Facilitating Knowledge Sharing in Chalco:

The Role of Communities of Practice

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ABSTRACT

Communities of practice (CoPs) have recently become key components in organizational knowledge management initiatives (Wenger, 2004). They have achieved prominence in the context of knowledge management and organizational learning both with scholars and practitioners. Many researches (Ardichvili *et al*., 2003; Davenport & Voelpel, 2001; Davenport & Probst, 2002) have investigated how some multinational companies integrated different kinds of CoPs into their knowledge management systems. But those studies focus mainly on the regions of the Western countries. There are limited researches conducted on other social context. This research therefore is to address CoPs in a Chinese organization - Chalco and investigates how the Learning Groups as the communities of practice facilitate knowledge sharing in the company.

This research adopts the Nonaka's (1994) organizational knowledge creation model (SECI) and defines the organizational knowledge sharing as two parts of organization knowledge creation process: socialisation and externalisation. It examines how the Learning Groups facilitate tacit knowledge sharing (socialization) and the knowledge conversion from tacit to explicit (externalization).

This research takes the social constructionist standpoint, trying to understand individuals' experience of participating Learning Groups in the company, through the interpretive lens. It adopts a qualitative approach using in-depth interviews to gather data which are then analysed using the narrative analysis approach paying attention to individuals' experience expressed through their interview accounts.

Through narrative analysis, the way in which Learning Groups facilitate tacit knowledge sharing and the conversion from tacit knowledge to explicit knowledge has been emerged. Some influences of Chinese cultural and social factors to the knowledge were also found.

The finding of this study suggests that there are some knowledge sharing barriers caused by both organizational factors and cultural factors. The Learning Groups in Chalco have been playing very positive roles in overcoming those barriers and facilitating knowledge sharing in the company.

The findings of this research can benefit to both academics and practitioners. It will help the related academics to understand how the Chinese cultural and social influences on knowledge management practice and how CoPs facilitate knowledge sharing in such context. It also provides an example of best practice on knowledge management for other business managers and government policy makers so that they can develop appropriate knowledge management strategies for the benefit of their companies and the social development.

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Declaration

I declare that the work contained in this thesis has not been submitted for any other award and it is all my own work.

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Chapter One Introduction

1.1 Introduction

Knowledge is a critical factor affecting an organization's ability to remain competitive in the new global market place and is therefore recognized as a valuable resource for keeping their competitive advantage (Bollinger & Smith, 2001). Organizations need to develop a mechanism for tapping into the collective intelligence and skills of employees in order to create greater organizational knowledge (Bollinger & Smith, 2001). As a result, the significance of communities of practice (CoPs) in facilitating knowledge sharing has been given a great deal of attention in the practice of knowledge management (Brown & Duguid, 1991; Ellis, 1998; Hildreth & Kimble, 1999). Blackler (1995) argues that the creation and deployment of knowledge is inseparable from different social contexts, which appear in the form of knowledge boundaries. This research studies the knowledge management practices in a Chinese organization. It will extend the theory of CoPs by providing a detailed view of how the CoPs facilitate knowledge sharing within the Chinese social and cultural context. It also can help company managers to deepen their understanding of motivations and barriers of knowledge sharing in the Chinese context as well as the value of CoPs in facilitating knowledge sharing in the organizations.

The opening chapter of this thesis presents an overview of this research. It begins with an introduction of the background to this research, thereby explaining the motivation of this study. Contextual factors considered to justify the need for such an enquiry in a

Chinese organization are outlined. With the explanation of the rationale underpinning this inquiry, the gap in previous research will be highlighted. The research aim and objectives subsequently are drawn up to guide the whole project. This then leads to the description of the methodology and research methods adopted to achieve the research objectives. Also, the significance of this research is presented. The remainder of the chapter outlines the aims and content of each chapter, including the logical structure and layout used to guide the reader from the data and findings towards the conclusions of the study.

1.2 Background of This Research

This research began as a study on knowledge-sharing in organizations. When the researcher started to design his research proposal, he revisited the literature on organizational knowledge management, the area related to the topic he pursued in his masters study. The researcher found there is a solid history of research literature in relation to knowledge in the work environment (Strassman, 1985; Senge, 1990; Huber, 1990; Davenport, 1998) and a variety of competing views on how knowledge is created, managed, shared and stored in organizations (Nonaka, 1994; Pedlar, Burgoyne and Boydell, 1991; Davenport, 1998). In today's knowledge economy, it is recognized that businesses have to raise their standards to gain competitive advantage due to the change in the trends such as globalization, privatization and increased customer sophistication (Quinn, 1992). In relation to this research, knowledge held by employees is seen as the most valuable asset (Bruton *et al*., 2007; Darroch, 2005;

Davenport, 1998; Stonehouse and Pemberton, 1999), which is a unique, causally ambiguous, and hard to imitate or substitute (Cabrera, 2002). These characteristics make knowledge as an important source of competitive advantage and, consequently, the target of managerial attention (Bou-Liusar and Segarra-Cipres, 2006; Ergazakis *et al*., 2006; Stonehouse and Pemberton, 1999; Hamel and Prahala, 1994). Companies work assiduously to capitalize on that fact, contributing to the evolution of knowledge management – the systematic and explicit management of knowledge related activities (Davenport and Prusak, 2000; Kenney and Gudergan, 2006).

