay, Higgins and Thompson 1995; Ye, Chen and Jin 2006). The internal consistency should be above 0.70 (Fornell and Larcker 1981; Hair et al. 1998; Barclay, Higgins and Thompson 1995). The average variance extracted should be greater than 0.50 (Fornell and Larcker 1981). Additionally, the square root of the average variance extracted should be greater than the off-diagonal elements in the correlation matrix for adequate discriminant validity (Barclay, Higgins and Thompson 1995; Fornell and Larcker 1981). The loadings, internal consistency (ICR), average variance extracted (AVE), and the square root of AVE are presented in the tables listed below for all of the different nine models developed in this study.

7.2.1. First PLS Graph Measurement Model

At the beginning, a model is created to test the above variables excluding the moderating variables (social capital). Figure 7-2 illustrates the PLS Graph of the first research model. As it is noticed in the figure that the model created in PLS Graph is slightly different from the final research model presented in this chapter in Figure 7-1. The first difference is that instead of having a single arrow that represent the

relationship between knowledge received to knowledge creation process, each of the knowledge creation process four steps are presented by an arrow. The reason behind that is to know the exact influence of knowledge received from CoPs categories on each of the knowledge creation process steps. Similarly, each of the knowledge creation process steps is defined by a separate path that influences the creation of new knowledge. Another difference is the arrows representing that each step in the knowledge creation process leads to the next step. As mentioned in Chapter Five that a pool of all the knowledge collected from different individuals is gathered to solve a problem (Bathelt, Malmberg and Maskell 2004; Foley 2000; Fong 2003; Fuller, Jawecki and Muhlbacher 2007; Kimble, Hildreth and Wright 2001; Nahapiet and Ghoshal 1998). After that individuals exchanged stories related to that specific problem in order to obtain alternative solutions (Bathelt, Malmberg and Maskell 2004; Fuller, Jawecki and Muhlbacher 2007; Li and Kettinger 2006). Finally, a solution to the problem is achieved after the interaction, collection, and experimentation of the solutions (Fuller, Jawecki and Muhlbacher 2007; Li and Kettinger 2006; Nonaka and Toyama 2003; Nonaka, Toyama and Konno 2000).

Table 7-2 indicates the results of the first research model loadings and weights. As stated before, all the CoPs categories are presented as formative indicators. Barclay, Higgins and Thompson (1995) expressed that the weights not the loadings are estimated for formative indicators. Therefore, the weights of the formative indicators are shown instead of the loadings, while for all the reflective indicators, the loadings are presented in Table 7-2. There is no specific value for acceptable or rejected weights for formative indicators. Alternatively, Chin (1998, xiii) argued that "loadings [for reflective indicators] should be at least 0.60 and ideally at 0.70 or above, indicating that each measure is accounting for 50 percent or more of the variance of the underlying LV [latent variable]." Nevertheless, several authors argued that items loadings of 0.7 or more are acceptable (Barclay, Higgins and Thompson 1995; Gefen, Straub and Boudreau 2000; Hulland 1999).Following Chin (1998), it is observed that all the loadings in Table 7-2 are equal to or greater than 0.6. However, the loading of the fifth CoP characteristic (COPFTUR5) is lower (0.591). As stated by Barclay, Higgins and Thompson (1995, 295) "this is not uncommon when standard or newly developed scales are used in casual modelling. Since most scales are developed for a particular theoretical and research context, it is not surprising that

some of the scales do not display the same psychometric properties when used in theoretical and research contexts distinct from those in which they were first developed." The reasons behind low loadings are (1) inappropriate wording of an item that leads to low reliability; (2) the item is not suitable that leads to poor content validity; and (3) the transfer of an item between different contexts is inappropriate that result in non-generalizability of the item (Hulland 1999). The researcher believed that the third reason explained the low loading of COPFTUR5. Thus, this indicator is dropped following Hulland (1999) argument that items with low loadings of 0.5 or less should be dropped. Barclay, Higgins and Thompson (1995) also mentioned in their paper that items with low loadings are dropped. Moreover, in Massey and Dawes (2007) study low loading items dropped from the original measure to improve the validity of the constructs. Another low loading is noticed in the fifth indicator (NK5 = 0.490) of new knowledge variable. In this case the low loading item is retained following Hulland (1999, 199) observation on past studies that "two of the four studies retained a significant number of low-reliability items in their final analysis. Since these low reliabilities can attenuate the estimated relationships between constructs, results based on the retention of low-reliability items must be interpreted with caution."

Table 7-3 exemplified the correlation matrix and psychometric properties of the study key constructs for the first model. It is noted that the AVE of CoP relations (CoPR) is slightly less than 0.5. However, the table illustrated that the square root of the average variance extracted is greater than the off-diagonal elements of all constructs in the correlation matrix thus meeting the discriminant validity.
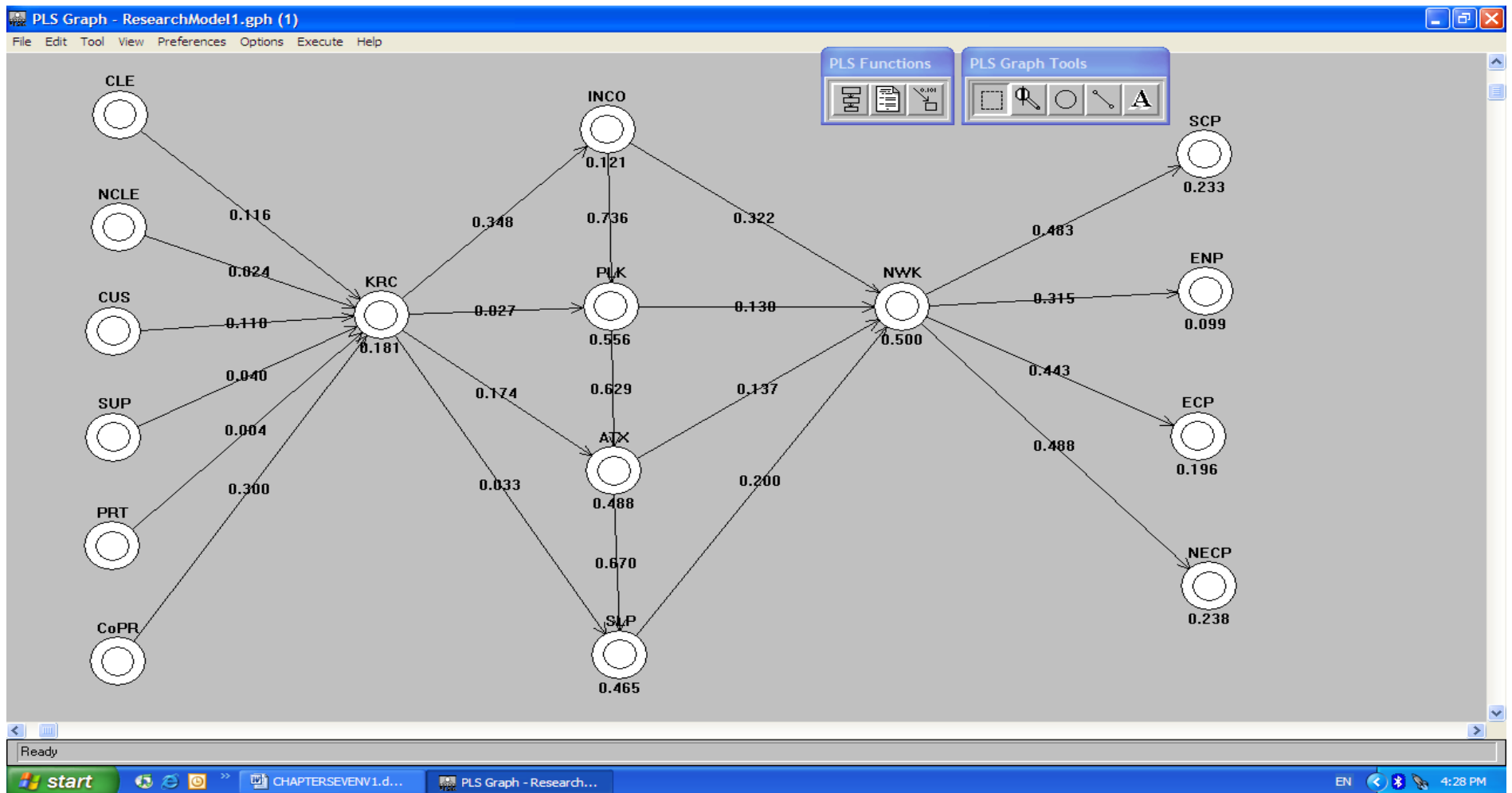
Figure 7-2: PLS Graph of Research Model 1

Table 7-2: Items Loadings and Weights for Research Model 1

Constructs	Items (observed variables)	Loadings	Weights
CLE	IMPMNG		0.495
	IMPSUB		0.733
	IMPCOLG		0.087
NCLE	IMPEMDPT		0.928
	IMPEMBRN		0.126
CUS	IMPCUS		0.565
	IMPINV		0.649
SUP	IMPSUP		-0.103
	IMPVEN		1.074
PRT	IMPPART		0.593
	IMPGMIN		0.092
	IMPCNST		0.484
CoPR	COPFTUR1	0.735	
	COPFTUR2	0.654	
	COPFTUR3	0.674	
	COPFTUR4	0.684	
	COPFTUR5	0.591	
	COPFTUR6	0.747	
KRC	KR1	0.680	
	KR2	0.780	
	KR3	0.813	
	KR4	0.712	
INCO	KP1	0.730	
	KP2	0.893	
	KP3	0.866	
PLK	KP4	0.895	
	KP5	0.917	
ATX	KP6	0.831	
	KP7	0.880	
SLP	KP8	0.941	
	KP9	0.932	
NWK	NK1	0.864	
	NK2	0.819	
	NK3	0.824	
	NK4	0.820	
	NK5	0.490	
SCP	CSSOP1	0.814	
	CSSOP2	0.813	
	CSSOP3	0.836	
	CSSOP4	0.762	
ENP	CSENP1	0.920	
	CSENP2	0.906	
ECP	CSECP1	0.872	
	CSECP2	0.774	
	CSECP3	0.835	

Constructs	Items (observed variables)	Loadings	Weights
NECP	CSNECP1	0.845	
	CSNECP2	0.865	
	CSNECP3	0.885	
	CSNECP4	0.859	

Table 7-3: Correlation Matrix and Psychometric Properties of Key Constructs for Model 1

	ICR	AVE	CLE	NCLE	CUS	SUP	PRT	CoPR	KRC	INCO	PLK	ATX	SLP	NWK	SCP	ENP	ECP	NECP
CoPR	0.839	0.466	0.303	0.312	0.234	0.232	0.209	**0.683**										
KRC	0.835	0.560	0.242	0.204	0.234	0.197	0.195	0.379	**0.748**									
INCO	0.871	0.693	0.280	0.169	0.122	0.088	0.093	0.463	0.348	**0.832**								
PLK	0.902	0.821	0.260	0.139	0.178	0.094	0.117	0.408	0.283	0.745	**0.906**							
ATX	0.846	0.733	0.317	0.238	0.240	0.171	0.162	0.356	0.352	0.655	0.678	**0.856**						
SLP	0.934	0.877	0.334	0.152	0.202	0.150	0.163	0.442	0.269	0.787	0.714	0.681	**0.936**					
NWK	0.880	0.602	0.292	0.222	0.225	0.188	0.154	0.518	0.396	0.666	0.606	0.573	0.640	**0.776**				
SCP	0.882	0.651	0.212	0.196	0.277	0.176	0.263	0.430	0.212	0.428	0.464	0.435	0.465	0.483	**0.807**			
ENP	0.909	0.834	0.145	0.097	0.211	0.089	0.168	0.316	0.135	0.276	0.315	0.299	0.309	0.315	0.556	**0.913**		
ECP	0.867	0.685	0.202	0.100	0.212	0.049	0.191	0.404	0.198	0.375	0.375	0.401	0.397	0.443	0.582	0.717	**0.828**	
NECP	0.921	0.745	0.211	0.139	0.200	0.046	0.176	0.444	0.207	0.483	0.471	0.447	0.489	0.488	0.627	0.636	0.792	**0.863**

Notes: Bold diagonal elements are the square root of AVE for each construct

Off-diagonal elements are the correlations between constructs

7.2.2. First PLS Graph Measurement Model (Revised)

A revised model that is illustrated in Figure 7-3 is created based on the findings depicted in the above paragraph describing the first model. As declared by Gefen, Straub and Boudreau (2000) Gamma (γ) represents paths connecting exogenous constructs to endogenous constructs, while Beta (β) symbolizes paths between two endogenous constructs. Chin (1998, xiii) suggested that "paths should be at least 0.20 and ideally above 0.30 in order to be considered meaningful." It is observed from Figure 7-2 that the paths (Gamma) for non co-located employees ($\gamma = 0.024$), suppliers ($\gamma = 0.040$), and business partners ($\gamma = 0.004$) are low. Therefore, in the revised model the low paths variables are dropped due to parsimony. In consequence, the calculation of the moderation variable (social capital) effect – that is explained in the next sections – will be easier. However, the two other categories (co-located employees and customers) are not dropped as their paths are higher compared to co-located employees, suppliers, and business partners' paths. Further, as stated above the loadings of the fifth CoP relations is low and thus dropped from the original measure; therefore there are only five indicators in CoPR construct as it is illustrated in Table 7-4. It is noticed in Table 7-4 that there are changes in some of the items loadings.

Comparing Figures 7-2 and 7-3 it is noted that the path co-efficients of co-located employees and customers are increased. It is also observed that the CoP relations path decreased, this is due to limiting the number of indicators for this construct from six to five. Moreover, R-square (R^2) for knowledge received (KRC) is lower in Figure 7-3. R-square (R^2) is defined by Gefen, Straub and Boudreau (2000, 71) as "coefficient of determination. Measure of the proportion of the variance of the dependent variable about its mean is explained by the independent variable(s)." Thus, an explanation of this decrease may be due to limiting the number of independent variables affecting knowledge received (i.e. dependent variable). Table 7-4 demonstrated the item loadings and weights of the revised research model. As in the first measurement model, it is noticed from Table 7-4that the loading of new knowledge (NK5) is low. On the other hand, all the other item loadings are equal to or greater than 0.6. As in Table 7-3, it is noticed from correlation matrix presented in

Table 7-5 that the square root of the average variance extracted is greater than the off-diagonal elements in the correlation matrix.

Figure 7-3: PLS Graph of Research Model 1 (Revised)

Table 7-4: Items Loadings and Weights for Research Model 1 (Revised)

Constructs	Items (observed variables)	Loadings	Weights
CLE	IMPMNG		0.499
	IMPSUB		0.729
	IMPCOLG		0.088
CUS	IMPCUS		0.569
	IMPINV		0.645
CoPR	COPFTUR1	0.779	
	COPFTUR2	0.706	
	COPFTUR3	0.720	
	COPFTUR4	0.675	
	COPFTUR6	0.736	
KRC	KR1	0.676	
	KR2	0.776	
	KR3	0.816	
	KR4	0.718	
INCO	KP1	0.730	
	KP2	0.893	
	KP3	0.866	
PLK	KP4	0.895	
	KP5	0.917	
ATX	KP6	0.831	
	KP7	0.880	
SLP	KP8	0.941	
	KP9	0.932	
NWK	NK1	0.864	
	NK2	0.819	
	NK3	0.824	
	NK4	0.820	
	NK5	0.490	
SCP	CSSOP1	0.814	
	CSSOP2	0.813	
	CSSOP3	0.836	
	CSSOP4	0.762	
ENP	CSENP1	0.920	
	CSENP2	0.906	
ECP	CSECP1	0.872	
	CSECP2	0.774	
	CSECP3	0.835	
NECP	CSNECP1	0.845	
	CSNECP2	0.865	
	CSNECP3	0.885	
	CSNECP4	0.859	

Table 7-5: Correlation Matrix and Psychometric Properties of Key Constructs for Model 1 (Revised)

	ICR	AVE	CLE	CUS	CoPR	KRC	INCO	PLK	ATX	SLP	NWK	SCP	ENP	ECP	NECP
CoPR	0.846	0.524	0.288	0.163	**0.724**										
KRC	0.835	0.560	0.243	0.234	0.348	**0.748**									
INCO	0.871	0.693	0.280	0.122	0.499	0.349	**0.832**								
PLK	0.902	0.821	0.261	0.179	0.432	0.284	0.745	**0.906**							
ATX	0.846	0.733	0.317	0.241	0.373	0.352	0.655	0.678	**0.856**						
SLP	0.934	0.877	0.334	0.203	0.465	0.269	0.787	0.714	0.681	**0.936**					
NWK	0.880	0.602	0.292	0.225	0.522	0.396	0.666	0.606	0.573	0.640	**0.776**				
SCP	0.882	0.651	0.212	0.277	0.419	0.212	0.428	0.464	0.435	0.465	0.483	**0.807**			
ENP	0.909	0.834	0.146	0.211	0.308	0.135	0.276	0.315	0.299	0.309	0.315	0.556	**0.913**		
ECP	0.867	0.685	0.202	0.212	0.398	0.198	0.375	0.375	0.401	0.397	0.443	0.582	0.717	**0.828**	
NECP	0.921	0.745	0.211	0.200	0.465	0.207	0.483	0.471	0.447	0.489	0.488	0.627	0.636	0.792	**0.863**

Notes: Bold diagonal elements are the square root of AVE for each construct

Off-diagonal elements are the correlations between constructs

7.2.3. Second PLS Graph Measurement Model

To test the effect of the moderating variable (social capital) on the other variables in the research model, a different model is created for each of the three social capital aspects following Chin, Marcolin, and Newsted (2003). According to Chin, Marcolin, and Newsted (2003) each item should be weighted to identify its contribution in the context of the interaction model. They further explained that the individual weighting of items will provide more reliable estimation of their interaction effect. In addition, models that group two social capital aspects are formed to clarify their impact and finally all the social capital aspects are gathered to identify their total affect.

In PLS product-indicator approach indicators should be either standardized or centred in order to avoid computational errors, "accurately estimate the interaction construct", and easily interpret the "resulting regression beta for the predictor variable" (Chin, Marcolin, and Newsted 2003, 199). In this study standardization of the indicators is carried out, whereas, all predictor and moderator construct indicators are standardized to a mean of zero and variance of one (Jaccard, Turrisi and Wan 1990; Aiken and West 1991). The formative indicators (i.e. communities of practice categories) are not standardized, only the moderating variables (trust, norms, and identification) are standardized. Chin, Marcolin and Newsted's (2003, 199) method of standardization is followed by (1) first "calculating the mean and standard deviation for each indicator;(2) then "the corresponding overall mean is subtracted and the result is divided by the respective standard deviation"; and (3) finally multiplying the predictor variable X and the moderator variable Z that reflect the latent interaction variable X*Z. The following sections describe the different six models created in PLS Graph version 3.00 to identify the effect of social capital aspects that include trust, norms, and identification.

Figure 7-4 exemplified the research model created to discover the influence of the first social capital aspect that is trust. As indicated earlier by Chin, Marcolin, and Newsted (2003) product indicators are developed by multiplying the predictor and moderator variables. As shown in Figure 7-4 the predictor variables co-located employees (CLE) and customers (CUS) are multiplied with the moderator variable

trust (TRS) that results in two interaction variables (CLE*TRS) and (CUS*TRS). It is noticed that the path between CLE*TRS and KRC (knowledge received) is acceptable with 0.250. Further, compared with Figure 7-3 the R-square (R^2) for knowledge received (KRC) increased noticeably to 0.196. The loadings and weights of the variables of the second research model are presented in Table 7-6. Focusing on the loadings of the moderating and interaction variables, it is observed that all the loadings are high excluding the loadings of three interaction indicators that are customer and first trust indicator (IMPCUS_SCT1), customer and sixth trust indicator (IMPCUS_SCT6), and investor and first trust indicator (IMPINV_SCT1) that are respectively 0.105, 0.224, and 0.586. In Table 7-7, the correlation matrix and psychometric properties of key constructs for the second model that illustrates the moderating affect of trust is presented. The average variance extracted for the interaction variable trust and customers (TRS*CUS) is less than 0.50. The square root of AVE for all the constructs is adequate except for trust (TRS) and interaction variables trust and co-located employees (TRS*CLE) and trust and customers (TRS*CUS). However, it does not pose any discrimnant validity problem as CLE and CUS are formative constructs.

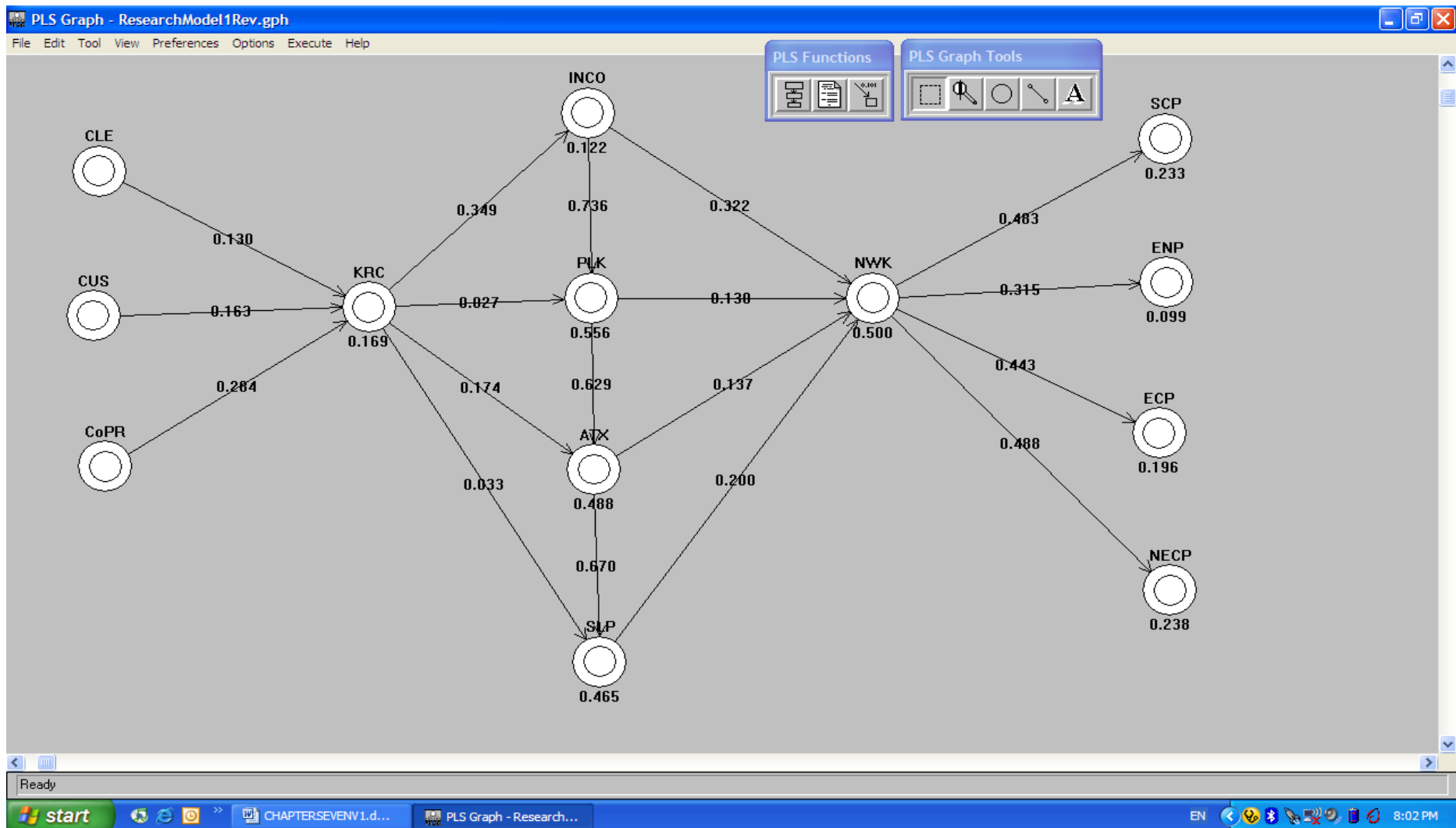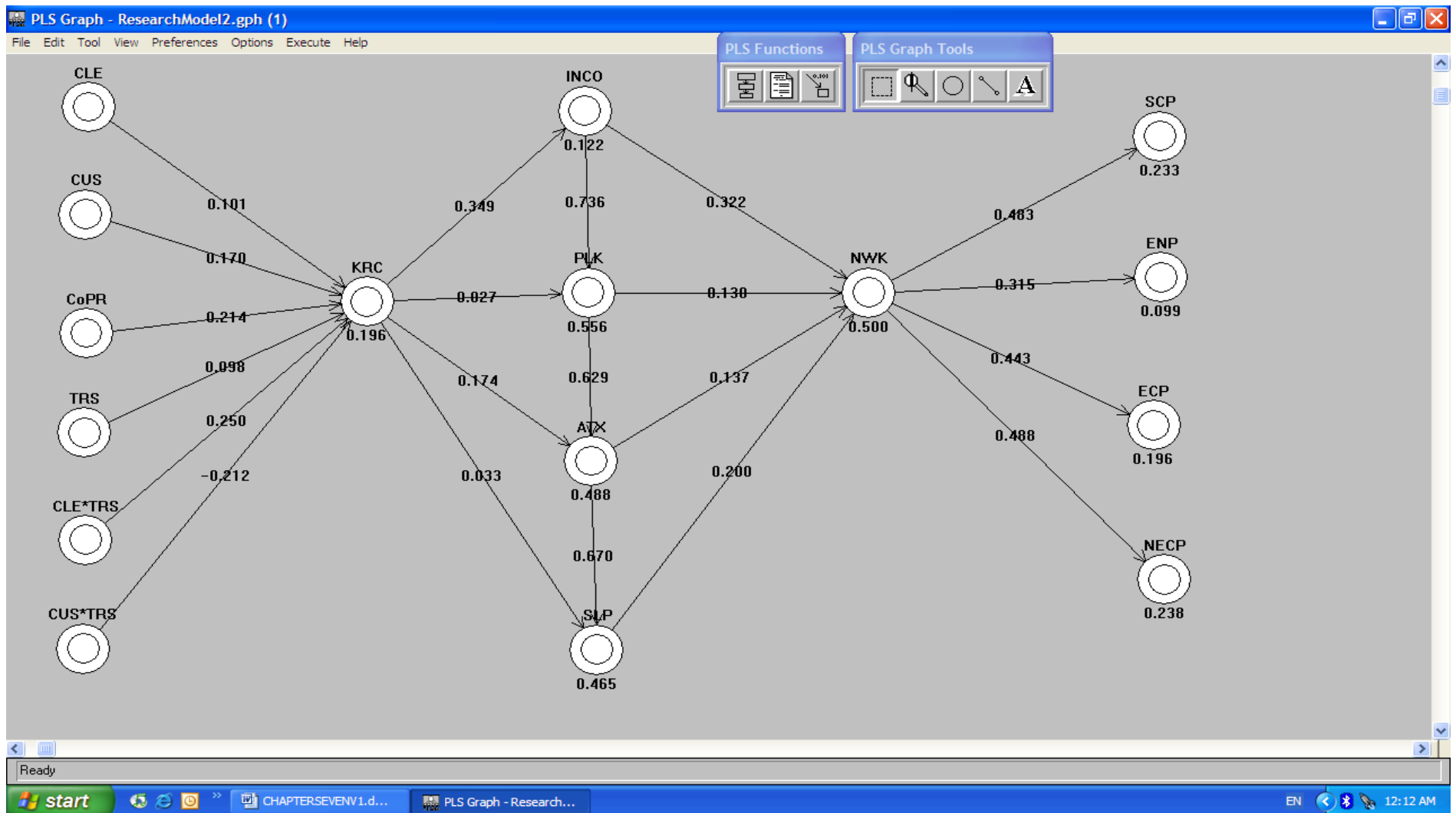*Figure 7-4: PLS Graph of Research Model 2*

Table 7-6: Items Loadings and Weights for Research Model2

Constructs	Items (observed variables)	Loadings	Weights
CLE	IMPMNG		0.499
	IMPSUB		0.730
	IMPCOLG		0.088
CUS	IMPCUS		0.569
	IMPINV		0.645
CoPR	COPFTUR1	0.779	
	COPFTUR2	0.706	
	COPFTUR3	0.720	
	COPFTUR4	0.675	
	COPFTUR6	0.736	
TRS	SCT1	0.746	
	SCT2	0.793	
	SCT3	0.712	
	SCT4	0.723	
	SCT5	0.769	
	SCT6	0.785	
CLE*TRS	IMPMNG_SCT1	0.719	
	IMPMNG_SCT2	0.745	
	IMPMNG_SCT3	0.722	
	IMPMNG_SCT4	0.668	
	IMPMNG_SCT5	0.665	
	IMPMNG_SCT6	0.734	
	IMPSUB_SCT1	0.723	
	IMPSUB_SCT2	0.751	
	IMPSUB_SCT3	0.718	
	IMPSUB_SCT4	0.635	
	IMPSUB_SCT5	0.656	
	IMPSUB_SCT6	0.745	
	IMPCOLG_SCT1	0.722	
	IMPCOLG_SCT2	0.790	
	IMPCOLG_SCT3	0.762	
	IMPCOLG_SCT4	0.731	
	IMPCOLG_SCT5	0.742	
	IMPCOLG_SCT6	0.753	
CUS*TRS	IMPCUS_SCT1	0.105	
	IMPCUS_SCT2	0.656	
	IMPCUS_SCT3	0.624	
	IMPCUS_SCT4	0.667	
	IMPCUS_SCT5	0.651	
	IMPCUS_SCT6	0.224	
	IMPINV_SCT1	0.586	
	IMPINV_SCT2	0.770	
	IMPINV_SCT3	0.722	
	IMPINV_SCT4	0.665	
	IMPINV_SCT5	0.729	
	IMPINV_SCT6	0.686	

Constructs	Items (observed variables)	Loadings	Weights
KRC	KR1	0.676	
	KR2	0.776	
	KR3	0.817	
	KR4	0.716	
INCO	KP1	0.730	
	KP2	0.893	
	KP3	0.866	
PLK	KP4	0.895	
	KP5	0.917	
ATX	KP6	0.831	
	KP7	0.880	
SLP	KP8	0.941	
	KP9	0.932	
NWK	NK1	0.864	
	NK2	0.819	
	NK3	0.824	
	NK4	0.820	
	NK5	0.490	
SCP	CSSOP1	0.814	
	CSSOP2	0.813	
	CSSOP3	0.836	
	CSSOP4	0.762	
ENP	CSENP1	0.920	
	CSENP2	0.906	
ECP	CSECP1	0.872	
	CSECP2	0.774	
	CSECP3	0.835	
NECP	CSNECP1	0.845	
	CSNECP2	0.865	
	CSNECP3	0.885	
	CSNECP4	0.859	

Table 7-7: Correlation Matrix and Psychometric Properties of Key Constructs for Model 2

	ICR	AVE	CLE	CUS	CoPR	KRC	INCO	PLK	ATX	SLP	NWK	SCP	ENP	ECP	NECP	TRS	TRS*CLE	TRS*CUS
CoPR	0.846	0.524	0.288	0.163	**0.724**													
KRC	0.835	0.560	0.243	0.234	0.348	**0.748**												
INCO	0.871	0.693	0.280	0.122	0.499	0.349	**0.832**											
PLK	0.902	0.821	0.261	0.179	0.432	0.284	0.745	**0.906**										
ATX	0.846	0.733	0.317	0.241	0.373	0.352	0.655	0.678	**0.856**									
SLP	0.934	0.877	0.334	0.203	0.465	0.269	0.787	0.714	0.681	**0.936**								
NWK	0.880	0.602	0.292	0.225	0.522	0.396	0.666	0.606	0.573	0.640	**0.776**							
SCP	0.882	0.651	0.212	0.277	0.419	0.212	0.428	0.464	0.435	0.465	0.483	**0.807**						
ENP	0.909	0.834	0.146	0.211	0.308	0.135	0.276	0.315	0.299	0.309	0.315	0.556	**0.913**					
ECP	0.867	0.685	0.202	0.212	0.398	0.198	0.375	0.375	0.401	0.397	0.443	0.582	0.717	**0.828**				
NECP	0.921	0.745	0.211	0.200	0.465	0.208	0.483	0.471	0.447	0.489	0.488	0.627	0.636	0.792	**0.863**			
TRS	0.888	0.570	0.267	0.195	0.567	0.326	0.594	0.528	0.492	0.552	0.672	0.518	0.386	0.458	0.542	**0.755**		
TRS*CLE	0.951	0.522	0.284	0.198	0.531	0.333	0.602	0.520	0.489	0.562	0.675	0.500	0.371	0.457	0.515	0.929	**0.722**	
TRS*CUS	0.872	0.388	0.234	0.279	0.524	0.274	0.554	0.509	0.468	0.545	0.604	0.449	0.350	0.428	0.504	0.874	0.868*	**0.623**

Notes: Bold diagonal elements are the square root of AVE for each construct
Off-diagonal elements are the correlations between constructs

7.2.4. Third PLS Graph Measurement Model

The second social capital aspect that is norms and its moderating impact is illustrated in Figure 7-5. It is perceived that the path between the interaction variable co-located employees and norms (CLE*NRM) is greater than 0.2. The R-square (R^2) for knowledge received (KRC) is higher than the first original model and the revised model. Table 7-8 illustrated the loadings and weights of the items in the third research model. All the loadings of the variables listed in the table are high with loadings greater than or equal to 0.6. Table 7-9 demonstrated the internal consistency reliability and average variance extracted. The square roots of AVE for norms (NRM) and interaction variables norms and co-located employees (NRM*CLE) and norms and customers (NRM*CUS) are less than the off-diagonal elements in the correlation matrix. However, it does not pose any discriminant validity problem as CLE and CUS are formative constructs.
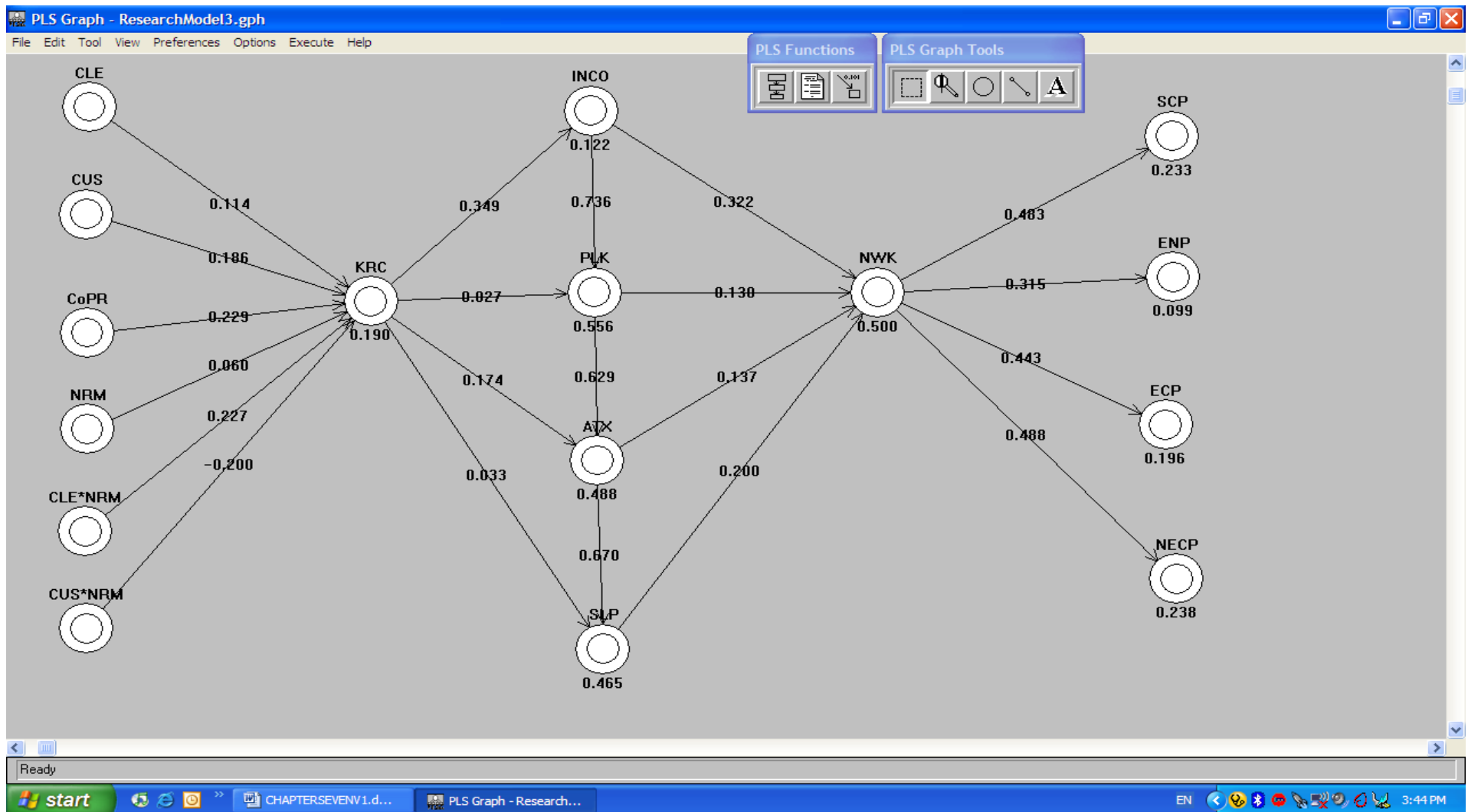
Figure 7-5: PLS Graph of Research Model 3

Table 7-8: Items Loadings and Weights for Research Model3

Constructs	Items (observed variables)	Loadings	Weights
CLE	IMPMNG		0.499
	IMPSUB		0.729
	IMPCOLG		0.088
CUS	IMPCUS		0.568
	IMPINV		0.647
CoPR	COPFTUR1	0.779	
	COPFTUR2	0.706	
	COPFTUR3	0.720	
	COPFTUR4	0.675	
	COPFTUR6	0.736	
NRM	SCN1	0.810	
	SCN2	0.861	
	SCN3	0.842	
	SCN4	0.833	
CLE*NRM	IMPMNG_SCN1	0.782	
	IMPMNG_SCN2	0.806	
	IMPMNG_SCN3	0.762	
	IMPMNG_SCN4	0.778	
	IMPSUB_SCN1	0.775	
	IMPSUB_SCN2	0.795	
	IMPSUB_SCN3	0.766	
	IMPSUB_SCN4	0.758	
	IMPCOLG_SCN1	0.830	
	IMPCOLG_SCN2	0.836	
	IMPCOLG_SCN3	0.807	
	IMPCOLG_SCN4	0.793	
CUS*NRM	IMPCUS_SCN1	0.823	
	IMPCUS_SCN2	0.832	
	IMPCUS_SCN3	0.854	
	IMPCUS_SCN4	0.853	
	IMPINV_SCN1	0.724	
	IMPINV_SCN2	0.747	
	IMPINV_SCN3	0.725	
	IMPINV_SCN4	0.723	
KRC	KR1	0.678	
	KR2	0.775	
	KR3	0.816	
	KR4	0.716	
INCO	KP1	0.730	
	KP2	0.893	
	KP3	0.866	
PLK	KP4	0.895	
	KP5	0.917	
ATX	KP6	0.831	
	KP7	0.880	

Constructs	Items (observed variables)	Loadings	Weights
SLP	KP8	0.941	
	KP9	0.932	
NWK	NK1	0.864	
	NK2	0.819	
	NK3	0.824	
	NK4	0.820	
	NK5	0.490	
SCP	CSSOP1	0.814	
	CSSOP2	0.813	
	CSSOP3	0.836	
	CSSOP4	0.762	
ENP	CSENP1	0.920	
	CSENP2	0.906	
ECP	CSECP1	0.872	
	CSECP2	0.774	
	CSECP3	0.835	
NECP	CSNECP1	0.845	
	CSNECP2	0.865	
	CSNECP3	0.885	
	CSNECP4	0.859	

<div align="center">***Table 7-9: Correlation Matrix and Psychometric Properties of Key Constructs for Model 3***</div>

	ICR	AVE	CLE	CUS	CoPR	KRC	INCO	PLK	ATX	SLP	NWK	SCP	ENP	ECP	NECP	NRM	NRM*CLE	NRM*CUS
CoPR	0.846	0.524	0.288	0.163	**0.724**													
KRC	0.835	0.560	0.243	0.234	0.348	**0.748**												
INCO	0.871	0.693	0.280	0.122	0.499	0.349	**0.832**											
PLK	0.902	0.821	0.261	0.179	0.432	0.284	0.745	**0.906**										
ATX	0.846	0.733	0.317	0.240	0.373	0.352	0.655	0.678	**0.856**									
SLP	0.934	0.877	0.334	0.203	0.465	0.269	0.787	0.714	0.681	**0.936**								
NWK	0.880	0.602	0.292	0.225	0.522	0.396	0.666	0.606	0.573	0.640	**0.776**							
SCP	0.882	0.651	0.212	0.277	0.419	0.212	0.428	0.464	0.435	0.465	0.483	**0.807**						
ENP	0.909	0.834	0.146	0.211	0.308	0.135	0.276	0.315	0.299	0.309	0.315	0.556	**0.913**					
ECP	0.867	0.685	0.202	0.212	0.398	0.198	0.375	0.375	0.401	0.397	0.443	0.582	0.717	**0.828**				
NECP	0.921	0.745	0.211	0.200	0.465	0.208	0.483	0.471	0.447	0.489	0.488	0.627	0.636	0.792	**0.863**			
NRM	0.903	0.700	0.221	0.217	0.502	0.289	0.500	0.511	0.441	0.492	0.577	0.557	0.364	0.478	0.528	**0.837**		
NRM*CLE	0.952	0.626	0.205	0.238	0.464	0.290	0.508	0.511	0.449	0.506	0.579	0.549	0.350	0.487	0.516	0.926	**0.791**	
NRM*CUS	0.928	0.620	0.161	0.391	0.396	0.218	0.408	0.433	0.385	0.443	0.468	0.452	0.315	0.418	0.461	0.805	0.830	**0.787**

Notes: Bold diagonal elements are the square root of AVE for each construct

Off-diagonal elements are the correlations between constructs

7.2.5. Fourth PLS Graph Measurement Model

The moderating effect of the last social capital aspect identification is pointed out in Figure 7-6. As for the first two social capital aspects trust and norms, the path of the interaction variable co-located employees and identification (CLE*IDN) and knowledge received (KRC) is acceptable. Additionally, the R-square (R^2) of knowledge received is also high with 0.195. Table 7-10 indicated the loadings and weights of the fourth research model that represents the moderating role of identification. It is noted in the table that all the loadings are equal or more than 0.6. Table 7-11 displayed the correlation matrix for the third moderating variable identification. The square roots of AVE for the moderating variable (IDN) and interaction variables identification and co-located employees (IDN*CLE) and identification and customers (IDN*CUS) are less than the off-diagonal elements in the correlation matrix. However, this does not pose any discriminant validity problem as CLE and CUS are formative constructs.