A further review of literature has led the researcher to a range of knowledge management initiatives. A large volume of literature from an information technology or information system perspective discussed the codification, storage and retrieval issues of knowledge management (Krogh *et al*., 2001; Weiser and Morrison, 1998; Scott, 2000; Moffett *et al*., 2003) and suggested the capturing of all the knowledge of an organization into databases that would make it easily accessible to all employees (Odem and O'Dell, 1998; Zack, 1999; Gottschalk, 2003; Khandelwal and Gottschalk, 2003). Evolving out of a long intellectual history, it treats knowledge as a private good, owned by either the organization or its organization members. It suggests that knowledge can be separated from the context in which it is generated and stored (Wasko and Faraj, 2000).

This is contrary to the author's experience in his role as an engineer working in a large Chinese organization. Knowledge sharing in the workplace, in his experience, is

socially constructed sharing process where people integrate and share their personal, social and professional experience with their work colleagues. Through this interaction, the construction of knowledge and its meaning within work practice appeared to evolve as a function of doing work. Often, members of the organization seek knowledge from sources that are most easily accessible (such as asking co-workers) rather than the best and most up-to-date source (O'Reilly, 1982). Also, knowledge is not something that can be managed like other assets as it is always tied to people and is therefore not reproducible in information systems (Probst, Raub and Romhardt, 2000). This is especially true in terms of tacit knowledge (knowledge that cannot be easily articulated) since it has a personal quality and resides in the mind of the individual (Polanyi, 1966). Information systems are only able to capture the explicit knowledge, which is the knowledge that can be codified into rules, procedures, manuals, etc. and it is easy to disseminate (Szulanski, 1996). It is the knowledge's tacit nature that makes it difficult to be shared and communicated as it is deeply rooted in action, commitment and involvement in a specific context (Styhre, 2003).

This is a vastly different perspective to the IT focused literature. In the past years, a definite shift in focus appears in knowledge management literature towards the tacit nature of knowledge, specifically focusing upon the concept of knowledge sharing as a socially constructed phenomenon (Snowdon and Merali, 2000).

> *The organizational imperative was to extract so-called tacit knowledge from individuals and to convert it into explicit knowledge that could be codified and stored in computerized knowledge repositories for perpetual access. In the*

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later part of the decade (1990's) there were expositions on the futility of such an endeavor, asserting that knowledge and social systems in which it resided were too complex to be dealt with simplistically.

(Snowden and Merali, 2000, p.5)

Nonaka, among others, states that tacit knowledge is experienced-based and can be revealed through the sharing of experience or by joint participation in evaluative activity-socialization processes involving observation, imitation and practice (Baumard, 1999; Nonaka, 1994; Styhre, 2003). They propose that communities of practice (CoPs) are becoming a mechanism by which individuals' knowledge and groups' knowledge is produced and integrated in organizations (Brown & Duguid, 2001a; Davenport & Prusak, 2000). This is a parallel perspective that sees knowledge as a public good, owned and maintained by the community of practitioners who are its custodian. When knowledge is considered as a public good, knowledge sharing is motivated by moral obligation and community interest as opposed to self-interest (Wasko and Faraj, 2000)

So, what are Communities of Practice (CoPs)? Lave and Wenger (1991) first introduced the concept of communities of practice as:

"A set of relationships among persons, activities and world, over time, in relation with other tangential and overlapping communities of practice."

(Lave and Wenger, 1991, p98)

In brief, they are naturally occurring communities (Stamps, 2001) and are groups of

people informally bound together by shared expertise and passion for a joint enterprise (Wenger and Snyder, 2000). They may exist within departments but they are likely to cross departmental boundaries. Although, CoPs exist in a variety of forms, they share a basic structure. A CoP is a unique combination of three fundamental elements: a domain of knowledge, which defines a set of issues; a community of people who care about this domain; the shared practice that they are developing to be effective in their domain (Wenger, McDermott and Snyder, 2002a).