Figure 7-6: PLS Graph of Research Model 4

Table 7-10: Items Loadings and Weights for Research Model 4

Constructs	Items (observed variables)	Loadings	Weights
CLE	IMPMNG		0.496
	IMPSUB		0.732
	IMPCOLG		0.087
CUS	IMPCUS		0.566
	IMPINV		0.648
CoPR	COPFTUR1	0.779	
	COPFTUR2	0.706	
	COPFTUR3	0.721	
	COPFTUR4	0.675	
	COPFTUR6	0.736	
IDN	SCI1	0.911	
	SCI2	0.844	
	SCI3	0.844	
CLE*IDN	IMPMNG_SCI1	0.840	
	IMPMNG_SCI2	0.791	
	IMPMNG_SCI3	0.812	
	IMPSUB_SCI1	0.816	
	IMPSUB_SCI2	0.745	
	IMPSUB_SCI3	0.785	
	IMPCOLG_SCI1	0.877	
	IMPCOLG_SCI2	0.838	
	IMPCOLG_SCI3	0.853	
CUS*IDN	IMPCUS_SCI1	0.844	
	IMPCUS_SCI2	0.818	
	IMPCUS_SCI3	0.824	
	IMPINV_SCI1	0.803	
	IMPINV_SCI2	0.761	
	IMPINV_SCI3	0.756	
KRC	KR1	0.679	
	KR2	0.779	
	KR3	0.815	
	KR4	0.713	
INCO	KP1	0.730	
	KP2	0.893	
	KP3	0.866	
PLK	KP4	0.895	
	KP5	0.917	
ATX	KP6	0.831	
	KP7	0.880	
SLP	KP8	0.941	
	KP9	0.932	
NWK	NK1	0.864	
	NK2	0.819	
	NK3	0.824	
	NK4	0.820	
	NK5	0.490	

Constructs	Items (observed variables)	Loadings	Weights
SCP	CSSOP1	0.814	
	CSSOP2	0.813	
	CSSOP3	0.836	
	CSSOP4	0.762	
ENP	CSENP1	0.920	
	CSENP2	0.906	
ECP	CSECP1	0.872	
	CSECP2	0.774	
	CSECP3	0.835	
NECP	CSNECP1	0.845	
	CSNECP2	0.865	
	CSNECP3	0.885	
	CSNECP4	0.859	

Table 7-11: Correlation Matrix and Psychometric Properties of Key Constructs for Model 4

	ICR	AVE	CLE	CUS	CoPR	KRC	INCO	PLK	ATX	SLP	NWK	SCP	ENP	ECP	NECP	IDN	IDN*CLE	IDN*CUS
CoPR	0.846	0.524	0.288	0.163	**0.724**													
KRC	0.835	0.560	0.242	0.234	0.348	**0.748**												
INCO	0.871	0.693	0.280	0.122	0.499	0.348	**0.832**											
PLK	0.902	0.821	0.260	0.179	0.432	0.283	0.745	**0.906**										
ATX	0.845	0.732	0.317	0.240	0.373	0.352	0.655	0.678	**0.856**									
SLP	0.934	0.877	0.334	0.202	0.465	0.269	0.787	0.714	0.681	**0.936**								
NWK	0.880	0.602	0.292	0.225	0.522	0.396	0.666	0.606	0.573	0.640	**0.776**							
SCP	0.882	0.651	0.212	0.277	0.419	0.212	0.428	0.464	0.435	0.465	0.483	**0.807**						
ENP	0.909	0.834	0.146	0.211	0.308	0.135	0.276	0.315	0.299	0.309	0.315	0.556	**0.913**					
ECP	0.867	0.685	0.202	0.212	0.398	0.198	0.375	0.375	0.401	0.397	0.443	0.582	0.717	**0.828**				
NECP	0.921	0.745	0.211	0.200	0.465	0.207	0.483	0.471	0.447	0.489	0.488	0.627	0.636	0.792	**0.863**			
IDN	0.901	0.752	0.230	0.263	0.519	0.302	0.464	0.439	0.443	0.460	0.498	0.487	0.313	0.458	0.468	**0.867**		
IDN*CLE	0.948	0.669	0.226	0.272	0.491	0.311	0.481	0.459	0.462	0.482	0.511	0.476	0.316	0.457	0.470	0.923	**0.818**	
IDN*CUS	0.915	0.643	0.163	0.401	0.439	0.232	0.401	0.398	0.383	0.424	0.425	0.397	0.274	0.405	0.427	0.821	0.841	**0.802**

Notes: Bold diagonal elements are the square root of AVE for each construct
Off-diagonal elements are the correlations between constructs

7.2.6. Fifth PLS Graph Measurement Model

As indicated previously, two social capital aspects are combined to show their moderating effect. Figure 7-7 demonstrated the effect of both trust and norms. It is observed from the figure that the path between customers and trust (CUS*TRS) and knowledge received (KRC) is acceptable with 0.210. The R^2 of knowledge received increased to 0.199. It is exemplified in Table 7-12 that the loadings of the interaction indicators IMPCUS_SCT1, IMPCUS_SCT6, and IMPINV_SCT1 are low. Table 7-13 showed that the square root of AVE for trust (TRS), trust and co-located employees (TRS*CLE), trust and customers (TRS*CUS), norms (NRM), norms and co-located employees (NRM*CLE), and norms and customers (NRM*CUS) are less than the off-diagonal elements in the correlation matrix. However, this does not pose any discriminant validity problem as CLE and CUS are formative constructs.
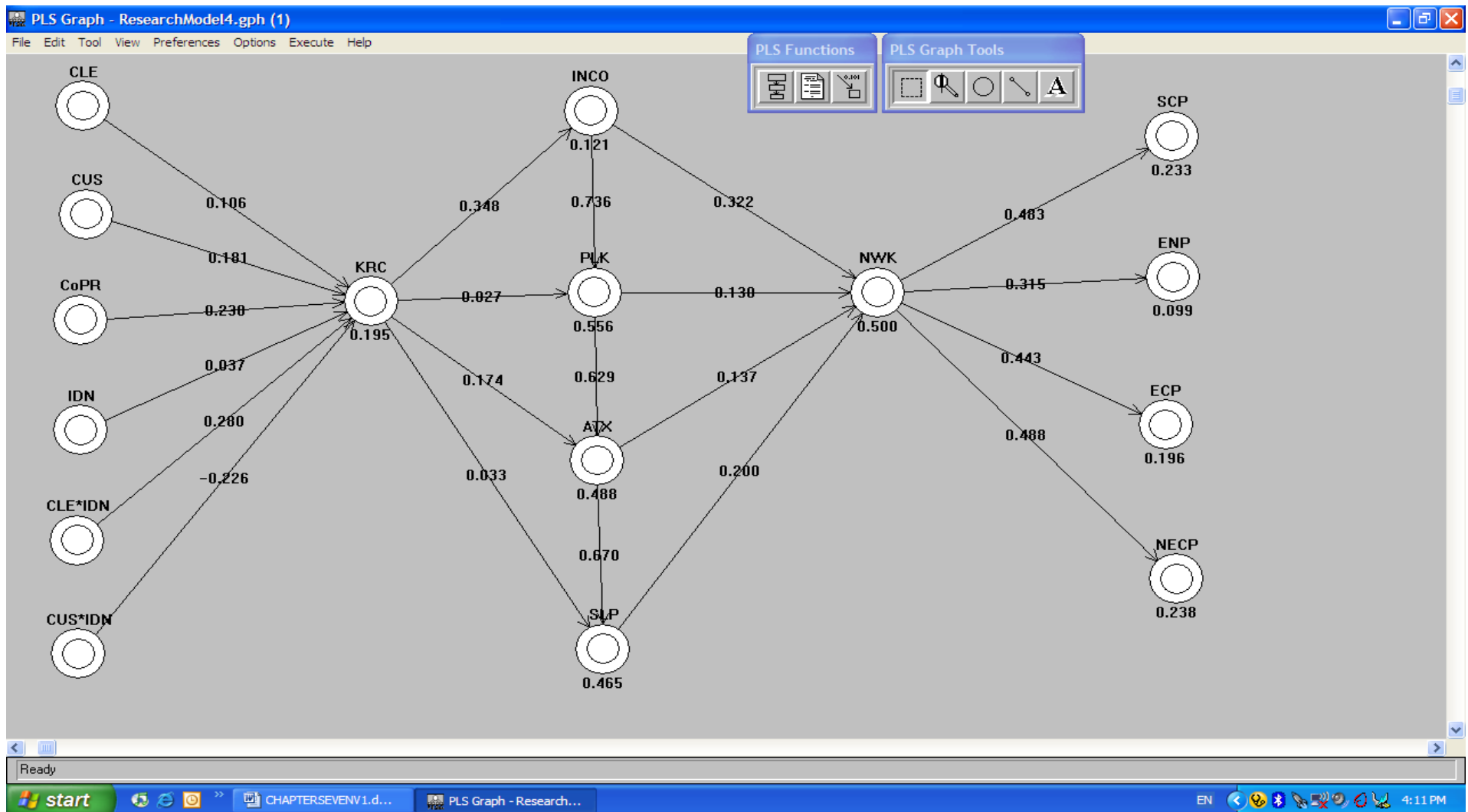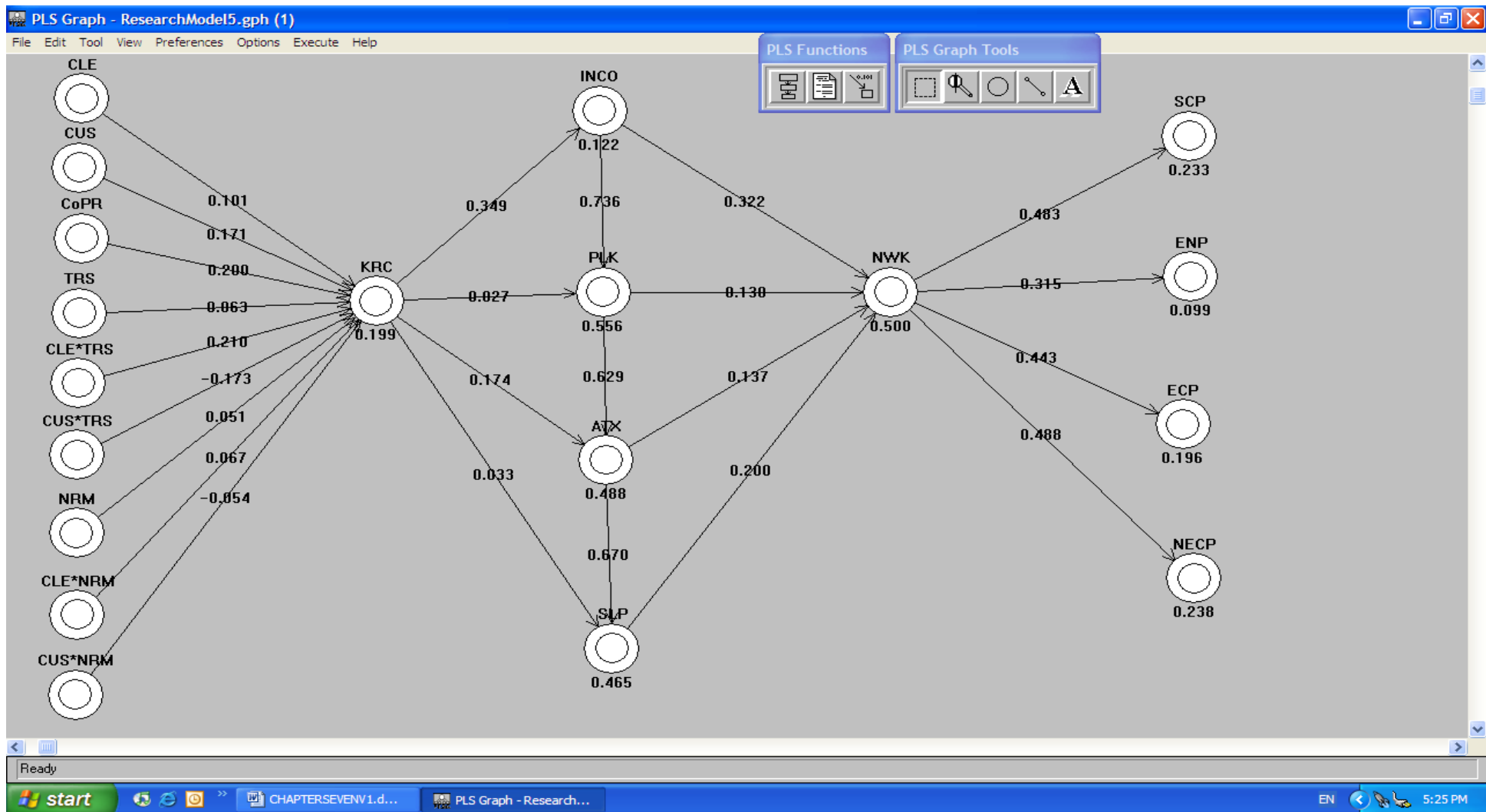
Figure 7-7: PLS Graph of Research Model 5

Table 7-12: Items Loadings and Weights for Research Model 5

Constructs	Items (observed variables)	Loadings	Weights
CLE	IMPMNG		0.499
	IMPSUB		0.729
	IMPCOLG		0.088
CUS	IMPCUS		0.569
	IMPINV		0.645
CoPR	COPFTUR1	0.779	
	COPFTUR2	0.706	
	COPFTUR3	0.720	
	COPFTUR4	0.675	
	COPFTUR6	0.736	
TRS	SCT1	0.746	
	SCT2	0.793	
	SCT3	0.712	
	SCT4	0.723	
	SCT5	0.769	
	SCT6	0.785	
CLE*TRS	IMPMNG_SCT1	0.719	
	IMPMNG_SCT2	0.745	
	IMPMNG_SCT3	0.722	
	IMPMNG_SCT4	0.668	
	IMPMNG_SCT5	0.665	
	IMPMNG_SCT6	0.734	
	IMPSUB_SCT1	0.723	
	IMPSUB_SCT2	0.751	
	IMPSUB_SCT3	0.718	
	IMPSUB_SCT4	0.635	
	IMPSUB_SCT5	0.656	
	IMPSUB_SCT6	0.745	
	IMPCOLG_SCT1	0.722	
	IMPCOLG_SCT2	0.790	
	IMPCOLG_SCT3	0.762	
	IMPCOLG_SCT4	0.731	
	IMPCOLG_SCT5	0.742	
	IMPCOLG_SCT6	0.753	
CUS*TRS	IMPCUS_SCT1	0.105	
	IMPCUS_SCT2	0.656	
	IMPCUS_SCT3	0.624	
	IMPCUS_SCT4	0.667	
	IMPCUS_SCT5	0.651	
	IMPCUS_SCT6	0.223	
	IMPINV_SCT1	0.586	
	IMPINV_SCT2	0.770	
	IMPINV_SCT3	0.722	
	IMPINV_SCT4	0.665	
	IMPINV_SCT5	0.729	
	IMPINV_SCT6	0.686	

Constructs	Items (observed variables)	Loadings	Weights
NRM	SCN1	0.810	
	SCN2	0.861	
	SCN3	0.842	
	SCN4	0.833	
CLE*NRM	IMPMNG_SCN1	0.782	
	IMPMNG_SCN2	0.806	
	IMPMNG_SCN3	0.762	
	IMPMNG_SCN4	0.778	
	IMPSUB_SCN1	0.775	
	IMPSUB_SCN2	0.795	
	IMPSUB_SCN3	0.766	
	IMPSUB_SCN4	0.758	
	IMPCOLG_SCN1	0.830	
	IMPCOLG_SCN2	0.836	
	IMPCOLG_SCN3	0.807	
	IMPCOLG_SCN4	0.793	
CUS*NRM	IMPCUS_SCN1	0.824	
	IMPCUS_SCN2	0.832	
	IMPCUS_SCN3	0.854	
	IMPCUS_SCN4	0.853	
	IMPINV_SCN1	0.724	
	IMPINV_SCN2	0.747	
	IMPINV_SCN3	0.724	
	IMPINV_SCN4	0.723	
KRC	KR1	0.676	
	KR2	0.775	
	KR3	0.817	
	KR4	0.717	
INCO	KP1	0.730	
	KP2	0.893	
	KP3	0.866	
PLK	KP4	0.895	
	KP5	0.917	
ATX	KP6	0.831	
	KP7	0.880	
SLP	KP8	0.941	
	KP9	0.932	
NWK	NK1	0.864	
	NK2	0.819	
	NK3	0.824	
	NK4	0.820	
	NK5	0.490	
SCP	CSSOP1	0.814	
	CSSOP2	0.813	
	CSSOP3	0.836	
	CSSOP4	0.762	

Constructs	Items (observed variables)	Loadings	Weights
ENP	CSENP1	0.920	
	CSENP2	0.906	
ECP	CSECP1	0.872	
	CSECP2	0.774	
	CSECP3	0.835	
NECP	CSNECP1	0.845	
	CSNECP2	0.865	
	CSNECP3	0.885	
	CSNECP4	0.859	

Table 7-13: Correlation Matrix and Psychometric Properties of Key Constructs for Model 5

	ICR	AVE	CLE	CUS	CoPR	KRC	INCO	PLK	ATX	SLP	NWK	SCP	ENP	ECP	NECP	TRS	TRS*CLE	TRS*CUS	NRM	NRM*CLE	NRM*CUS
CoPR	0.846	0.524	0.288	0.163	**0.724**																
KRC	0.835	0.560	0.243	0.234	0.348	**0.748**															
INCO	0.871	0.693	0.280	0.122	0.499	0.349	**0.832**														
PLK	0.902	0.821	0.261	0.179	0.432	0.284	0.745	**0.906**													
ATX	0.846	0.733	0.317	0.241	0.373	0.352	0.655	0.678	**0.856**												
SLP	0.934	0.877	0.334	0.203	0.465	0.269	0.787	0.714	0.681	**0.936**											
NWK	0.880	0.602	0.292	0.225	0.522	0.396	0.666	0.606	0.573	0.640	**0.776**										
SCP	0.882	0.651	0.212	0.277	0.419	0.212	0.428	0.464	0.435	0.465	0.483	**0.807**									
ENP	0.909	0.834	0.146	0.211	0.308	0.135	0.276	0.315	0.299	0.309	0.315	0.556	**0.913**								
ECP	0.867	0.685	0.202	0.212	0.398	0.198	0.375	0.375	0.401	0.397	0.443	0.582	0.717	**0.828**							
NECP	0.921	0.745	0.211	0.200	0.465	0.208	0.483	0.471	0.447	0.489	0.488	0.627	0.636	0.792	**0.863**						
TRS	0.888	0.570	0.267	0.195	0.567	0.326	0.594	0.528	0.492	0.552	0.672	0.518	0.386	0.458	0.542	**0.755**					
TRS*CLE	0.951	0.522	0.284	0.198	0.531	0.333	0.602	0.520	0.489	0.562	0.675	0.500	0.371	0.457	0.515	0.929	**0.722**				
TRS*CUS	0.872	0.388	0.234	0.279	0.524	0.274	0.554	0.509	0.468	0.545	0.604	0.449	0.350	0.428	0.504	0.874	0.868	**0.623**			
NRM	0.903	0.700	0.221	0.217	0.502	0.289	0.500	0.511	0.441	0.492	0.577	0.557	0.364	0.478	0.528	0.636	0.590	0.594	**0.837**		
NRM*CLE	0.952	0.626	0.205	0.238	0.464	0.290	0.508	0.511	0.449	0.506	0.579	0.549	0.350	0.487	0.516	0.613	0.662	0.636	0.926	**0.791**	
NRM*CUS	0.928	0.620	0.161	0.393	0.396	0.218	0.408	0.433	0.385	0.443	0.468	0.452	0.315	0.418	0.461	0.488	0.505	0.708	0.805	0.829	**0.787**

Notes: Bold diagonal elements are the square root of AVE for each construct

Off-diagonal elements are the correlations between constructs

7.2.7. Sixth PLS Graph Measurement Model

The other combination of moderating variables is between norms and identification that is presented in Figure 7-8. It is observed from the figure that the path between co-located employees and identification (CLE*IDN) and KRC is 0.273 that is acceptable. The R^2 of knowledge received is also high in this research model. Table 7-14 illustrated that all the loadings of the variables in this model are high. Table 7-15 illustrated the correlation matrix for moderation variables norms and identification. The moderation and interaction variables: norms (NRM), norms and co-located employees (NRM*CLE), norms and customers (NRM*CUS), identification (IDN), identification and co-located employees (IDN*CLE), and identification and customers (IDN*CUS) have their square root of AVE less than the off-diagonal elements in the correlation matrix. However, it does not pose any discriminant validity problem as CLE and CUS are formative constructs.
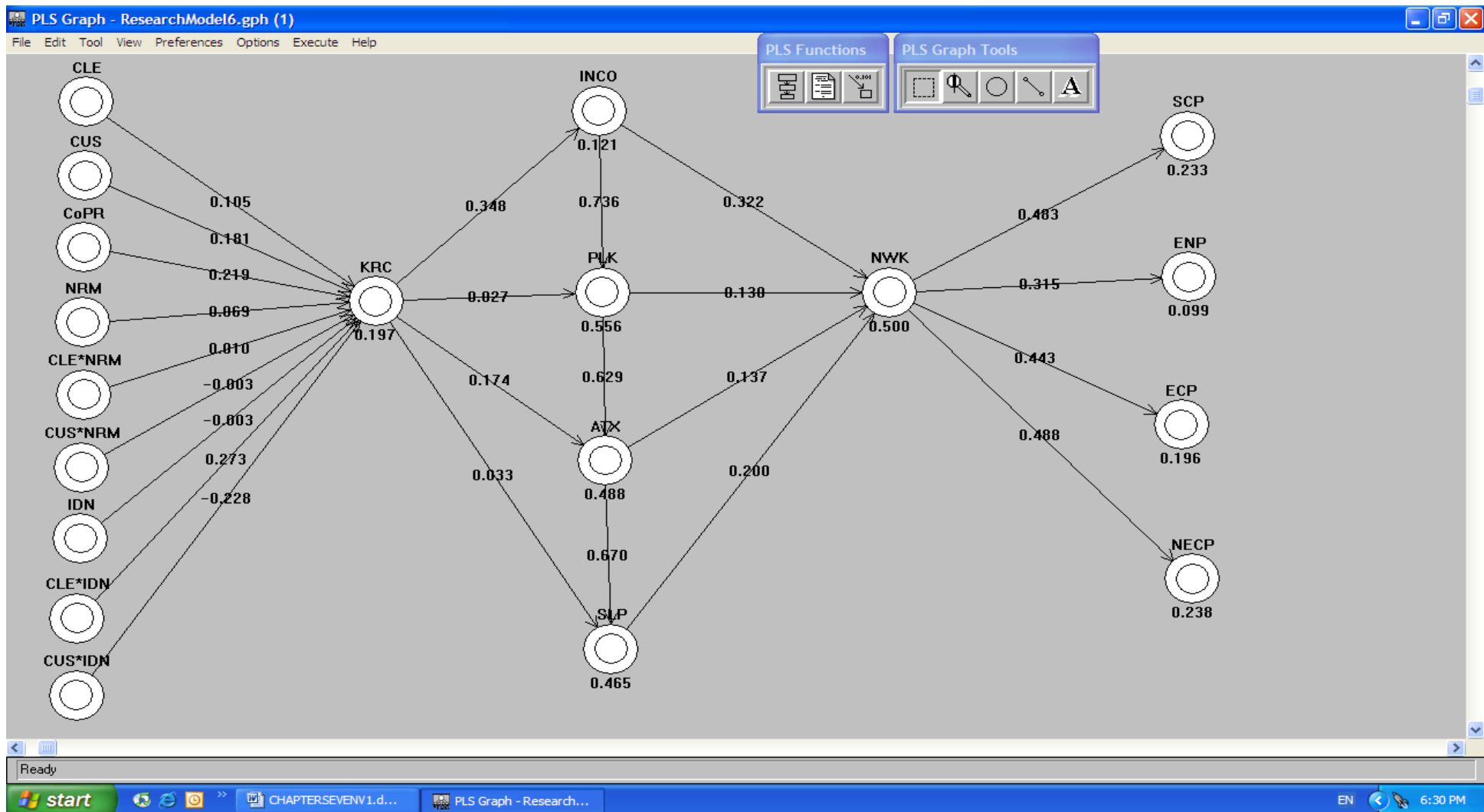
Figure 7-8: PLS Graph of Research Model 6

Table 7-14: Items Loadings and Weights for Research Model 6

Constructs	Items (observed variables)	Loadings	Weights
CLE	IMPMNG		0.497
	IMPSUB		0.731
	IMPCOLG		0.087
CUS	IMPCUS		0.566
	IMPINV		0.648
CoPR	COPFTUR1	0.779	
	COPFTUR2	0.706	
	COPFTUR3	0.721	
	COPFTUR4	0.675	
	COPFTUR6	0.736	
NRM	SCN1	0.810	
	SCN2	0.861	
	SCN3	0.842	
	SCN4	0.833	
CLE*NRM	IMPMNG_SCN1	0.782	
	IMPMNG_SCN2	0.806	
	IMPMNG_SCN3	0.762	
	IMPMNG_SCN4	0.778	
	IMPSUB_SCN1	0.775	
	IMPSUB_SCN2	0.795	
	IMPSUB_SCN3	0.766	
	IMPSUB_SCN4	0.758	
	IMPCOLG_SCN1	0.830	
	IMPCOLG_SCN2	0.836	
	IMPCOLG_SCN3	0.807	
	IMPCOLG_SCN4	0.793	
CUS*NRM	IMPCUS_SCN1	0.823	
	IMPCUS_SCN2	0.832	
	IMPCUS_SCN3	0.854	
	IMPCUS_SCN4	0.853	
	IMPINV_SCN1	0.724	
	IMPINV_SCN2	0.747	
	IMPINV_SCN3	0.725	
	IMPINV_SCN4	0.724	
IDN	SCI1	0.911	
	SCI2	0.844	
	SCI3	0.844	
CLE*IDN	IMPMNG_SCI1	0.840	
	IMPMNG_SCI2	0.791	
	IMPMNG_SCI3	0.812	
	IMPSUB_SCI1	0.816	
	IMPSUB_SCI2	0.745	
	IMPSUB_SCI3	0.785	
	IMPCOLG_SCI1	0.877	
	IMPCOLG_SCI2	0.838	
	IMPCOLG_SCI3	0.853	

Constructs	Items (observed variables)	Loadings	Weights
CUS*IDN	IMPCUS_SCI1	0.844	
	IMPCUS_SCI2	0.818	
	IMPCUS_SCI3	0.824	
	IMPINV_SCI1	0.803	
	IMPINV_SCI2	0.761	
	IMPINV_SCI3	0.756	
KRC	KR1	0.679	
	KR2	0.777	
	KR3	0.816	
	KR4	0.714	
INCO	KP1	0.730	
	KP2	0.893	
	KP3	0.866	
PLK	KP4	0.895	
	KP5	0.917	
ATX	KP6	0.831	
	KP7	0.880	
SLP	KP8	0.941	
	KP9	0.932	
NWK	NK1	0.864	
	NK2	0.819	
	NK3	0.824	
	NK4	0.820	
	NK5	0.490	
SCP	CSSOP1	0.814	
	CSSOP2	0.813	
	CSSOP3	0.836	
	CSSOP4	0.762	
ENP	CSENP1	0.920	
	CSENP2	0.906	
ECP	CSECP1	0.872	
	CSECP2	0.774	
	CSECP3	0.835	
NECP	CSNECP1	0.845	
	CSNECP2	0.865	
	CSNECP3	0.885	
	CSNECP4	0.859	

Table 7-15: Correlation Matrix and Psychometric Properties of Key Constructs for Model 6

	ICR	AVE	CLE	CUS	CoPR	KRC	INCO	PLK	ATX	SLP	NWK	SCP	ENP	ECP	NECP	NRM	NRM*CLE	NRM*CUS	IDN	IDN*CLE	IDN*CUS
CoPR	0.846	0.524	0.288	0.163	**0.724**																
KRC	0.835	0.560	0.243	0.234	0.348	**0.748**															
INCO	0.871	0.693	0.280	0.122	0.499	0.348	**0.832**														
PLK	0.902	0.821	0.260	0.179	0.432	0.284	0.745	**0.906**													
ATX	0.845	0.732	0.317	0.240	0.373	0.352	0.655	0.678	**0.856**												
SLP	0.934	0.877	0.334	0.202	0.465	0.269	0.787	0.714	0.681	**0.936**											
NWK	0.880	0.602	0.292	0.225	0.522	0.396	0.666	0.606	0.573	0.640	**0.776**										
SCP	0.882	0.651	0.212	0.277	0.419	0.212	0.428	0.464	0.435	0.465	0.483	**0.807**									
ENP	0.909	0.834	0.146	0.211	0.308	0.135	0.276	0.315	0.299	0.309	0.315	0.556	**0.913**								
ECP	0.867	0.685	0.202	0.212	0.398	0.198	0.375	0.375	0.401	0.397	0.443	0.582	0.717	**0.828**							
NECP	0.921	0.745	0.211	0.200	0.465	0.207	0.483	0.471	0.447	0.489	0.488	0.627	0.636	0.792	**0.863**						
NRM	0.903	0.700	0.221	0.217	0.502	0.289	0.500	0.511	0.441	0.492	0.577	0.557	0.364	0.478	0.528	**0.837**					
NRM*CLE	0.952	0.626	0.205	0.238	0.464	0.290	0.508	0.511	0.449	0.506	0.579	0.549	0.350	0.487	0.516	0.926	**0.791**				
NRM*CUS	0.928	0.619	0.160	0.390	0.396	0.218	0.408	0.433	0.385	0.443	0.468	0.452	0.315	0.418	0.461	0.805	0.830	**0.787**			
IDN	0.901	0.752	0.230	0.263	0.519	0.302	0.464	0.439	0.443	0.460	0.498	0.487	0.313	0.458	0.468	0.738	0.706	0.612	**0.867**		
IDN*CLE	0.948	0.669	0.226	0.272	0.491	0.311	0.481	0.459	0.462	0.482	0.511	0.476	0.316	0.458	0.470	0.690	0.772	0.650	0.923	**0.818**	
IDN*CUS	0.915	0.643	0.164	0.402	0.439	0.232	0.401	0.398	0.383	0.424	0.425	0.397	0.274	0.405	0.427	0.632	0.680	0.840	0.821	0.841	**0.802**

Notes: Bold diagonal elements are the square root of AVE for each construct

Off-diagonal elements are the correlations between constructs

7.2.8. Seventh PLS Graph Measurement Model

The last grouping between trust and identification that is presented in Figure 7-9 showed the moderation effect of these two social capital aspects. The path between co-located employees and identification (CLE*IDN) and KRC is less than 0.2 but it is the highest number. Interestingly, the R^2 of KRC is higher than all the previous models with 0.201. As indicated in Table 7-16 that the loadings for IMPCUS_SCT1, IMPCUS_SCT6, and IMPINV_SCT1 are low. Table 7-17 demonstrated that the square roots of trust (TRS), trust and co-located employees (TRS*CLE), trust and customers (TRS*CUS), identification (IDN), identification and co-located employees (IDN*CLE), and identification and customers (IDN*CUS) are less than the off-diagonal elements of the correlation matrix. However, this does not pose any discriminant validity problem as CLE and CUS are formative constructs.
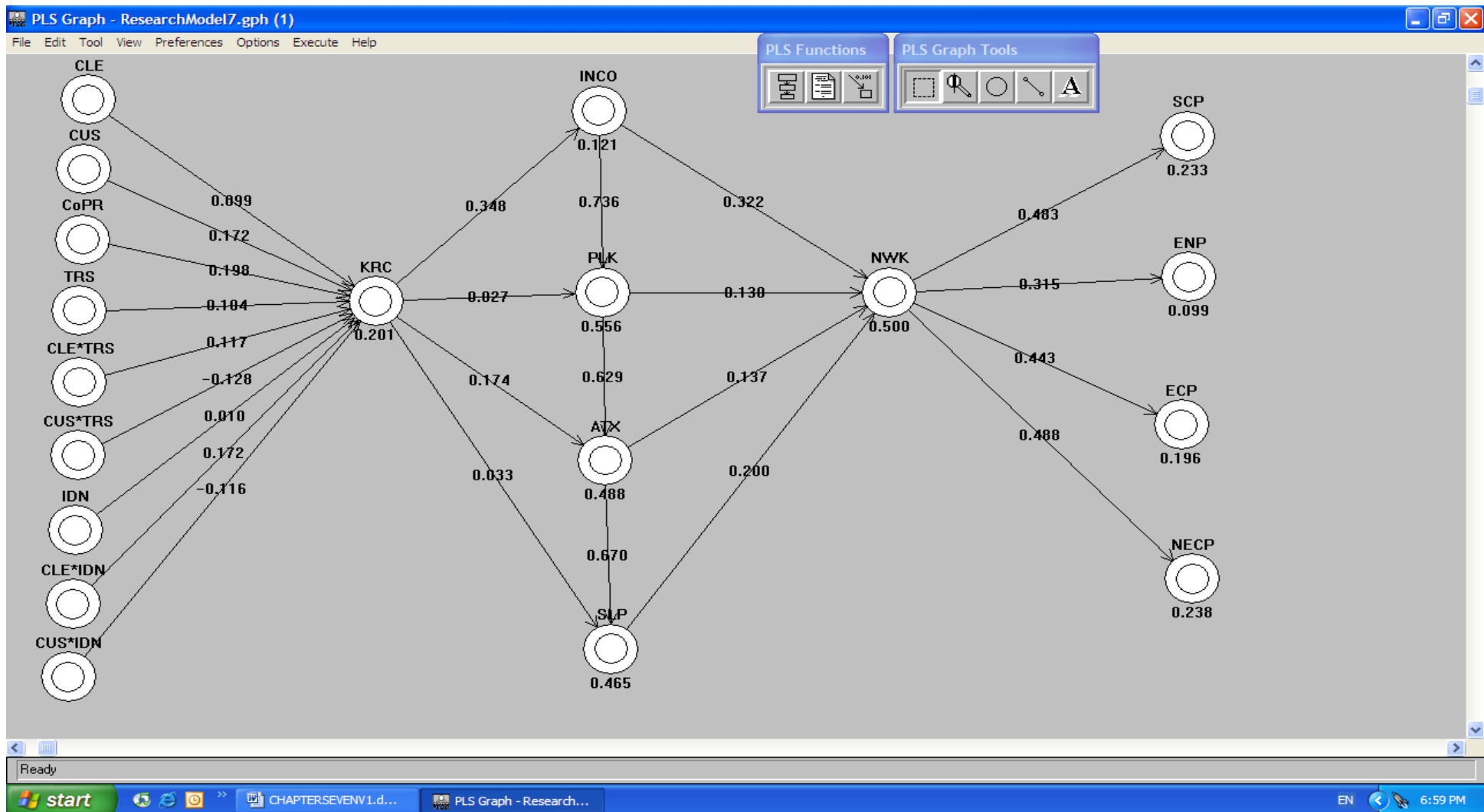
Figure 7-9: PLS Graph of Research Model 7

Table 7-16: Items Loadings and Weights for Research Model 7

Constructs	Items (observed variables)	Loadings	Weights
CLE	IMPMNG		0.498
	IMPSUB		0.731
	IMPCOLG		0.087
CUS	IMPCUS		0.566
	IMPINV		0.646
CoPR	COPFTUR1	0.779	
	COPFTUR2	0.706	
	COPFTUR3	0.721	
	COPFTUR4	0.675	
	COPFTUR6	0.736	
TRS	SCT1	0.746	
	SCT2	0.793	
	SCT3	0.712	
	SCT4	0.723	
	SCT5	0.769	
	SCT6	0.785	
CLE*TRS	IMPMNG_SCT1	0.719	
	IMPMNG_SCT2	0.745	
	IMPMNG_SCT3	0.722	
	IMPMNG_SCT4	0.668	
	IMPMNG_SCT5	0.665	
	IMPMNG_SCT6	0.734	
	IMPSUB_SCT1	0.723	
	IMPSUB_SCT2	0.751	
	IMPSUB_SCT3	0.718	
	IMPSUB_SCT4	0.635	
	IMPSUB_SCT5	0.656	
	IMPSUB_SCT6	0.745	
	IMPCOLG_SCT1	0.722	
	IMPCOLG_SCT2	0.790	
	IMPCOLG_SCT3	0.762	
	IMPCOLG_SCT4	0.731	
	IMPCOLG_SCT5	0.742	
	IMPCOLG_SCT6	0.753	
CUS*TRS	IMPCUS_SCT1	0.105	
	IMPCUS_SCT2	0.656	
	IMPCUS_SCT3	0.623	
	IMPCUS_SCT4	0.667	
	IMPCUS_SCT5	0.651	
	IMPCUS_SCT6	0.224	
	IMPINV_SCT1	0.586	
	IMPINV_SCT2	0.770	
	IMPINV_SCT3	0.722	
	IMPINV_SCT4	0.665	
	IMPINV_SCT5	0.729	
	IMPINV_SCT6	0.686	

Constructs	Items (observed variables)	Loadings	Weights
IDN	SCI1	0.911	
	SCI2	0.844	
	SCI3	0.844	
CLE*IDN	IMPMNG_SCI1	0.840	
	IMPMNG_SCI2	0.791	
	IMPMNG_SCI3	0.812	
	IMPSUB_SCI1	0.816	
	IMPSUB_SCI2	0.745	
	IMPSUB_SCI3	0.785	
	IMPCOLG_SCI1	0.877	
	IMPCOLG_SCI2	0.838	
	IMPCOLG_SCI3	0.853	
CUS*IDN	IMPCUS_SCI1	0.844	
	IMPCUS_SCI2	0.819	
	IMPCUS_SCI3	0.824	
	IMPINV_SCI1	0.803	
	IMPINV_SCI2	0.761	
	IMPINV_SCI3	0.755	
KRC	KR1	0.677	
	KR2	0.777	
	KR3	0.816	
	KR4	0.715	
INCO	KP1	0.730	
	KP2	0.893	
	KP3	0.866	
PLK	KP4	0.895	
	KP5	0.917	
ATX	KP6	0.831	
	KP7	0.880	
SLP	KP8	0.941	
	KP9	0.932	
NWK	NK1	0.864	
	NK2	0.819	
	NK3	0.824	
	NK4	0.820	
	NK5	0.490	
SCP	CSSOP1	0.814	
	CSSOP2	0.813	
	CSSOP3	0.836	
	CSSOP4	0.762	
ENP	CSENP1	0.920	
	CSENP2	0.906	
ECP	CSECP1	0.872	
	CSECP2	0.774	
	CSECP3	0.835	

Constructs	Items (observed variables)	Loadings	Weights
NECP	CSNECP1	0.845	
	CSNECP2	0.865	
	CSNECP3	0.885	
	CSNECP4	0.859	

Table 7-17: Correlation Matrix and Psychometric Properties of Key Constructs for Model 7

	ICR	AVE	CLE	CUS	CoPR	KRC	INCO	PLK	ATX	SLP	NWK	SCP	ENP	ECP	NECP	TRS	TRS*CLE	TRS*CUS	IDN	IDN*CLE	IDN*CUS
CoPR	0.846	0.524	0.288	0.163	**0.724**																
KRC	0.835	0.560	0.243	0.234	0.348	**0.748**															
INCO	0.871	0.693	0.280	0.122	0.499	0.348	**0.832**														
PLK	0.902	0.821	0.261	0.179	0.432	0.283	0.745	**0.906**													
ATX	0.846	0.733	0.317	0.241	0.373	0.352	0.655	0.678	**0.856**												
SLP	0.934	0.877	0.334	0.203	0.465	0.269	0.787	0.714	0.681	**0.936**											
NWK	0.880	0.602	0.292	0.225	0.522	0.396	0.666	0.606	0.573	0.640	**0.776**										
SCP	0.882	0.651	0.212	0.277	0.419	0.212	0.428	0.464	0.435	0.465	0.483	**0.807**									
ENP	0.909	0.834	0.146	0.211	0.308	0.135	0.276	0.315	0.299	0.309	0.315	0.556	**0.913**								
ECP	0.867	0.685	0.202	0.212	0.398	0.198	0.375	0.375	0.401	0.397	0.443	0.582	0.717	**0.828**							
NECP	0.921	0.745	0.211	0.200	0.465	0.207	0.483	0.471	0.447	0.489	0.488	0.627	0.636	0.792	**0.863**						
TRS	0.888	0.570	0.267	0.195	0.567	0.326	0.594	0.528	0.492	0.552	0.672	0.518	0.386	0.458	0.542	**0.755**					
TRS*CLE	0.951	0.522	0.284	0.198	0.531	0.333	0.602	0.520	0.489	0.562	0.675	0.500	0.371	0.457	0.515	0.929	**0.722**				
TRS*CUS	0.872	0.387	0.234	0.279	0.524	0.274	0.554	0.509	0.468	0.545	0.604	0.449	0.350	0.428	0.504	0.874	0.868	**0.622**			
IDN	0.901	0.752	0.230	0.263	0.519	0.302	0.464	0.439	0.443	0.460	0.498	0.487	0.313	0.458	0.468	0.597	0.586	0.574	**0.867**		
IDN*CLE	0.948	0.669	0.226	0.272	0.491	0.311	0.481	0.459	0.462	0.482	0.511	0.476	0.316	0.458	0.470	0.597	0.681	0.635	0.923	**0.818**	
IDN*CUS	0.915	0.643	0.164	0.403	0.439	0.232	0.401	0.398	0.383	0.424	0.425	0.397	0.274	0.405	0.427	0.488	0.528	0.706	0.821	0.841	**0.802**

Notes: Bold diagonal elements are the square root of AVE for each construct

Off-diagonal elements are the correlations between constructs

7.2.9. Final PLS Graph Measurement Model

The final model combined all the moderating variables trust, norms, and identification (see Figurer 7-10). Again the path between CLE*IDN and KRC is less than 0.2, however, it has the highest number 0.187. The R^2 of knowledge received is slightly more than the R^2 of the seventh research model. Moreover, in Table 7-18 the loadings of IMPCUS_SCT1, IMPCUS_SCT6, and IMPINV_SCT1 is lower than 0.6. The correlation matrix of the combination of the three moderation constructs is exemplified in Table 7-19. It is noticed that the square root of the average variance extracted for the moderation and interaction constructs involving CLE and CUS are less than the off-diagonal elements. However, this does not pose any discriminant validity problem as CLE and CUS are formative indicators.