The ability of a CoP to create a friendly environment for individuals with similar interests and problems, to discuss a common subject and encourage the transfer and creation of new knowledge. Described by Wenger and Snyder (2000) in the literature of communities of practice, practitioners with similar work experiences tend to be drawn to communities, and from this common purpose to share knowledge and experiences arise. In a CoP, learning and sharing are social, and happen in practice (Stamps, 2001) where learners   enter a community at the periphery and over time move closer to full, legitimate participation as they gain knowledge and learn the community's rituals and adopt a view of themselves as members of the community (Buysse, Sparkman and Wesley, 2003; Lave and Wenger, 1991). Knowledge is like the coin of the realm within CoPs. People in CoPs share their experience and knowledge in free-flowing, creative ways that foster new approaches to problems. Moreover, knowledge that passes around in these communities is not limited to the explicit knowledge but quite often it takes the form of tacit knowledge (Stamps, 2001; Wenger and Snydner, 2000). Additionally, since utilizing tacit knowledge is the real

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gold in organizational knowledge management, a CoP can be the key to unlock this hidden treasure (McDermott, 2000). Therefore, a CoP can be an effective mechanism for increasing velocity and richness of knowledge diffusion.

Due to these capabilities, CoPs are seen as vehicles and living repositories for managing knowledge. Some research has been conducted on how some multinational companies utilize CoPs as vehicles to improve their organization's performance (Ardichvili *et al*., 2003; Barab and Duffy, 2000; Chao, 2001; Cohen & Prusak, 1996; Davenport & Voelpel, 2001; Davenport & Probst, 2002; Edmundson, 2001; Wenger & Snyder, 2000). These companies are as diverse as an international bank, a major car manufacturer, and a global petrochemical company and so on. They showed that CoPs can help integrate individuals into an organization (Chao, 2001), promote the sharing of best practices and drive organization strategy (Wenger and Snyder, 2000), motivate individuals in the organization (Barab and Duffy, 2000), and develop and retain professional skills (Wenger and Snyder, 2000). However, these researches focus mainly on the regions of the USA, Japan, and Western Europe, there are limited research focusing on communities of practice within Chinese social contexts. The researcher also noticed that previous research only looks at how CoPs are of value to individuals and organizations (Chao, 2001; Brown and Gary, 1995; Sharp, 1997), and how organizations' knowledge management strategy interacts with CoPs to improve their business performance (Cohen & Prusak, 1996; Davenport & Voelpel, 2001; Spencer, Rushton, Rumizen and McDermott, 2003; Wenger *et al*, 2001). Those researches have studied the value of CoPs from organizational prospective. There is

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limited research that studies CoPs based on knowledge management theory. This has revealed a gap in the literature of knowledge management and communities of practice, which this DBA study will explore. Holden (2002) argues that the operation of knowledge management in organizations varies across cultural and institutional context. Further, Lam (2000) maintains that the ability of an organization to harness knowledge is influenced by broad social and institutional factors. Hence, this research will focus on CoPs in the Chinese social context, exploring how CoPs facilitate knowledge sharing based on the knowledge management theory. It will demonstrate some important values of communities of practice in facilitating knowledge sharing in the Chinese social context and recommend realistic strategies for developing communities of practice in Chinese organizations.

1.3 Research Context

While the theory of knowledge management and knowledge sharing is created in the West, acknowledging the unique social, cultural and dynamic economic background of China, there is also a need to examine the knowledge management in the Chinese context. This research specifically addresses CoPs in the social context of a Chinese organization. It will be carried out through a single case study and explores how communities of practice facilitate knowledge sharing in the Aluminium Corporation of China Limited (Chalco).

1.3.1 Chinese Social and Economic Context

China is a highly collectivistic country (Hofstede, 2001), where group interests and collective good takes precedence over individual interests, which is quite different from individualism in Western countries. Within this social context, it is only natural to assume that more people may be willing to share their knowledge among organization/group members, given that group norms are more important than individual interests. In addition, Chinese culture is deeply influenced by Confucianism (Bond, 1991; Pun et al., 2000; Redding, 1993). As a moral system, rather than a religion, Confucianism attempts to ''establish harmony in a complex society of contentious human beings through a strong and orderly hierarchy'' (Park and Luo, 2001). Also, ''people focus and relationship building'' are other outstanding characteristic of Chinese enterprise management as the consequence of Confucianism (Bond, 1991). It emphasizes that the individual does not exist independently but in a network of relationships, which is called ''Guanxi''. Park and Luo (2001) believe that ''Guanxi is a critical factor in firm performance in China''. As a result, the collectivistic nature of Chinese society and the traditional Chinese cultural values pose challenges to the universality of knowledge management theories. By studying how CoPs facilitate knowledge sharing in the Chinese social and cultural context, this research will help build more elegant and universal theories on knowledge management and the development of communities of practice in organization.