From all the nine PLS measurement models loadings and weights tables (7-2, 7-4, 7-6, 7-8, 7-10, 7-12, 7-14, 7-16, and 7-18) it is noticed that the weights of the formative indicators are almost the same. Similarly, the loadings of the reflective indicators knowledge creation process (INCO, PLK, ATX, and SLP), new knowledge (NWK), and corporate sustainability (SCP, ENP, ECP, and NECP) did not change. Alternatively, the loadings of CoPs categories (CoPR) and knowledge received (KRC) changed. This indicated that the moderating variables (trust, norms, and identification) affect only CoPs categories and knowledge received and did not influence the other variables. Moreover, from the figures illustrated in this chapter (Figure 7-2 to 7-10) it is noticed that all the paths after the knowledge received (KRC) are the same. The paths between KRC and first knowledge creation step interact and communicate (INCO) and KRC and second step pool of knowledge (PLK) are slightly different in models 1, 4, 6, 7, and 8. It can be argued that these changes are due to the effect of the moderating variables on knowledge received (KRC) that eventually impact its relationship with the INCO and PLK. It is noticed that the first knowledge creation steps INCO and PLK are influenced by KRC because they depend on the knowledge received from CoPs members more than the other two knowledge creation steps ATX and SLP.
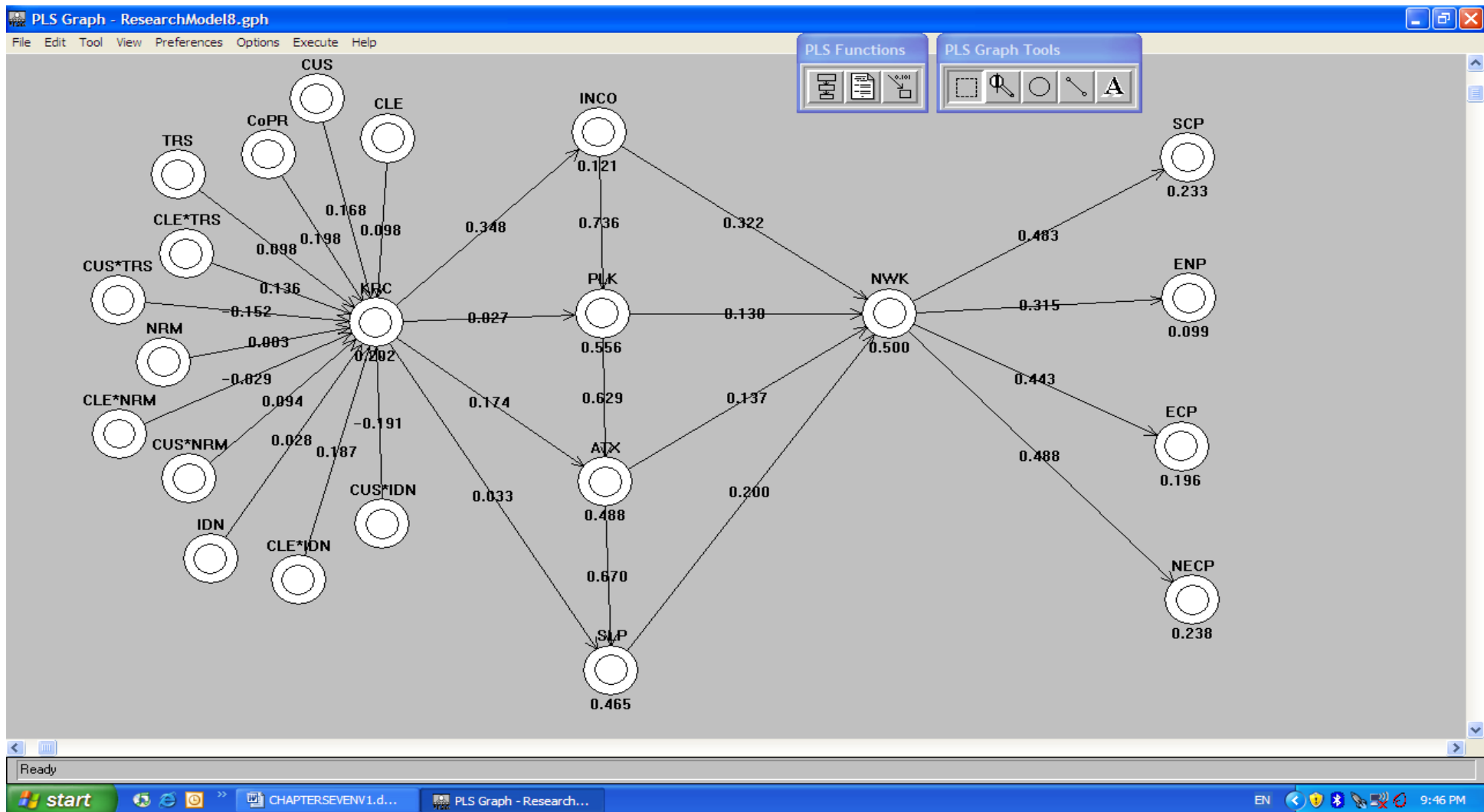
Figure 7-10: PLS Graph of Research Model 8

Table 7-18: Items Loadings and Weights for Research Model 8

Constructs	Items (observed variables)	Loadings	Weights
CLE	IMPMNG	0.675	0.498
	IMPSUB	0.861	0.731
	IMPCOLG	0.400	0.087
CUS	IMPCUS	0.797	0.568
	IMPINV	0.847	0.646
CoPR	COPFTUR1	0.779	
	COPFTUR2	0.706	
	COPFTUR3	0.720	
	COPFTUR4	0.675	
	COPFTUR6	0.736	
TRS	SCT1	0.746	
	SCT2	0.793	
	SCT3	0.712	
	SCT4	0.723	
	SCT5	0.769	
	SCT6	0.785	
TRS*CLE	IMPMNG_SCT1	0.719	
	IMPMNG_SCT2	0.745	
	IMPMNG_SCT3	0.722	
	IMPMNG_SCT4	0.668	
	IMPMNG_SCT5	0.665	
	IMPMNG_SCT6	0.734	
	IMPSUB_SCT1	0.723	
	IMPSUB_SCT2	0.751	
	IMPSUB_SCT3	0.718	
	IMPSUB_SCT4	0.668	
	IMPSUB_SCT5	0.656	
	IMPSUB_SCT6	0.745	
	IMPCOLG_SCT1	0.722	
	IMPCOLG_SCT2	0.790	
	IMPCOLG_SCT3	0.762	
	IMPCOLG_SCT4	0.731	
	IMPCOLG_SCT5	0.742	
	IMPCOLG_SCT6	0.753	
TRS*CUS	IMPCUS_SCT1	0.106	
	IMPCUS_SCT2	0.656	
	IMPCUS_SCT3	0.623	
	IMPCUS_SCT4	0.667	
	IMPCUS_SCT5	0.650	
	IMPCUS_SCT6	0.224	
	IMPINV_SCT1	0.586	
	IMPINV_SCT2	0.770	
	IMPINV_SCT3	0.722	
	IMPINV_SCT4	0.665	
	IMPINV_SCT5	0.729	
	IMPINV_SCT6	0.687	

Constructs	Items (observed variables)	Loadings	Weights
NRM	SCN1	0.810	
	SCN2	0.861	
	SCN3	0.842	
	SCN4	0.833	
NRM*CLE	IMPMNG_SCN1	0.782	
	IMPMNG_SCN2	0.806	
	IMPMNG_SCN3	0.762	
	IMPMNG_SCN4	0.778	
	IMPSUB_SCN1	0.775	
	IMPSUB_SCN2	0.795	
	IMPSUB_SCN3	0.766	
	IMPSUB_SCN4	0.758	
	IMPCOLG_SCN1	0.830	
	IMPCOLG_SCN2	0.836	
	IMPCOLG_SCN3	0.807	
	IMPCOLG_SCN4	0.793	
NRM*CUS	IMPCUS_SCN1	0.824	
	IMPCUS_SCN2	0.832	
	IMPCUS_SCN3	0.854	
	IMPCUS_SCN4	0.853	
	IMPINV_SCN1	0.724	
	IMPINV_SCN2	0.747	
	IMPINV_SCN3	0.724	
	IMPINV_SCN4	0.723	
IDN	SCI1	0.911	
	SCI2	0.844	
	SCI3	0.844	
IDN*CLE	IMPMNG_SCI1	0.840	
	IMPMNG_SCI2	0.791	
	IMPMNG_SCI3	0.812	
	IMPSUB_SCI1	0.816	
	IMPSUB_SCI2	0.745	
	IMPSUB_SCI3	0.785	
	IMPCOLG_SCI1	0.877	
	IMPCOLG_SCI2	0.838	
	IMPCOLG_SCI3	0.853	
IDN*CUS	IMPCUS_SCI1	0.844	
	IMPCUS_SCI2	0.819	
	IMPCUS_SCI3	0.824	
	IMPINV_SCI1	0.803	
	IMPINV_SCI2	0.761	
	IMPINV_SCI3	0.755	
KRC	KR1	0.677	
	KR2	0.777	
	KR3	0.816	
	KR4	0.715	

Constructs	Items (observed variables)	Loadings	Weights
INCO	KP1	0.730	
	KP2	0.893	
	KP3	0.866	
PLK	KP4	0.895	
	KP5	0.917	
ATX	KP6	0.831	
	KP7	0.880	
SLP	KP8	0.941	
	KP9	0.932	
NWK	NK1	0.864	
	NK2	0.819	
	NK3	0.824	
	NK4	0.820	
	NK5	0.490	
SCP	CSSOP1	0.814	
	CSSOP2	0.813	
	CSSOP3	0.836	
	CSSOP4	0.762	
ENP	CSENP1	0.920	
	CSENP2	0.906	
ECP	CSECP1	0.872	
	CSECP2	0.774	
	CSECP3	0.835	
NECP	CSNECP1	0.845	
	CSNECP2	0.865	
	CSNECP3	0.885	
	CSNECP4	0.859	

Table 7-19: Correlation Matrix and Psychometric Properties of Key Constructs for Model 8

	ICR	AVE	CLE	CUS	CoPR	KRC	INCO	PLK	ATX	SLP	NWK	SCP	ENP	ECP	NECP	TRS	TRS*CLE	TRS*CUS	NRM	NRM*CLE	NRM*CUS	IDN	IDN&CLE	IDN*CUS
CoPR	0.846	0.524	0.288	0.163	**0.724**																			
KRC	0.835	0.560	0.243	0.234	0.348	**0.748**																		
INCO	0.871	0.693	0.280	0.122	0.499	0.348	**0.832**																	
PLK	0.902	0.821	0.261	0.179	0.432	0.284	0.745	**0.906**																
ATX	0.846	0.733	0.317	0.241	0.373	0.352	0.655	0.678	**0.856**															
SLP	0.934	0.877	0.334	0.203	0.465	0.269	0.787	0.714	0.681	**0.936**														
NWK	0.880	0.602	0.292	0.225	0.522	0.396	0.666	0.606	0.573	0.640	**0.776**													
SCP	0.882	0.651	0.212	0.277	0.419	0.212	0.428	0.464	0.435	0.465	0.483	**0.807**												
ENP	0.909	0.834	0.146	0.211	0.308	0.135	0.276	0.315	0.299	0.309	0.315	0.556	**0.913**											
ECP	0.867	0.685	0.202	0.212	0.398	0.198	0.375	0.375	0.401	0.397	0.443	0.582	0.717	**0.828**										
NECP	0.921	0.745	0.211	0.200	0.465	0.207	0.483	0.471	0.447	0.489	0.488	0.627	0.636	0.792	**0.863**									
TRS	0.888	0.570	0.267	0.195	0.567	0.326	0.594	0.528	0.492	0.552	0.672	0.518	0.386	0.458	0.542	**0.755**								
TRS*CLE	0.951	0.522	0.284	0.198	0.531	0.333	0.602	0.520	0.489	0.562	0.675	0.500	0.371	0.457	0.515	0.929	**0.722**							
TRS*CUS	0.872	0.387	0.234	0.278	0.524	0.274	0.554	0.509	0.468	0.545	0.604	0.449	0.350	0.428	0.504	0.874	0.868	**0.622**						
NRM	0.903	0.700	0.221	0.217	0.502	0.289	0.500	0.511	0.441	0.492	0.577	0.557	0.364	0.478	0.528	0.636	0.590	0.594	**0.837**					
NRM*CLE	0.953	0.626	0.205	0.238	0.464	0.290	0.508	0.511	0.449	0.506	0.579	0.549	0.350	0.487	0.516	0.613	0.662	0.636	0.926	**0.791**				
NRM*CUS	0.928	0.620	0.160	0.392	0.396	0.218	0.408	0.433	0.385	0.443	0.468	0.452	0.315	0.418	0.461	0.488	0.505	0.708	0.805	0.830	**0.787**			
IDN	0.901	0.752	0.230	0.263	0.519	0.302	0.464	0.439	0.443	0.460	0.498	0.487	0.313	0.458	0.468	0.597	0.586	0.574	0.738	0.706	0.612	**0.867**		
IDN*CLE	0.948	0.669	0.226	0.272	0.491	0.311	0.481	0.459	0.459	0.482	0.511	0.476	0.316	0.458	0.470	0.597	0.681	0.635	0.690	0.772	0.650	0.923	**0.818**	
IDN*CUS	0.915	0.643	0.164	0.403	0.439	0.232	0.401	0.398	0.383	0.424	0.425	0.397	0.274	0.405	0.427	0.488	0.528	0.706	0.632	0.679	0.841	0.821	0.841	**0.802**

Notes: Bold diagonal elements are the square root of AVE for each construct

Off-diagonal elements are the correlations between constructs

7.3. Summary

This chapter described nine different PLS Graph measurement models created to analyse the relationships between the study constructs that include community of practice categories (co-located employees, non co-located employees, customers, suppliers, and business partners), communities of practice relations, knowledge received, knowledge creation process, new knowledge created, and corporate sustainability. Additionally, eighteen tables are presented in this chapter to show the reflective indicators loadings, formative indicators weights, the internal consistency reliability (ICR), average variance extracted (AVE), and the square root of the average variance extracted of the indicators of the above listed constructs to verify their significance and the reliability and validity of the relationships among these constructs.

CHAPTER EIGHT:

Results, Interpretation and Discussion

8.1. Overview

In the previous chapter the assessment of PLS measurement models are discussed. This chapter presents the PLS structural model analysis. The validity and reliability of the six major study hypotheses are assessed by constructs paths (β/γ) and t-values. The results of the study's theoretical and managerial implications are also identified in this chapter.

8.2. PLS Structural Models

PLS structural models are run after each measurement model. Table 8-1 presents the results of all structural models. The assessment of PLS structural model is necessary to investigate the relationships among the constructs (Barclay, Higgins and Thompson 1995). As exemplified in Table 8-1, the path of relationships between the constructs represents the hypothesis (Gefen, Straub and Boudreau 2000) and the estimates of t-values of the bootstrap samples are employed to test the hypothesis. Focusing on the t-values of the different study variables obtained from PLS structural models, it can be argued that not all study hypotheses are supported. According to Gefen, Straub and Boudreau (2000, 35) t-values are employed to estimate the significance of the paths where it should be "above 1.96 or 2.56, for alpha protection levels of 0.05 and 0.01, respectively".

The first hypothesis (**H1**) highlighted the positive influence of CoPs on the knowledge received that is used in the knowledge creation process in the context of Bahrain service industry. This hypothesis – as discussed in Chapter Five – is divided into five related hypotheses that address CoPs categories identified in this study. It is noticed

that **H1a** that underlined co-located employees of CoPs is supported in models 1, 2, 3, 4, and 5 (i.e. t-value > 1.96). In addition, **H1c** (customers CoPs) is supported in all the models except in model 1. Alternatively, t-values for non co-located employees (**H1b**), suppliers (**H1d**), and business partners (**H1 e**) are not supported in model 1 (note that these relationships are dropped from the other eight models as discussed in section 7.2.2 in Chapter Seven).

The postulation that CoP relations positively affect knowledge received from CoPs (**H2**) is supported in all the nine models where t-values exceed 1.96. Regarding the hypothesis that knowledge received from CoPs positively impacts the knowledge creation process (**H3**), it is noted that the first step in the knowledge creation process interaction and communication (**H3a**) and the third step alternative experimentations (**H3c**) are supported in all the models. In contrast, the second step in the knowledge creation process pool of knowledge (**H3b**) and the fourth step solution to problem (**H3d**) are not supported in all the models represented in Table 8-1. In relation to the postulation that the knowledge creation process steps are carried out in a sequence, it is noticed that **H3e**, **H3f**, and **H3g** are supported in all the nine models.

The hypothesis that the knowledge creation process positively influences the creation of new knowledge (**H4**) and the related hypotheses (**H4a**, **H4b**, **H4c**, and **H4d**) are all supported in this study. In contrast, the suggestion that social capital indicators (trust **H5a**, norms **H5b**, and identification **H5c**) moderate the amount of knowledge received from CoPs are not supported. Interestingly, the positive influence of new knowledge created on all the four measurement of organisational performance (social**H6a**, environmental**H6b**, economic**H6c**, and non economic**H6d**) is supported in all the models.

8.3. Interpretation of Results

This section discusses in detail the results of the six major hypotheses and the related hypotheses that are presented in Chapter Five. As stated in the previous section, the discussion is focused on the final combined research model (model 8).

Table 8-1: PLS Results of the Nine Models

Hypotheses	Model 1 Loadings	Model 1 t-value	Model 1 (Rev) Loadings	Model 1 (Rev) t-value	Model 2 Loadings	Model 2 t-value	Model 3 Loadings	Model 3 t-value	Model 4 Loadings	Model 4 t-value	Model 5 Loadings	Model 5 t-value	Model 6 Loadings	Model 6 t-value	Model 7 Loadings	Model 7 t-value	Model 8 (Final) Loadings	Model 8 (Final) t-value
H1a:CLE→KRC	0.116	2.078*	0.130	2.397**	0.101	2.106*	0.114	2.509**	0.106	2.008*	0.101	2.120*	0.105	1.847*	0.099	1.781*	0.098	1.742*
H1b:NCLE→KRC	0.024	0.417																
H1c:CUS→KRC	0.110	1.820*	0.163	3.102***	0.170	3.079***	0.186	3.094***	0.181	3.036***	0.171	2.833***	0.181	3.631***	0.172	2.749***	0.168	2.652***
H1d:SUP→KRC	0.040	0.676																
H1e:PRT→KRC	0.004	0.065																
H2: CoPR→KRC	0.300	5.128***	0.284	4.528***	0.214	3.598***	0.229	3.399***	0.230	3.781***	0.200	3.059***	0.219	2.982***	0.198	3.253***	0.198	2.977***
H3a:KRC→INCO	0.348	6.068***	0.349	6.239***	0.349	5.837***	0.349	5.848***	0.348	6.182***	0.349	5.849***	0.348	5.223***	0.348	6.177***	0.348	6.174***
H3b:KRC→PLK	0.027	0.618	0.027	0.747	0.027	0.620	0.027	0.620	0.027	0.675	0.027	0.619	0.027	0.750	0.027	0.675	0.027	0.676
H3c:KRC→ATX	0.174	3.940***	0.174	3.976***	0.174	4.382***	0.174	4.384***	0.174	4.370***	0.174	4.383***	0.174	4.031***	0.174	4.384***	0.174	4.387***
H3d:KRC→SLP	0.033	0.705	0.033	0.723	0.033	0.655	0.033	0.653	0.033	0.764	0.033	0.655	0.033	0.709	0.033	0.763	0.033	0.762
H3e:INCO→PLK	0.736	21.260***	0.736	20.132***	0.736	22.340***	0.736	22.361***	0.736	22.298***	0.736	22.364***	0.736	21.887***	0.736	22.328***	0.736	22.348***
H3f:PLK→ATX	0.629	14.310***	0.629	13.904***	0.629	15.691***	0.629	15.689***	0.629	15.324***	0.629	15.688***	0.629	14.347***	0.629	15.345***	0.629	15.340***
H3g:ATX→SLP	0.670	16.070***	0.670	15.687***	0.670	15.740***	0.670	15.725***	0.670	16.925***	0.670	15.738***	0.670	16.388***	0.670	16.931***	0.670	16.924***
H4a:INCO→NWK	0.322	3.983***	0.322	3.605***	0.322	3.494***	0.322	3.495***	0.322	3.465***	0.322	3.494***	0.322	3.219***	0.322	3.465***	0.322	3.465***
H4b:PLK→NWK	0.130	2.535**	0.130	2.158*	0.130	2.105*	0.130	2.105*	0.130	2.199*	0.130	2.105*	0.130	2.243*	0.130	2.199*	0.130	2.200*
H4c:ATX→NWK	0.137	2.687***	0.137	2.377**	0.137	2.430**	0.137	2.431**	0.137	2.939***	0.137	2.430**	0.137	2.245*	0.137	2.939***	0.137	2.939***
H4d:SLP→NWK	0.200	2.492**	0.200	2.835***	0.200	2.575***	0.200	2.575***	0.200	2.389**	0.200	2.575***	0.200	2.439**	0.200	2.389**	0.200	2.389**
H5a:TRS→KRC					0.098	0.708					0.063	0.214			0.104	0.407	0.098	0.326
CLE*TRS→KRC					0.250	1.461					0.210	1.145			0.117	0.558	0.136	0.626
CUS*TRS→KRC					-0.212	1.655*					-0.173	0.603			-0.128	0.523	-0.152	0.536
H5b:NRM→KRC							0.060	0.333			0.051	0.150	0.069	0.228			0.003	0.009
CLE*NRM→KRC							0.227	1.139			0.067	0.293	0.010	0.042			-0.029	0.116
CUS*NRM→KRC							-0.200	1.580			-0.054	0.192	-0.003	0.010			0.094	0.246
H5c:IDN→KRC									0.037	0.228			-0.003	0.011	0.010	0.040	0.028	0.105
CLE*IDN→KRC									0.280	1.411			0.273	1.242	0.172	0.832	0.187	0.823
CUS*IDN→KRC									-0.226	1.620			-0.228	0.744	-0.116	0.447	-0.191	0.543
H6a:NWK→SCP	0.483	8.214***	0.483	8.516***	0.483	9.669***	0.483	9.669***	0.483	7.694***	0.483	9.669***	0.483	9.563***	0.483	7.694***	0.483	7.694***
H6b:NWK→ENP	0.315	5.357***	0.315	4.525***	0.315	5.011***	0.315	5.011***	0.315	4.745***	0.315	5.011***	0.315	5.004***	0.315	4.745***	0.315	4.745***
H6c:NWK→ECP	0.443	8.071***	0.443	7.544***	0.443	8.112***	0.443	8.112***	0.443	7.135***	0.443	8.112***	0.443	7.853***	0.443	7.135***	0.443	7.135***
H6d:NWK→NECP	0.488	8.111***	0.488	8.392***	0.488	9.112***	0.488	9.112***	0.488	7.259***	0.488	9.112***	0.488	8.384***	0.488	7.259***	0.488	7.259***
R^2	0.181		0.169		0.196		0.190		0.195		0.199		0.197		0.201		0.202	
f^2					0.03		0.03		0.03		0.04		0.03		0.04		0.04	

Notes: * $p<0.05$, ** $p<0.01$, *** $p<0.001$

8.3.1. Hypothesis H1

Opposing to literature findings regarding the positive effect of communities of practice on knowledge sharing and creation (Arora 2002; Breu and Hemingway 2002; Chua 2006; Kimble, Hildreth and Wright 2001; Lesser and Everest 2001; Lesser and Storck 2001; Roberts 2006; Wang, Yang and Chou 2008; Wenger 1998a, b), it is empirically suggested from the results of this study that the relation between CoPs– except customer CoPs – and knowledge received from their members is not significant. As mentioned previously in this study, CoPs are divided into five different categories: co-located employees, non co-located employees, customers, suppliers, and business partners.

From section 8.2 in this chapter, it is found that hypotheses related to co-located employees (H1a), non co-located employees (H1b), suppliers (H1d), and business partners (H1e) are not significant. This is opposite to some researchers' argument that communities of practice that existed in the same department (Constant, Sproull and Kiesler 1996; Teigland and Wasko 2003; Wenger 1998a), different organisation units (Szulanski 1996; Tsai 2001; Wenger 1998a, b), suppliers (Nonaka 1994; von Hippel 1988; Wenger 1998a, b), and business partners (Corno, Reinmoeller and Nonaka 1999; Inkpen 1996; Mu, Peng and Love 2008) are vital to share and exchange knowledge among employees.

Thus, it is understood from the rejection of these hypotheses that knowledge received from these CoPs categories did not play a significant role in the knowledge creation process in Bahrain service industry organisations. As for co-located and non co-located employees, one possible reason for the rejection of these hypotheses is prestige. The participants of the study are senior managers; therefore, they will be reluctant to get help and advice from the employees under their supervision in the same department or from other departments' managers to uphold their prestige. In the case of suppliers and business partners, a possible reasons for the rejection of these hypotheses are: (a) suppliers and partners are unaware of the organisation activities, processes, and policies; (b) managers want to uphold their organisation's image as an

expert in its field; and (c) managers are unwilling to discuss internal organisational matters with outsiders due to the confidentiality of that information.

Alternatively, hypothesis H1c underscoring customers CoPs is significant. It can be suggested that customers CoPs are important source of information – that is obtained in the form of feedback and complaints – for senior managers within the Kingdom of Bahrain service industry. The acceptance of this hypothesis may also be due to the fact that the study involves service industry organisations where for most of them – if not for all of them – the most important goal is to satisfy customers' needs to succeed in Bahrain competitive service industry. Therefore, listening to customers' positive and negative feedback is vital for the knowledge creation process and corporate sustainability in general.

8.3.2. Hypothesis H2

It is noted from the results of this study that CoP relations positively influence the knowledge received from CoPs that is used in the knowledge creation process. CoP relations Gamma and t-values for all nine models are acceptable, though; γ decreased moving from model 1 to 8. Similarly, t-values for CoP relations are acceptable in all the models as illustrated in Table 8-1. This confirmed the claim that CoP relations or characteristics affect knowledge sharing among CoP members (Brown and Duguid 1991; Chae et al. 2005; Chiu, Hsu and Wang 2006; Davenport and Hall 2002; Lesser and Everest 2001; Nahapiet and Ghoshal 1998; Wenger 1998a). Hence, this study empirically supported this hypothesis.

As provided in Chapter Two, there are many CoP characteristics highlighted in the literature. Due to the limitation in time and scope of the study, six characteristics are used to test the existence of CoPs within Bahrain service industry. As stated previously in Chapter Seven, CoP characteristics – or as called relations – are not only useful to check the availability of CoPs in the Kingdom of Bahrain but also have a positive influence on knowledge received from CoPs members. It is also stated in Chapter Seven that one of the CoP relations – CoPs members' involvement in formal and informal activities (Lesser and Everest 2001; Wenger 1998 a, b) – was dropped

from the measurement model because of low PLS loadings. Thus, this hypothesis tested and proved that five CoP characteristics have a positive impact on knowledge received. Possible reasons for the acceptance of this hypothesis are as follow:

(a) recognising other CoPs members' knowledge and way of doing things (COPFTUR1) optimistically affect the knowledge received from them. In this case, these members will be contacted for help in solving work related problems as they are expected to know about these problems and the way of solving them – experience in dealing with these problems. In addition, it encouraged CoPs members to receive knowledge from others as it will save them the time required to know who to refer to when a problem occurs at work and enhanced members confidence in the accuracy of the knowledge received.

(b) open and easy communication with CoPs members (COPFTUR2) also influences knowledge received from them. Members will be more willing to approach other CoP members as it is easy to contact them and explain the problem they are facing especially in face-to-face communication. Therefore, CoPs members will not be reluctant to communicate others and receive necessary knowledge from them.

(c) furthermore CoPs members are motivated to communicate with others who are sharing same terminology (COPFTUR3). This will facilitate the explanation and understanding of the problem as they are sharing the same terms, jargons, and vocabulary. CoPs members are speaking the same language, thus, discussing work problems and exchanging knowledge related to it will be much easier.

(d) as one of the main goals for the existence of CoPs is to learn (COPFTUR4), members will be stimulated to exchange knowledge between them – i.e. positively affect the knowledge received from CoPs members. CoPs members will not be embarrassed from asking questions and receiving answers as they are all learning from each other.

(e) another important initiation of the connection among CoPs members to receive knowledge from them is to fulfil a need (COPFTUR6) that is solving work related problems. Therefore, members are encouraged to obtain knowledge from each other to fulfil this need.

As a result, knowing what others know, open communication, shared terminology, learning, and fulfilling members' needs are some of CoPs relations or characteristics that motivate the exchange of knowledge among CoPs members in Bahrain service industry that positively affect the reception of knowledge required in the knowledge creation process.

Hulland (1999) stressed that the way PLS minimise error through determining the R^2 values for the endogenous constructs. The R^2 for knowledge received (KRC) for all the nine models are presented in Table 8-1. It is noticed that the R^2 of model 8 that include all the study constructs (together with moderation constructs) has the highest figure (0.202). Therefore, the antecedents of knowledge received explained 20.2% of the variance.

8.3.3. Hypothesis H3

It is argued that within CoPs tacit and explicit knowledge is distributed and eventually encourage innovation in the organisation (Chu and Khosla 2008). Past study found that the relationship between type of knowledge received and type of network is not easily understood (Chae et al. 2005). However, several authors expressed that tacit knowledge is the dominant type of knowledge exchanged in CoPs (Dewhurst and Navarro 2004; Kogut and Zander 1992; Preece 2003; Wang, Yang and Chou 2008). Thus, this study hypothesised that knowledge received from CoPs positively influences the knowledge creation process. To test this hypothesis, the study investigated each step of the knowledge creation process independently.

The first step in the knowledge creation process is interaction and communication (Fuller, Jawecki and Muhlbacher 2007). Fuller, Jawecki and Muhlbacher (2007) stated that community members interact and communicate constantly, in which members talk about their work (Lave and Wenger 1991; Wenger 1998a), ask questions, bring up problems (Brown and Duguid 2001; Nonaka, Toyama and Konno 2000; Wenger 1998a, b), provide solutions, produce answers, laugh at mistakes, or discuss work changes (Brown and Duguid 1991; Wenger 2004). Therefore, the knowledge received positively influences knowledge creation first step interacts and

communicate. From the results obtained in this study, the hypothesis is supported empirically. As noted from Table 8-1 Beta (β) and t-values of the relationship between knowledge received from CoPs and knowledge creation first step interact and communicate are acceptable. Hence, H3a is supported in this study.

The acceptance of this hypothesis (H3a) implies that the knowledge received from internal and external CoPs within Bahrain service industry is critical for the first step in the knowledge creation process (i.e. interact and communication). It can be argued that the knowledge received from different CoPs members is obtained through their talking with each other about their job and asking questions and creating answers when they discuss a problem or not sure about a specific issue at work. As discussed earlier, CoPs facilitate the sharing and exchange of knowledge among their members that eventually encourage the reception of knowledge used in the interaction and communication step in the knowledge creation process.

The R^2 for knowledge creation process that is interaction and communication (INCO) for all the nine models are equal to 0.121 (for models 1, 4, 6, 7, and 8) and increase slightly to 0.122 (in models 1 (Revised), 2, 3, and 5). Therefore, the antecedents of interaction and communication explained 12% of the variance.

The second step in the knowledge creation process is developing a pool of collective knowledge (Brown and Duguid 2000) that exceeds any individual member knowledge (Fuller, Jawecki and Muhlbacher 2007). It is argued that when a problem occurs, community members will gather domain knowledge by interacting and working together to solve this problem (Kimble, Hildreth and Wright 2001). Similarly, Ibert (2007) expressed that sharing stories between members of community of practice creates an informal repository of knowledge. It is assumed that the knowledge received positively influences knowledge creation second step that is creating a pool of knowledge. Contradictory to the above arguments, the results of the study found that the relationship between the knowledge received from CoPs and developing a pool of collective knowledge is not acceptable. This is observed from the Beta of this hypothesis in all the nine models that are less than 0.2 and the t-values that are below 1.96 and 2.56. Consequently, H3b is not supported.

One explanation for that is the knowledge received from communities of practice members is directly related to knowledge creation process first step that is interaction and communication and it is indirectly influencing the second step which is developing a pool of collective knowledge. Thus, the knowledge received from different CoPs is employed in the first step of the knowledge creation process. Then, the outcome(s) of that first step is used in the second step of the knowledge creation process.

The antecedents of the second step develop a pool of knowledge explained 55.6% of the variance, in which the R^2 is 0.556.

Performing a sequence of alternating experimentation and invention – that is the third step in the knowledge creation process – is done when an unfamiliar situation arises where community members share and reflect stories related to the situation in hand (Fuller, Jawecki and Muhlbacher 2007). Orr (1990) discovered that the development of a practice is improved when technicians share stories and exchange practice and experience between them. As a result, it is hypothesised that knowledge received positively influences knowledge creation third step alternative experimentations. The findings of this study supported this hypothesis as the Beta and t-values in all the models illustrated in Table 8-1 are acceptable. It is important to mention here that the Beta and t-values are less than what is found in knowledge creation process first step interaction and communication.

This is due to the reason earlier mentioned in the above paragraph that the knowledge received from CoPs indirectly impacts the other knowledge creation process steps. Therefore, the acceptance of this hypothesis is for the reason that in this step (as in step one of the knowledge creation process) CoPs members discussed the problem and exchanged stories related to it in order to find a suitable way to solve the problem. The share and exchange of stories among CoPs members required the knowledge received from them, thus this hypothesis is accepted. The knowledge received from CoPs members is mainly employed in the first step of the knowledge creation process. However, it is also secondarily utilized in the third step which is performing a sequence of alternating experimentation and invention.

The R^2 for knowledge creation third step that is alternative experimentation is 0.488, suggesting that the models explained 48.8% of the variance in this endogenous variable.

The last step in the knowledge creation process is to find solution to problem (Fuller, Jawecki and Muhlbacher 2007). It is agreed that problems are solved by developing and applying new knowledge (Nonaka and Toyama 2003; Nonaka, Toyama and Konno 2000). Communities of practice are effective tools to deal with unstructured problems within organisations (Lesser and Everest 2001; Lesser and Storck 2001). Communities of practice encourage a context of free-flowing and creative means of sharing experiences and knowledge between the members that eventually create new approached to solve problems (Wenger and Snyder 2000). Further, members of a community of practice collaborate to solve problems by storytelling, hence tacit knowledge transfer motivated by CoPs (Gertler 2003). Thus, it is believed that knowledge received from CoPs will influence knowledge creation process final step that is solution to problem. In contrast to the previous assumption, the results of this study proved that knowledge received did not affect the last step in the knowledge creation process.

This is because of the same reason stated earlier, that knowledge received directly influences the first step interaction and communication and indirectly impacts the rest of the steps involved in the knowledge creation process. It can be understood that finding a solution to a problem is not affected by knowledge received from CoPs members. One reason for that is knowledge received already processed in the first step of the knowledge creation process. Thus, the last step in the knowledge creation process – find solution to the problem – implicitly employed this knowledge. This means CoPs in Bahrain service industry utilized the knowledge received from different CoPs members in the first step of the knowledge creation process (interact and communicate), processed it, and then passed the outcome of this processed knowledge to the other three steps of the knowledge creation process.

The R^2 for solution to problem (SLP) for all the nine models is 0.465. Therefore, the antecedents of solution to problem explained 46.5% of the variance.

As mentioned in Chapter Five, several authors agreed that in the process of knowledge creation, a pool of all the knowledge collected from different individuals is gathered to solve a problem (Bathelt, Malmberg and Maskell 2004; Foley 2000; Fong 2003; Fuller, Jawecki and Muhlbacher 2007; Kimble, Hildreth and Wright 2001; Nahapiet and Ghoshal 1998). This drove the study assumption that knowledge creation process first step interaction and communication will lead to the second step that is develop a pool of knowledge. From the figures presented in Table 8-1, this hypothesis significantly supported with high levels of Beta ($\beta = 0.736$) and t-values (that reaches to 22.364) in all the models.

It is implied from this hypothesis that in the knowledge creation process occurred in Bahrain service industry, CoPs members interact and communicate with each other to discuss the problem they are facing at work. After that, all the information collected from the first step is gathered to create a pool of knowledge related to this problem. It can be argued that it is logical to carry out the process of knowledge creation in this sequence (i.e. talking about, asking questions, and creating answers for work related problem and then gather all the knowledge collected from the previous action in a pool of problem related knowledge) to solve the problem.

After collecting all the knowledge related to a problem, alternative solutions are obtained from individuals who exchange stories related to that problem (Bathelt, Malmberg and Maskell 2004; Fuller, Jawecki and Muhlbacher 2007; Li and Kettinger 2006). Consequently, it is hypothesised that pool of knowledge (second step in the knowledge creation process) will lead to alternative experimentations (third step in the knowledge creation process). This hypothesis is supported in all the nine models with high Beta of 0.629 and t-values that reached to 15.691 in model 2.

The support of this hypothesis indicated that CoPs members within Bahrain service industry will continue the process of knowledge creation to solve work problems or find out how to deal with doubtful situations. In that instance, CoPs members will investigate the pool of knowledge collected for suitable solutions to the work problem. If a solution to the problem could not be found from the pool of knowledge, the next rational step is to find alternative experimentations by sharing past stories related to the problem.

The last step in a knowledge creation process is to find a solution to the problem that can be achieved after the interaction, collection, and experimenting the solutions (Fuller, Jawecki and Muhlbacher 2007; Li and Kettinger 2006; Nonaka and Toyama 2003; Nonaka, Toyama and Konno 2000). The following hypothesis is drawn from this argument: alternative experimentations will lead to a solution to the problem. This study empirically supported this hypothesis, as it is noted from Table 8-1 with high figures of Beta and t-values.

It can be argued that it is understandable to find a solution to the problem faced by CoPs members after all the discussions, collection of knowledge, and sharing alternative experimentations. Therefore, the acceptance of this hypothesis entails that CoPs members within Bahrain service industry will eventually find out a solution to the problem they are facing as they are reluctant to develop themselves in their profession (as mentioned by Wenger, McDermott and Snyder (2002) CoP definition provided in Table 2-2 ".. deepen their knowledge and expertise").

Ultimately Fuller, Jawecki and Muhlbacher (2007) four steps for innovation creation in CoPs is empirically proved in this study. The results of the study ascertained that the knowledge creation process followed a sequence of four steps that include interaction and communication, develop a pool of knowledge, perform a series of alternative experimentations, and find solution to problem is carried out within the Kingdom of Bahrain service industry.

8.3.4. Hypothesis H4

It is stressed that innovation is produced as a result of knowledge creation and sharing across organisational boundaries (du Plessis 2008). Similarly, it is proposed that organisational learning and innovation is encouraged by knowledge creation, codification, and sharing (Summer 1999). That drove the assumption that knowledge creation process positively influences the creation of new knowledge. As stated in hypothesis H3, each of knowledge creation process four steps are tested separately.

It is realised that through problem identification new knowledge is created (Nickerson and Zenger 2004). As pointed out before, the first step in the knowledge creation process that is interaction and communication consists of problem identification. Thus, it is argued that interaction and communication positively influences the creation of new knowledge. This argument is empirically supported in this study with Beta of 0.322 and t-values of greater than 3.00 in all the models in Table 8-1.

It is implied from that hypothesis that CoPs in Bahrain service industry may come up with new knowledge when they begin the knowledge creation process by interacting and communicating with each other. As talking about the problem, asking questions, and providing answers may create new and unique ideas that solve the problem.

Creative solutions to problems – that is new knowledge – are produced when employees combine their ideas in the cross functional teams and structures developed within organisations (Foley 2000). During the process of the evolutionary information-processing theory of knowledge creation tentative knowledge occurs, in which temporary solutions are found and evaluated to meet the goal (Li and Kettinger 2006). This leads to two assumptions, the first one is that developing a pool of knowledge positively influences the creation of new knowledge and the second assumption is alternative experimentations also impact new knowledge creation. These hypotheses are also supported, although the β values are low.

It is predicated that the second step that is "develop a pool of knowledge" and the third step which is "perform alternative experimentations" are influencing new knowledge creation. This means, within Bahrain service industry, CoPs members involvement in creating a pool of knowledge related to work problem and sharing and reflecting stories related to this problem will create new ideas that may solve the problem. Thus, these two steps in the knowledge creation process will help CoPs members finding a solution to the problem that is generating new knowledge.

Nonaka (1994) stressed that innovation is explained by finding solutions to new defined problems. It is argued that a solution to a problem leads to creating new knowledge (Li and Kettinger 2006; Nonaka and Toyama 2003; Nonaka, Toyama and Konno 2000). As a result, it is assumed that a solution to a problem positively

influences the creation of new knowledge. This hypothesis is supported with significant Beta and t-values in all the nine models. Interestingly, it was predicated that the last step in the knowledge creation process that is solution to problem has greater influence on the creation of new knowledge. However, the empirical findings of the study discovered that the first step of the knowledge creation process that is interaction and communication has greater influence on the creation of new knowledge as the figures of Beta and t-values are greater than in the fourth step.

It can be understood that CoPs in Bahrain service industry will come up with new knowledge derived from the solution found to solve work related problems (i.e. step four of the knowledge creation process). As indicated in the previous paragraph, it is interesting to note that interaction and communication has greater influence on the creation of new knowledge than solution to the problem. Hence, this implies that CoPs members' interaction and communication to discuss a problem or being unsure about a specific situation at work will usually lead to the creation of new knowledge. Alternatively, finding a solution to the problem will not necessarily lead to new knowledge creation. In that case, CoPs members will occasionally develop new knowledge when they found the solution to the problem they are facing; otherwise, routine solutions are employed to solve the problem.

The R^2 for new knowledge is 0.500, suggesting that the models explained 50% of the variance in this endogenous variable.

8.3.5. Hypothesis H5

Nahapiet and Ghoshal (1998) argued that organisational environment is suitable to create knowledge as it is supported by the development of social capital. It is proposed that social capital provides the required conditions for exchange and combination that will eventually lead to knowledge development (Gelauff 2003; Grant 1996b; Nahapiet and Ghoshal 1998). Tsai and Ghoshal (1998) empirically approved that social capital motivates organisations' resource exchange and production innovation. It is suggested that the flow of knowledge in communities of practice is supported by social capital (Davenport and Hall 2002; Gelauff 2003;

Productivity Commission 2003; Woodhouse 2006). The role of social capital whether moderating or directly influencing knowledge exchange is not clearly identified in the literature (Kankanhalli, Tan, and Wei 2005). Several scholars believed that social capital aspects moderate the impact of knowledge exchange (Kankanhalli, Tan, and Wei 2005; Teigland and Wasko 2003; Wasko and Faraj 2005), while others found that social capital is an outcome (Lesser and Strock 2001; Teigland and Wasko 2004). This study assumed that social capital moderates the amount of knowledge received from CoPs members.

The study focused on three well known relational dimension of social capital that includes trust, norms, and identification (Nahapiet and Ghoshal 1998; Wasko and Faraj 2005).Relational dimension of social capital facilitates individuals' access to information and knowledge that positively influences knowledge exchange and combination (Nahapiet and Ghoshal 1998).

Regarding the first aspect of social capital trust, many researchers argued that knowledge sharing is encouraged by trust (e.g. Chiu, Hsu and Wang 2006; Cooke and Morgan 2000; Fukuyama 1995; Gammelgaard and Ritter 2005; Morgan 2004; Sharkie 2003). Trusting others for not misusing knowledge (Gelauff 2003) and using knowledge appropriately (Kankanhalli, Tan and Wei 2005) facilitate the exchange of knowledge between them. It is argued that trust plays a moderation role in the knowledge exchange process (Chae et al. 2005; Nonaka, Toyama and Konno 2000). This draws the postulation that the level of trust moderates the amount of knowledge received from CoPs. To test this hypothesis, the PLS structural model is presented by Betas and t-values (see Table 8-1). As mentioned earlier in Chapter Seven, to evaluate the moderating role of social capital aspects, the researcher followed Chin, Marcolin and Newsted (2003) steps. The first moderating construct that is trust is divided into three variables: the moderation variable trust (TRS), and two interaction variables co-located employees and trust (CLE*TRS) and customers and trust (CUS*TRS). From Table 8-1, it is noted that in models 2, 5, 7, and 8 the effect of trust is shown. The Beta and t-value of the moderation construct TRS and the interaction construct CUS*TRS are not acceptable in all of the four models. Interestingly, for the interaction construct CLE*TRS the Beta in models 2 and 5 are acceptable that is greater than 0.2, however, the t-values are not acceptable in all the

four models. Hence, the moderation effect of trust on the knowledge received from CoPs is not supported.

Regarding the second social capital aspect that is norms, opposing to the argument that norms positively influence the flow of knowledge (Huysman and Wulf, 2005; Nahapiet and Ghoshal 1998; Productivity Commission 2003) the empirical results of the study did not support this argument. In the four models (3, 5, 6, and 8) that demonstrated the moderation influence of norms, it is noticed that for the moderating construct norms (NRM) and the interaction construct customers and norms (CUS*NRM) the Betas are less than 0.2 and t-values are less than 1.96. For the other interaction variable co-located employees and norms (CLE*NRM) the Betas and t-values in all the four models are not acceptable except in model 3 the Beta is high (β = 0.227).

Several authors stated that identification has a positive impact on knowledge exchange within a network (Bouty 2000; Jones, Hesterly and Borgatti1997; Kramer, Brewer and Hanna1996; Lewicki and Bunker 1996; Nahapiet and Ghoshal 1998; Nonaka 1991). Thus, it is assumed that identification moderates the amount of knowledge received from different CoPs members. The Betas and t-values of the moderation variable identification (IDN) and interaction variable customers and identification (CUS*IDN) are not acceptable in all the four models (4, 6, 7, and 8). The Betas of the interaction variable co-located employees and identification (CLE*IDN) in models 4 and 6 are greater than 0.2, while the t-values of CLE*IDN are low in all the models. Therefore, the hypothesis related to the third and final social capital aspect that is identification is not supported as well.

To calculate the interaction effect in the seven models that illustrates the moderation influence of social capital aspects, the researcher followed Chin, Marcolin and Newsted (2003) procedure. The R-square (R^2) of model 1 (revised) is compared with R^2 of models 2, 3, 4, 5, 6, 7, and 8. The difference between the R^2 is used to estimate the effect size for interaction (f^2), where f^2 = [R^2 (interaction model) - R^2 (main effects model)] / [1 - R^2 (main effects model)] (Chin, Marcolin and Newsted 2003, 211). A small, medium, and large interaction effect size is predicted for f^2 equal to 0.02, 0.15, and 0.35 respectively (Cohen 1988). The interaction effect sizes of models

2, 3, 4, 5, 6, 7, and 8 that represent social capital moderation impact are small where f^2 are between 0.03 and 0.04 (see Table 8-1). However, Chin, Marcolin and Newsted (2003, 211) expressed that "a small f^2 does not necessarily imply an unimportant effect. Even a small interaction effects can be meaningful under extreme moderating conditions, if the resulting beta changes are meaningful, then it is important to take these conditions into account."

Based on the results of this study, it is argued that trust, norms, and identification did not moderate the amount of knowledge received from communities of practice. The rejection of the hypotheses related to the moderating effect of social capital aspects on the amount of knowledge received from CoPs implies that CoPs members in Bahrain service industry are likely to accept the knowledge received from other members irrespective of the level of trust, norms, and identification. Consequently, since they are members of CoPs, the knowledge they provide is trusted by others. This entails that the knowledge received from other CoPs members is unconditionally acceptable.

8.3.6. Hypothesis H6

The last set of hypotheses are related to corporate sustainability which include social, environmental, economic, and non economic performance. Many researchers highlighted the role of knowledge on organisation performance (Argote 1999; Choo, Linderman and Schroeder 2007; Gadman and Cooper 2005; Laszlo and Laszlo 2002; Levin 2000; Salomon and Martin 2008; Teece 1977; Winter and Szulanski 2001). Therefore, it is argued that the new knowledge produced from communities of practice members' interaction has a positive impact on the organisation sustainability. This study classified corporate sustainability into social, environmental, economic, and non economic performance that are tested separately. As described below all the different corporate sustainability classifications are supported by the study empirical PLS results.

The empirical results of this study supported the theoretical assumption that there is a positive impact of knowledge on organisation social performance (Robinson et al. 2008). As noted from Table 8-1, the Betas ($\beta = 0.483$) in all of the nine models are

satisfactory. In addition, the t-values of the relationship between new knowledge created (NWK) and social performance (SCP) are acceptable in all models.

It may be indicated from the acceptance of this hypothesis that the increase of employees loyalty and decrease of their turnover, providing enhanced training and education programs for employees, discovering effective actions to prevent corruption, and finding new social responsibility projects ideas that are derived from new knowledge created via Bahrain service industry CoPs. Therefore, organisation social performance is positively influenced by CoPs Bahrain service industry new knowledge.

The R^2 for social performance is 0.233; consequently, the antecedents of this category of corporate sustainability explained 23.3% of the variance.

As stated earlier in this section, knowledge plays an important role in improving organisation's performance (e.g. Argote 1999; Gadman and Cooper 2005; Kodama 2005; Levin 2000; Teece 1977; Winter and Szulanski 2001). As one of corporate sustainability aspects, it is assumed that environmental performance is positively influenced by knowledge. The study supported the above assumption, in which the Betas and t-values of the relationship between new knowledge and organisation environmental performance are satisfactory.

An explanation of the approval of the hypothesis is that new knowledge created within Bahrain service industry CoPs cause the formation of new methods for environment protection and cleanness. As a result, CoPs in Bahrain service industry positively contribute to Bahrain's environment as the organisations in these industry showed high level of environmental performance.

The antecedents of the second category of corporate sustainability explained 9.9% of the variance, in which the R^2 is 0.099.

Many authors highlighted the effect of knowledge on organisation financial or economic performance (Gold, Mathoura and Segars 2001; Grant 1996a; Lee and Choi 2003; Rhodes et al. 2008; Salomon and Martin 2008). As a result, it is hypothesised

that new knowledge positively influences organisation economic performance. The study results supported this hypothesis in which the Betas ($\beta = 0.443$) and t-values (reaches up to 8.112) for this relationship are acceptable.

It is implied from the support of this hypothesis that organisation profitability, local hiring procedures, and increasing revenues and decreasing costs have improved because of the new knowledge created via Bahrain service industry CoPs. Thus, organisation's core goal that is improving their economic performance is positively persuaded by CoPs new knowledge.

The R^2 for economic performance is 0.196, suggesting that the models explained 19.6% of the variance in this endogenous variable.

The last corporate sustainability category that is non economic performance is also confirmed. From the literature (O'leary 2001; Rhodes et al. 2008; Salomon and Martin 2008) it is assumed that organisation non economic performance is influenced by knowledge. Acceptable Betas and t-values as shown in Table 8-1 proved that new knowledge positively influences organisation non economic performance.

The confirmation of this hypothesis means that customer's expectations, organisation's processes, organisation's innovation and growth enhancement are highly affected by Bahrain service industry CoPs new knowledge. Accordingly, new knowledge created by Bahrain service industry CoPs improved organisation's non economic performance. It is notable to mention here that the significant role new knowledge created within Bahrain service industry CoPs play on organisations' corporate sustainability (social, environmental, economic and non economic) was an interesting finding from the researcher point of view. This is because it was predicted in the beginning of this study that new knowledge is only central to organisation's economic performance as it is the only performance shown up in Bahraini organisation's annual reports. Additionally, it is argued that organisations' primary consideration is their financial performance (G100 2003).

The R^2 for non economic performance is 0.238, suggesting that the models explained 23.8% of the variance in this endogenous variable.

8.4. Research Implications

From the partial least squares (PLS) results obtained in the previous chapter (the assessment of the measurement model) and this chapter (the assessment of the structural model), the six major hypotheses related to this study were tested. In total fourteen out of twenty four hypotheses were supported based on the study results.

It is noticed from community of practice literature that there is a lack of empirical studies (Andriessen, Soekijad and Keasberry 2002) especially studies that investigate the effect of CoPs on innovation processes (Swan, Scarbrough and Maxine 2002), external CoPs (Soekijad, Huis in 't Veld and Enserink 2004; Swan, Scarbrough and Maxine 2002), and the influence of CoPs on organisational performance (Schenkel and Teigland 2008; Schenkel, Teigland and Borgatti 2001; Teigland 2000, 2003). One objective of this study is to empirically investigate the existence and forms of CoPs within the Kingdom of Bahrain service industry. Furthermore, the way knowledge is created within these CoPs and the impact of the new knowledge created through this process on organisation sustainability (i.e. social, environmental, economic, and non economic performance) are investigated in this study. From the results of this study, a number of research implications are derived:

- Intra and inter CoPs existed in Bahrain service industry, though, intra CoPs presented by co-located and inter CoPs presented by customers are mainly contacted by Bahrain service organisations' employees to deal with unsure situations and solve problems at work. Therefore, these CoPs have a major impact on organisation's knowledge creation process and its performance. It is implied that not all CoPs categories have an influence on organisations' performance. That is opposing to previous studies such as Lesser and Storck (2001), Schenkel and Teigland (2008), and Schrader (1991). In addition, what is true for one country is not for another. More specifically, cultural values and religious beliefs are different in Bahrain – as an Arabic and Islamic country – from the other countries studied in the literature, for example, European countries (Teigland 2000) and the United States of America (Teigland 2002; Wasko and Faraj 2005). Moreover, studying the

reason behind the importance of the different categories of CoPs on organisations' knowledge creation process and performance is vital to be investigated.

■ Community of practice characteristics were used at the beginning of this study to distinguish this type of networks existence in Bahrain service industry. The literature discussed different CoPs characteristics – as specified in section 2.2.1.2 in Chapter Two – without investigating the influence of these characteristics on CoPs. However, it is found that these characteristics (i.e. CoP relations) play an important role on the knowledge received from CoPs members. Therefore, this is added to CoP theory in which these characteristics not only identify CoPs but also persuade the amount of knowledge received from community members that eventually enhance organisation performance and future well being. The influence of other CoPs characteristics on knowledge received are not covered in this study. Accordingly, studying the effect of the other CoPs characteristics on knowledge received from CoPs members is essential.

■ Another interesting finding of this study is the knowledge creation process in communities of practice existed in Bahrain service organisations. It is assumed that the knowledge creation process can be considered as a system – as shown in Figure 8-1 – that include three main activities:(a) the reception of knowledge from CoPs (the input), (b) the knowledge creation process itself (the process), and (c) the new knowledge created (output). The study finding agreed with Nonaka's (1991, 1994) knowledge creation theory that new knowledge is created through the conversion of tacit and explicit knowledge. Furthermore, it can be argued that the study finding contributes to the knowledge creation literature in which it describes how knowledge is actually created in Bahrain service industry.
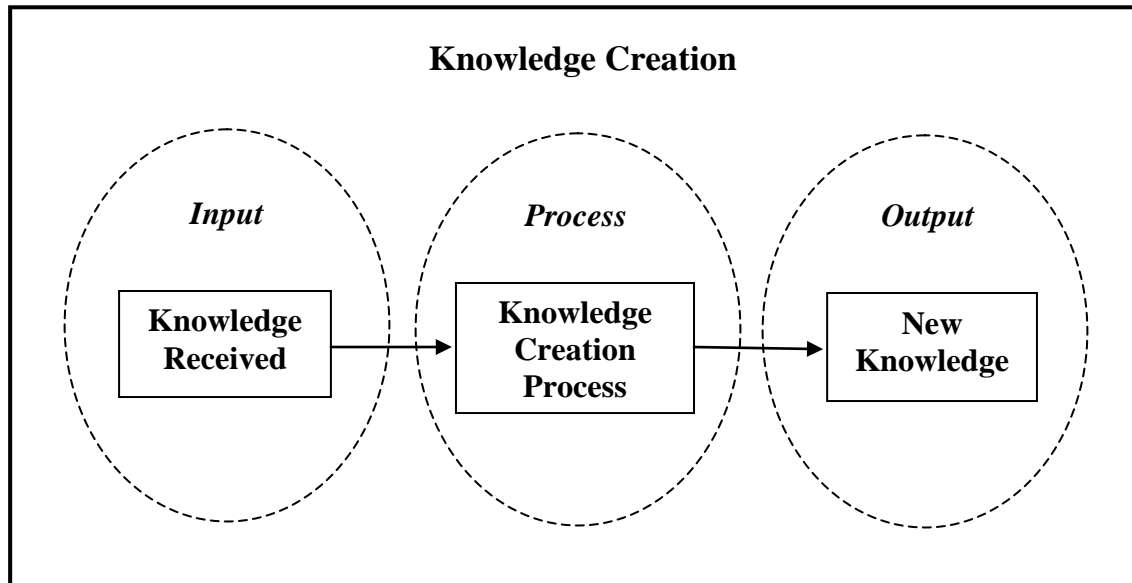
Figure 8-1: Knowledge Creation as a System

- It is argued that the knowledge transferring process involves diffusion and receiving of knowledge (Grant 1996a). To the best of the researcher knowledge, the study of knowledge received from communities of practice is neglected in the literature. Thus, this study examined the type and amount of knowledge received from different CoPs' categories and its influence on the knowledge creation process. It is discovered that both tacit and explicit knowledge are received from other community members. In addition, it is found that knowledge received from CoPs affect the knowledge creation process first step that is interaction and communication. For the best of the researcher knowledge, so far this is the first study that empirically investigated the knowledge creation process within organisations and more specifically among communities of practice. It is ascertained that knowledge creation process is carried out in sequence of four steps that is concur with the literature – refer to section 2.2.3 in Chapter Two. However, there is a need to discover the knowledge creation process in more depth and in different industries and nations.

- It is found from the study results that there is a positive relationship between knowledge creation process and new knowledge development. More specifically, the last step in the knowledge creation process (solution to problem) has greater effect on the creation of new knowledge than the other

three steps. This adds to the literature as the study findings indicated that the last step of the knowledge creation process influences the creation of new knowledge.

- The moderation variable in this study is social capital concept that is represented by three relational dimensions: trust, norms, and identification. For the best of the researcher knowledge, so far there is no study that measures the level of social capital in the Kingdom of Bahrain. Hence, this study explored the level of social capital in the Kingdom of Bahrain services industry and its role on the knowledge received from CoPs members. It is found that social capital aspects existed in Bahrain service industry organisations involved in the study where trust has the highest level followed by norms and identification. Though the results of this study did not support the assumption that social capital aspects have a moderation effect on knowledge received from CoPs members. It can be argued that the level of social capital has no effect on the knowledge received from Bahrain service industry CoPs. Nevertheless, it is required to study the effect of social capital on knowledge creation process occuring in CoPs.

- The study explored the impact of the outcome of the knowledge creation process (i.e. new knowledge generated) on corporate sustainability. It is proved from the study results that the generation of new knowledge happen in communities of practice within Bahrain service industry positively affect the organisation social, environmental, economic, and non economic performance (i.e. corporate sustainability). Further, it is noted that social and non economic performance has the highest percentage that demonstrates the influence of new knowledge created within communities of practice in Bahrain service industry. In contrast, environmental performance has the lowest percentage regarding the impact of new knowledge on it. This is opposite to what is found in the literature that environmental concerns is in the lead keeping behind social aspects reports (Brown, Dillard and Marshall 2006). From researcher understanding, this is due to the nature of the industry under study as environment performance is more noticeable within the production industry where management is reluctant to obey government regulations related to

environment pollution expected from production processes. Further studies are needed to examine the influence of CoPs new knowledge on corporate sustainability and the reason behind its impact on one type of performance over the others.

8.5. Managerial Implication

As mentioned in Chapter Two, community of practice concept is accepted among various organisations (Chu and Khosla 2008; de Moor and Smits 2002; Davenport and Hall 2002; Scarso and Bolisani 2008; Soekijad, Huis in 't Veld and Enserink 2004) as a mechanism to leverage knowledge, learning and innovation (Cross et al. 2006; Schenkel and Teigland 2008; Soekijad, Huis in 't Veld and Enserink 2004; Swan, Scarbrough and Maxine 2002; Wang, Yang and Chou 2008). An increasing number of managers start to develop and support CoPs for their knowledge management strategies or even as a supplementary organisational structure (Probst and Borzillo 2008; Wenger and Snyder 2000). Communities of practice are found in large organisations as they have the required resources to utilize CoPs as a method of knowledge management (Andriessen, Soekijad and Keasberry 2002; Roberts 2006). From the literature, it is found that organisations that are utilising Cops are well known, large, and international organisations in different sectors within the service and production industries (Chu and Khosla 2008; Cross et al. 2006; Scarso and Bolisani 2008; Wang, Yang and Chou 2008) as well as the government sector (Kranendonk and Kersten 2007). Following the lead of these organisations, it is recommended that organisations within the Kingdom of Bahrain service industry should first develop a knowledge management strategy (Robinson et al. 2008) and implement CoPs in their strategy in order to survive in Bahrain competitive marketplace and continue their growth.

Implementing CoPs in organisation's management strategies is not the ultimate solution for Bahrain service industry organisations to sustain their position in the market, the following recommendations provided in this section are equally important to bear in mind by managers and decision makers:

- From the results of this study, it is observed that organisations within Bahrain service industry are unfamiliar with community of practice concept. Wenger (1998b) highlighted the challenge of unrecognising CoPs by their members and the organisation. As a result, before implementing CoPs in organisation's management strategy, employees should be introduced to the concept and its benefits and limitations.

- It is not enough to recognise the existence of CoPs within Bahrain service organisations, equally important is to provide the suitable environment for these community members to interact and also create an incentive system that reward CoPs members coming up with remarkable solutions. Consequently, employees in all organisational levels will be motivated to be an active part in these communities that ultimately improve organisation performance. This is supporting the claim that providing a suitable culture, infrastructure, and incentives are vital motivators for employees to share knowledge that leads to new knowledge creation necessary for sustainable competitive advantage for the organisation (Arora 2002). More precisely, Scarso and Bolisani (2008) suggested that communities of practice need to be cultivated and managed.

- Communities of practice positive outcomes are a long-term perspective (Scarso and Bolisani 2008), thus setting a long-term CoPs implementation in the organisation management strategy is required. The management should not expect to gain the positive results in the implementation early stages.

- In the management strategy, an appropriate measures of sustainability objectives are required to be formed (Robinson et al. 2008). The management strategy should clarify the objectives of sustainability, how to achieve it, what the costs are, and what benefits are expected. As mentioned earlier, it is not easy for organisations to attain the three goals of sustainability (Schilizzi 2002), therefore, sustainability objectives measures will facilitate the execution of the concept and increase the benefits.

- In setting their sustainability objectives, organisations need to be realistic and set attainable goals. According to Porter and Kramer (2006) organisations cannot solve all society's problems; therefore, specific issues should be selected that are aligned with organisation activities and available resources.

8.6. Summary

This chapter outlined the PLS assessment of the structural model, where the study hypotheses are tested by constructs paths (β/γ) and t-values. Interpretation of the study results is underscored as well, where each of the main hypotheses was discussed separately. The acceptance or rejection plus the implication of each of the main and secondary hypotheses were reviewed. In addition, research implications are emphasised where an overview of the study findings, its contribution to the literature, and further studies that can be done in the future are presented. Managerial implications of the study results are also highlighted in this chapter.

CHAPTER NINE

Conclusions and Future Directions

9.1. Summary of Research

This study comprises three phases that employed both qualitative and quantitative research approaches to investigate the existence of communities of practice within the Kingdom of Bahrain service industry and their effect on generating new knowledge that eventually improves organisation performance and survival. A research model was developed based on the literature. The first stage was qualitative field study that involved interviewing ten senior managers in Bahrain service organisations both in the public and private sectors. The transcribed interviews were content analysed. It is interpreted from this phase of results that there is a hint of the existence of internal communities of practice (co-located and non co-located employees) and external CoPs (customers, suppliers, and business partners). Moreover, there is an indication of possible link between the knowledge received from the members of the these CoPs on the knowledge creation process and the outcome of the knowledge creation process (i.e. new knowledge) may have possible relationship with organisation's social, environmental, economic, and non-economic performance (corporate sustainability). A model was created for each of the ten interviews, and then merged with the model created based on the literature review, in which a comprehensive combined model was created.

Based on the model created in the previous phase and the literature review, a questionnaire was developed. In the second phase, the questionnaire was pilot tested in Bahrain service industry. Minor changes were made based on the findings and feedback obtained from the pilot study.

The final phase of this study contain the main quantitative survey distributed among the top 100 organisations in Bahrain service industry private and public sectors. Partial Least Squares (PLS) was utilised to analyse the collected data.

Theoretical and managerial implications were both obtained from the study results. The results of this study contributed to community of practice theory, knowledge creation theory, social capital theory, and corporate sustainability theory. Service organisation in the Kingdom of Bahrain can benefit from the results of this study in implementing creative knowledge management strategies that positively affect their survival and continuous sustainable growth.

9.2. Research Limitations

The population selected in this study that focused on large organisations within the Kingdom of Bahrain service industry and eliminating the selected participants to middle and top managers may limit the generalizability of the results. Small sample size of the field study is another limitation.

For all the major concepts in this study, there is a number of limitations provided below. It is noted that all possible aspects are highlighted below which were not possible to address due to time constraint.

Communities of Practice:

- A limitation of this study is not examining the styles or structural components of communities of practice. Table 9-1 demonstrate the styles or structural components of communities of practice that differ among organisations in terms of size, time of existence, geographic location, backgrounds, organisation boundaries, initiation, and recognition (Handley et al. 2006; Kerno 2008; Wenger, McDermott and Snyder 2002).
- Figure 9-1 exemplified the different stages of communities of practice development. Wenger (1998b) expressed that the level of interaction between CoPs members and type of activities differ among various CoP

development stages. Disregarding this part of CoPs literature is a drawback in this study. It can be argued that understanding the development stages of non co-located employees, suppliers, and business partners CoPs may explain the non significant hypotheses related to the effect of these communities on the knowledge received and used in the knowledge creation process.

- Another explanation of the unsupported hypotheses is not exploring the role of study participants in the communities are involved in. According to several authors CoP members have different roles and their participation depend on their role in the CoP (Hildreth, Kimble and Wright 2000; Scarso and Bolisani 2008; Wenger 1998a). Hence, ignoring the role participants of this study play in the CoPs they are part of is considered a limitation.

- Another limitation of this study that is related to communities of practice is changes that occur in these communities. As stated by du Plessis (2008) that communities of practice influenced by changes that occur in the member of the community, community goals and objectives, organisation culture, economy of the organisation, and organisation business strategy. This study ignored the effect of these changes on communities of practice.

- The context in which communities of practice are embedded significantly influence knowledge sharing and creation (Ardichvili 2008; Roberts 2006; Scarso and Bolisani 2008; Sharkie 2003). Scarso and Bolisani (2008) divided this context into organisations' internal and external environments. They further explained that the internal environment consists of two elements: (1) the business context (that includes business environment, organisation structure, Information and Communication Technology (ICT) level of literacy, and resources availability) and (2) organisation knowledge strategy and the external environment include the industry, degree of competition, and kind of products/services produced. This study overlooked the impact of these factors on CoPs that ultimately impact the knowledge creation process and organisation well being.

- An important issue that is also overlooked in this study is a term called CoP memory. Schenkel and Teigland (2008) argued that community memory facilitates the accessing of required knowledge vital for problem solving and allow members to add their knowledge to CoP memory. They added that members ability to access community memory positively affect CoP

performance through facilitating the creation and transfer of knowledge. As a result, the disregarding of CoP memory and its effective role is a limitation to this study.

Table 9-1: Structural Components of Communities of Practice

Population size: Can vary from a few specialists to hundreds of members. As population size increases, so does the likelihood of subdivision along related characteristics, such as geographic region or subtopic, to optimize membership activity and experience.
Longevity: Development of practice takes time but can vary from a few years to several centuries.
Means of member interaction: Oftentimes start among individuals who are acquainted with one another and are co-located, as a community of practice requires regular interaction. However, as new communication technologies allow for quicker information exchange, richer media content, and seamless integration of geographically distant members, distributed communities of practice are rapidly becoming the standard, not the exception.
Product vs. process: Communities of practice are easier to form with individuals possessing similar information coordinating responsibilities (engineering, marketing, human resources, etc.), as their knowledge and backgrounds are often very similar. However, communities of practice can also be formed along product lines, as well, where people with different functional responsibilities, but sharing a common product responsibility, interact.
Intra- vs. interorganisational: Communities of practice often arise as a recurring problem is addressed by those who are affected by it within an organisation, public or private. Communities of practice are frequently a useful tool in an interorganisational setting by assisting individuals employed in fluid, rapidly changing industries. By allowing the exchange of relevant information and technologies among organisations that, individually, might not have the time, resources, or manpower to remain current, employees are able to access a knowledge base of peers.
Source: Compiled from Wenger (1998), Wenger, McDermott, and Snyder (2002), and Scott (2003).

Source: Kerno (2008)

Stages of Development

Active
Members engage in developing a practice

Coalescing
Members come together and recognize their potential

Dispersed
Members no longer engage very intensely, but the community is still alive as a force and a center of knowledge

Potential
People face similar situations without the benefit of a shared practice

Memorable
The community is no longer central, but people still remember it as a significant part of their identities

Typical Activities

Finding each other, discovering commonalities

Exploring connectedness, defining joint enterprise, negotiating community

Engaging in joint activities, creating artifacts, adapting to changing circumstances, renewing interest, commitment, and relationships

Staying in touch, communicating, holding reunions, calling for advice

Telling stories, preserving artifacts, collecting memorabilia

time

Figure 9-1: Stages of CoPs Development (source: Wenger 1998b)

Knowledge Creation:

- The knowledge creation process explored in this study focused on knowledge created within communities of practice. The knowledge creation process existed within an organisation is not examined in this study. It is found that the way knowledge created outside a team is not studied (Tuomi 1999). A limitation in this study is not examining the knowledge creation process in the organisation but it is limited to a specific group (i.e. CoP) within the organisation.

- Nonaka (1994) argued that organisational knowledge creation is a continuous process. Lindkvist (2005) supported that as he suggested that in the problem-solving process, individuals always search for new ideas and criticism in order to solve the problems they are facing. The drawback of this study is that it did not examine the knowledge creation process as a continuous process.

Social Capital:

- Differences between organisations presented by different performance affect social capital creation and exploitation (Nahapiet and Ghoshal, 1998). The role of organisation performance is not examined in this study. In addition, the impact of Bahrain society on social capital is also disregarded. It is claimed that different societies have different influence on social norms (Productivity Commission 2003). The study focuses solely on the moderation effect of social capital aspects on knowledge received from communities of practice members. The factors influencing social capital is not explored in this study.

- An important limitation of the study is concentrating on measuring the level of social capital within Bahrain service industry – as it is to the best of researcher knowledge, the first study that measures social capital in the Middle East – thus the role of social capital whether moderation (as suggested in this study), prerequisite, or outcome was not measured in depth.

- Another shortcoming of this study that is related to social capital is studying one type of social capital dimension that is relational dimension. Structural and cognitive dimensions of social capital are ignored in this study.

Corporate Sustainability:

- The role of government regulations on the social and environmental performance reporting is ignored. As stated by Valor (2005) that some countries such as France enforce organisations to present their social and environmental performances. The study did not explore the role of government laws on corporate sustainability reporting that it encourages organisations to improve not only their profit (economic performance) but also their social and environmental performance.

A number of reasons that explained the disregarding of these important aspects in all the four key concepts of this study are: specific focus of this study, issues beyond the study objectives, and limited duration of this study.

9.3. Future Research Direction

As it is mentioned earlier in this study (Chapter Seven), the response rate for the main survey was considerably high. Thus, it can be predicted that it will be a good foundation for future studies on the topic. Below is a number of suggested directions of studies that can be considered in the future.

The study examined all four major concepts, concentrating on each one of these concepts that can be investigated solely in future studies. Also, the limitations outlined above can constitute future research studies.

As interpreted from the study outcomes, community of practice is a new unfamiliar concept in the Kingdom of Bahrain. Therefore, a possible future study is to focus on community of practice for example on the structural components, participants' role, CoP memory, and development stages and their role on CoPs, and measuring CoP performance. The study of internal and external factors that impact community of practice performance that include organisation context and organisation competitors can derive future research. In addition, the study examined all the different types of communities, future research that can focus on one type of communities to obtain better understanding. It is found from the field study interviews – see Chapter Four – that there is a hint of electronic communities of practice in Bahrain service industry. Therefore, a possible future study is to discover the existence of electronic communities of practice within Bahrain, the factors affecting these electronic communities, and their influence on organisation performance.

Another possible future study is focusing of the knowledge creation process testing the continuous process and the factors influencing the knowledge creation process. An interesting future study is expanding the knowledge creation process beyond the boundary of communities of practice to involve the whole organisation.

As the moderation role of social capital relational dimensions (trust, norms, and identification) are not confirmed in this study, it is assumed that they have a direct effect on the amount of knowledge received from communities of practice. Thus, the

examination of the relationship between social capital aspects and knowledge received can open a new venture for future studies.

Future research can also investigate the factors influencing organisation social, environment, and economic performances such as government laws. Corporate sustainability is a relatively new concept and in the Kingdom of Bahrain it is unfamiliar and few organisations that are involved in the study specified their interest in social and environmental activities. For future study, focusing on corporate sustainability will introduce this concept and its benefit to Bahraini organisations.

Regarding the methodology employed in this study, a number of recommendations for future research are listed below:

- The current study focused on senior managers working in large Bahraini service organisations. For future study, employees in different positions, small and medium size organisations, and other industries within the Kingdom of Bahrain can be involved. Broaden the population of future study to include the other Gulf Cooperation Council (GCC) countries that involve Saudi Arabia, United Arab of Emirates, Kuwait, Qatar, and Oman and make a comparison between these countries.
- The main study was conducted within a specified period of time, it is suggested that a longitude study in the future will provide a better understanding of communities of practice and their role in organisation sustainability.

It is recommended that future research could focus on evaluating the goodness (including tangibles such as cost and intangibles such as quality) of the knowledge generated from CoP interactions.

It is envisaged that such research could give insight of how the CoP knowledge generated knowledge could be enhanced and how it could be improved to suit a wide range of decision making activities.

It is also believed that knowledge gaps (if identified) at the CoP level must lead to further research in gaps at the learning organisation level and ultimately at the innovation levels.

Similar research may also be conducted vertically at the various CoPs at the various organisations' intra hierarchy and horizontally within industries or between various firms within specified industries.

Finally, the role of the Internet in CoP knowledge generation need to be further examined. May be, the role of CoP in knowledge generation in virtual organisational settings can be a potential area of future research.

9.4. Significance of the Research Results

The study research model (see Figure 7-1) that is based on the literature and empirical qualitative filed study uniquely combined four major related concepts (CoPs, knowledge creation, social capital, and corporate sustainability). The results of the study proved that the knowledge created within communities of practice positively affect organisation existence and growth (i.e. sustainability). An interesting finding is the existence of CoPs (intra and inter) without being recognised by the members (study participants) and the organisations they are working for. This is the first study – for the best of researcher knowledge – that empirically examined the effect of knowledge received from CoPs members on the knowledge creation process. Past studies focused on knowledge exchange, share, or transfer among CoPs members (e.g. Kasper, Muhlbacher and Muller 2008). As supported by Grant (1996a) the diffusion and receiving of knowledge are both included in the knowledge transferring process, thus the study assumed that knowledge received is an outcome of knowledge transfer. It is found from the results of this study that both tacit and explicit knowledge are received from communities of practice members.

It is noticed that previous studies disregarded the discussion of knowledge creation within CoPs and NoPs (Chae et al. 2005). A significant contribution of this study is proving the existence of a relationship between knowledge received from CoPs and

knowledge creation process. Interestingly, it is found that knowledge received affect the first step in the knowledge creation process (i.e. interaction and communication) and indirectly affect the other three steps of the process. One important finding of this study is the sequential steps of the knowledge creation process. Despite the fact that several authors argued that knowledge creation process is not systematic and unmanageable (Lynn, Morone and Paulson 1996; Mayo 1959). It is significantly proved that the knowledge creation process occurs in a series of steps that start with interaction and communication and end with finding solution to the problem.

Another significant contribution is the measurement of social capital level within Bahrain service industry. It is found that there are high levels of trust, norms, and identification in communities of practice existed in Bahrain service industry. Although the study did not prove the moderation effect of these social capital aspects on the amount of knowledge received from CoPs. Future studies can investigate the effect of social capital aspects on the knowledge received from CoPs.

The results obtained from the examination of the effect of new knowledge created in CoPs on corporate sustainability are another significance of the study. Although it is argued that the literature sometimes disregards the relationship between community of practice outcomes and organisational performance (Dupouet and Yildizoglu 2006; Lesser and Storck 2001). Several studies, however, examined the impact of CoPs and organisation or individual performance (Lesser and Storck 2001; Schenkel and Teigland 2008; Schrader 1991; Teigland 2000, 2002; Teigland and Wasko 2003, 2004). To the best of researcher knowledge, this is the first study that explored the effect of CoPs outcomes on not only organisation economic performance but also its social, environmental, and non economic performance. It is found that Bahrain service organisations are interested in non economic, social, and environmental performances (listed according to their importance to the organisations); however, these performances are not properly reported to the public. A significant finding proved a positive relationship between knowledge created within CoPs and organisation sustainability.

In terms of empirical contribution, to the best of researcher knowledge, so far, no empirical study has considered the role of CoPs, social capital, knowledge creation,

and corporate sustainability in the service industry in the Middle East and more specifically in the Kingdom of Bahrain. It can be argued that Bahraini organisations can effectively compete in the highly competitive service industry by implementing CoPs in their management strategies.

It is claimed that study results can be applied to different organisations in various countries across the globe because of its generic approach even though this study was conducted in Bahrain service organisations.

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Appendix

Curtin🔱
University of Technology

QUESTIONNAIRE
Communities of Practice, Knowledge Creation, and Corporate Sustainability: A Study of Bahrain Service Industry

Dear Participant,

My name is Ralla Al Azali. I am currently conducting study for my Doctor of Philosophy in Business at the Graduate School of Business, Curtin University of Technology, Perth Australia.

Purpose of Study
The purpose of this study is to investigate the role of knowledge received from communities of practice (CoPs) members on creating new knowledge and its impact on corporate sustainability. I am interested in finding out how CoPs contribute to knowledge creation and the role of knowledge created on organisation's economic, social and environmental performance (corporate sustainability). The attached questionnaire includes a number of questions to answer the above study objectives.

Consent to Participate and Confidentiality
Your involvement in the study is entirely voluntary. You have the right to withdraw at any stage without it affecting your rights or my responsibilities. The information you provide will be kept separate from your personal details, and I will only have access to this. The questionnaire sheet will not have your name or any other identifying information on it.

Further Information
This study has been reviewed and given approval by Curtin University of Technology Human Research Ethics Committee (Approval number **GSB 128**). If you would like further information about the study, please feel free to contact me on 36704746 or by email: rallamohd@gmail.com. Alternatively, you can contact my supervisor Prof. Mohammed Quaddus on +61-8-92662862 or E-mail: mohammed.quaddus@gsb.curtin.edu.au.

Instructions
- ■ This survey is divided into five sections. Section two is divided into four parts (A, B, C, and D) and section three is divided into three parts (A, B, and C).
- ■ Please make sure that you complete all the items listed in these sections.

Thank you very much for your involvement in this study, your participation is greatly appreciated

SECTION ONE:

Please tick ☑ the most appropriate answer:

Gender

☐ Male   ☐ Female

Age group

☐ 20 – 30 years old	☐ 51 – 60 years old
☐ 31 – 40 years old	☐ Over 60 years old
☐ 41 – 50 years old	

Level of education

☐ Secondary (high) school	☐ Master's degree
☐ Diploma	☐ Doctorate
☐ Bachelor's degree	
☐ Other (please specify) _____	

Your current position

☐ Head of Department	☐ Manager
☐ Director	☐ General Director
☐ Vice President	☐ President
☐ Chief Executive	☐ Executive Director
☐ Other (please specify) _____	

Number of years you have work for this organisation

☐ Less than 2 years	☐ +10 to 15 years
☐ +2 to 5 years	☐ More than 15 years
☐ +5 to 10 years	

Number of years you have been in your current position

☐ Less than 1 year	☐ +3 to 6 years
☐ +1 to 3 years	☐ More than 6 years

Industry your organisation in

☐ Cultural and Recreational Services	☐ Construction
☐ Electricity, Gas, and Water	☐ Transportation
☐ Finance, Investment, and Insurance	☐ Education
☐ Government Administration and Defence	☐ Communication
☐ Health and Community Services	☐ Agriculture
☐ Personal and other Services	
☐ Other (please specify) _____	

Your organisation sector

☐ Public (government)
☐ Private
☐ Public + Private (quasi-governmental)

Number of employees working in your organisation

☐ Less than 1000 employees
☐ 1000 – 2000 employees
☐ +2000 – 3000 employees
☐ +3000 – 4000 employees
☐ More than 4000 employees

SECTION TWO:

A **If you need to deal with a work related problem that you are unsure about or cannot work out, you get help and support from whom of the following. Please tick ☑ as MANY as appropriate**

☐ Your manager   ☐ Your investors
☐ Your subordinates (individuals working under   ☐ Your suppliers
your supervision)
☐ Your colleagues (individuals in the same   ☐ Your vendors
position in your department)
☐ Employees working in other departments   ☐ Your business partners
☐ Employees working in other organisation   ☐ Governmental ministries
branches
☐ Your customers   ☐ Consultants
☐ Others (please specify) _____

B **In general, who contacts you for the same reason? Please tick ☑ as MANY as appropriate**

☐ Your manager   ☐ Your investors
☐ Your subordinates (individuals working under   ☐ Your suppliers
your supervision)
☐ Your colleagues (individuals in the same   ☐ Your vendors
position in your department)
☐ Employees working in other departments   ☐ Your business partners
☐ Employees working in other organisation   ☐ Governmental ministries
branches
☐ Your customers   ☐ Consultants
☐ Others (please specify) _____

C **In relation to the above questions please specify how important are the people listed below who provides you with information that helps you to complete your work. Please circle the most appropriate answer**

	Very Important ←→ Not at all Important				
Your manager	1	2	3	4	5
Your subordinates	1	2	3	4	5
Your colleagues	1	2	3	4	5
Employees working in other departments	1	2	3	4	5
Employees working in other organisation branches	1	2	3	4	5
Your customers	1	2	3	4	5
Your investors	1	2	3	4	5
Your suppliers	1	2	3	4	5
Your vendors	1	2	3	4	5
Your business partners	1	2	3	4	5
Governmental ministries	1	2	3	4	5
Consultants	1	2	3	4	5

D	Considering the relationship you have with the individuals you showed in the previous questions, for each of the following statements, please give your opinion by circling the most appropriate answer:

Strongly Agree ←——————→ **Strongly Disagree**

I interact *(cooperate)* with the individuals I contacted for help with the intention *(goal)* of learning from them	1	2	3	4	5	6
I am aware *(familiar)* of the knowledge and skills of the individuals I contacted for help	1	2	3	4	5	6
It is easy to communicate with the individuals I contacted for help	1	2	3	4	5	6

Me and the individuals I contacted for help ….						
have a unique vocabulary *(words)* and use common terms and jargons	1	2	3	4	5	6
always engaged in *(go to)* social and sports activities and get together	1	2	3	4	5	6
share the vision *(idea)* of helping others solve professional problems	1	2	3	4	5	6

SECTION THREE:

A	Considering the relationship you have with individuals you interacted with (as specified in SECTION TWO of this questionnaire) how many times during the past month have the following happened? Please circle the most appropriate answer:

	Always	Often	Some-times	Rarely	Never
You received formal *(official)*, written communications in the form of reports or documents from individuals you contacted for help	1	2	3	4	5
You received informal *(unofficial)*, written communications in the form of reports or documents from individuals you contacted for help	1	2	3	4	5
You received formal *(official)*, verbal communications in the form of information or skills from individuals you contacted for help	1	2	3	4	5
You received informal *(unofficial)*, verbal communication in the form of information or skills from individuals you contacted for help	1	2	3	4	5

| **B** | **Considering the relationship you have with individuals you interacted with (as specified in SECTION TWO of this questionnaire), for each of the following statements, please give your opinion by circling the most appropriate answer:** | | | | | |

Strongly Agree ← → Strongly Disagree						
Me and the individuals I contacted for help ….						
always talk about our work and bring up problems related to it	1	2	3	4	5	6
always offer solutions for the problems we are facing at work	1	2	3	4	5	6
always laugh at mistakes and discuss changes in our work	1	2	3	4	5	6
develop a pool *(collection)* of collective *(shared)* knowledge	1	2	3	4	5	6
tried to gather all the information about the problem	1	2	3	4	5	6
conduct *(do)* a series of alternating *(irregular)* experimentation *(testing)* and invention *(discovery)*	1	2	3	4	5	6
share and reflect *(consider)* stories of similar situations at work	1	2	3	4	5	6
work together to come up with a solution for the problem in hand	1	2	3	4	5	6
always get together and throw the difficulties we faced at work to find a solution to it	1	2	3	4	5	6

| **C** | **Considering the relationship you have with individuals you interacted with (as specified in SECTION TWO of this questionnaire), for each of the following statements, please give your opinion by circling the most appropriate answer:** | | | | | |

Strongly Agree ← → Strongly Disagree						
From your interaction with the individuals you contacted for help you have ….						
acquired *(get)* knowledge that caused you to develop new insights *(opinions)*	1	2	3	4	5	6
acquired knowledge that enable you to perform new tasks *(responsibilities)*	1	2	3	4	5	6
contributed *(add)* new knowledge	1	2	3	4	5	6
acquired knowledge that enable you to develop creative solutions	1	2	3	4	5	6
come up with routine solutions	1	2	3	4	5	6

SECTION FOUR:

Considering the relationship you have with individuals you interacted with (as specified in SECTION TWO of this questionnaire), for each of the following statements, please give your opinion by circling the most appropriate answer:

Strongly Agree ← → Strongly Disagree						
I believe that ….						
individuals I contacted for help use other's knowledge appropriately *(correctly)*	1	2	3	4	5	6
individuals I contacted for help share the best	1	2	3	4	5	6

knowledge that they have						
the level of truthfulness of individuals I contacted for help is very important to accept knowledge received from them	1	2	3	4	5	6

The individuals I contacted for help ….

will not take advantage of others even when the opportunity arises	1	2	3	4	5	6
will always keep the promises they make to one another	1	2	3	4	5	6
are capable therefore the knowledge they pass to me is trusted	1	2	3	4	5	6

There is a norm of ….

cooperation and collaboration between the individuals I contacted for help	1	2	3	4	5	6
teamwork between the individuals I contacted for help	1	2	3	4	5	6
openness to conflicting views between the individuals I contacted for help	1	2	3	4	5	6
acceptance of mistakes between the individuals I contacted for help	1	2	3	4	5	6

I find that my values and the individuals I contacted for help values are very similar	1	2	3	4	5	6
In general the individuals I contacted for help are working toward the same goal	1	2	3	4	5	6
There is a sense of belonging between me and the individuals I contacted for help	1	2	3	4	5	6

SECTION FIVE:

Considering the new knowledge resulted from your interaction with the individuals you contacted for help (as specified in SECTION TWO of this questionnaire), for each of the following statements, please give your opinion by circling the most appropriate answer:

Strongly Agree ←——————→ Strongly Disagree

The new knowledge ….

helped us to enhance employees loyalty for the organisation and decrease the level of employee turnover	1	2	3	4	5	6
bring up new insights to enhance employees training and education programs provided by the organisation	1	2	3	4	5	6
generated new insights for social responsibility projects like contribute to the growth of the country and donations programs	1	2	3	4	5	6
assist the organisation to develop actions in response to incidents of corruption *(dishonesty)*	1	2	3	4	5	6
helped us reduce the use of vehicles by expanding the use of communication technologies like email and video conferencing	1	2	3	4	5	6
helped us to identify ways to reduce paper consumption, improve energy efficiency, and reduce machine numbers	1	2	3	4	5	6

bring up new ideas to protect and clean the environment	1	2	3	4	5	6
helped our organisation to be more profitable compared with key competitors	1	2	3	4	5	6
encourage the procedures for local hiring (Bahranization of the jobs)	1	2	3	4	5	6
helped the organisation to increase its revenues and decrease costs	1	2	3	4	5	6
were effective in improving the organisation's processes	1	2	3	4	5	6
helped our organisation to be more innovative compared with key competitors	1	2	3	4	5	6
would help the organisation to grow and continue its operation in the future	1	2	3	4	5	6
helped us to met or exceeded customers' expectations by applying the new knowledge we come up with	1	2	3	4	5	6

SURVEY COMPLETION

Report Request:

If you would like a copy of the study final report, please fill in the following details:

Your Name: _____

Your Organisation: _____

Mail   **Address:**

_____

_____

_____