Furthermore, as the world's largest emerging economy, China has drawn increasing

attention from both the business world and academic researchers. Foreign direct investment (FDI) grew quickly through joint-ventures then through wholly foreign-owned enterprises since China applied its open-door economic policy in the early 1980s. China has been one of the most important foreign direct investment destinations for foreign and multinational companies for more than a decade. Many more overseas companies are preparing to invest in China. On the other hand, those foreign and multinational companies have become strong competitors for firms in China, particularly in knowledge and technology intensive businesses. Meanwhile, many large Chinese companies are extending to other countries to participate in global business competition. This situation requires Chinese companies to make their organizational knowledge work well and to gain a core competitive capability (AMT, 2004)). In 2006, the Chinese government called for Chinese firms to improve their knowledge innovating capabilities and to build knowledge intensive enterprises for the next five years (Background note: China 2007). Under this economic background, some knowledge management initiatives have been started in Chinese companies, especially in some large knowledge intensive corporations. Hence, this DBA study addresses not only a gap in the literature of knowledge management but also responds to a drive of improving the business performance in those companies in China. It will help the knowledge managers in foreign and multinational companies to understand the Chinese social and cultural influences on knowledge sharing. It also helps Chinese companies to understand the value of CoPs in facilitating knowledge sharing within their organization and to develop appropriate organizational knowledge management

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strategies.

1.3.2 Informal Knowledge Sharing in Chalco

The Aluminium Corporation of China Limited (Chalco) is the only producer of alumina and the largest producer of primary aluminum in China. It was established as a joint stock limited company on September 10, 2001, as a result of the restructuring of the state-owned aluminum industry and has been listed on New York Stock Exchange and Hong Kong Stock Exchange since December 12, 2001. It is a typical large Chinese distributed organization. Its key operating assets are distributed across the country, including four integrated alumina and primary aluminum production plants, two alumina refineries, one primary aluminum smelter and one research institute.

Unlike its counterparts in the Western countries, where most of them have highly comprehensive IT infrastructure so that people can form virtual online communities and utilize specific software and hardware to capture, store and share knowledge (for example, Kohlbacher and Mukai, 2007; Kwok and Gao, 2004), there is lack of investment in the information technology that could facilitate employees' and organizational knowledge work performance. As a result, when people start to seek specific job related information and knowledge, they still rely on their personal contacts. This is how the informal knowledge sharing within communities of practice started.

In 2000, when the company started its ambitious business expansion plan, there were many temporary project teams set up to bring people from different units together with the aim to solve some operational and technical bottlenecks efficiently. Members of the project teams had various professional expertises, such as manufacturing technician, mechanical engineer, automation designer, quality controller, safety inspector and so on. On having to go back to their original formal departmental units after the completion of projects, some project team members still remained in contact and had fairly regular meetings to discuss work related issues. Even though they didn't have a particular name for their meetings, these people and their meetings can be seen as the original CoPs in Chalco. These meetings started with a small group of people, usually containing 3-5 people with a strong engineering background who had many years of working experience and understood the full spectrum of issues relating to the manufacturing process rather than just a single discipline. Their meetings were very informal and they identified what information was useful, what issues should be addressed and what topics they wanted to discuss.

1.3.3 Knowledge Management Initiative

Aiming to maintain its leading position in the market, Chalco continually increases alumina production capacity through technical innovation. Its governors realized the importance of retaining and exploring its abundance of knowledge in the company. As a result, the company launched a company-wide knowledge management initiative. It identified those informal knowledge sharing groups as role models to facilitate the

development of its knowledge management programme. It started to put these groups into the formal knowledge management agenda and redesigned the groups as part of the organizational knowledge sharing and mentoring system. The company drew up a formal documentation, giving CoPs legitimate status in the company. Those groups were also given an official name as 'Learning Group' (LP). Some middle managers and senior engineers have been selected as group coordinators and they are responsible for calling meetings, setting agendas, organizing group events and, more importantly, producing the group report to the company. The original members of the knowledge sharing groups who have abundance of working knowledge and experience work as core members of the Learning Groups. They often take on the group project and tasks, identify topics for the group to address, and move the group along its learning agenda. Many of them also act as leaders in the groups and are responsible for mentoring other group members. Group members are not always from the same business units and they all have their formal job and work duties. The company provides time, venue and other necessary resources for the group activities and expects the Learning Groups to facilitate knowledge sharing, mentoring staffs and developing knowledge repository in the company.

Chalco's Learning Groups work on the outside of the company formal business structure. They are built with a strong focus on sharing knowledge, solving business problems and developing the shared practice in the company. As a result, the Leaning Group can be seen as one type of Communities of Practice. The Learning Groups in Chalco play significant roles in the company's knowledge management initiative.

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What do these Learning Groups do in the company? How do they facilitate knowledge sharing in company? Are there any issues about the development of Learning Groups in the company? What should the company do to facilitate the development of Learning Groups? These questions are the central focus of this DBA study and they are also the guide for the researcher to shape the aim and objectives for this research.

1.4 Aim and Objectives of this Research

The aim of this research was to explore *the role of communities of practice in facilitating knowledge sharing in Chalco's social and cultural context.* Based on the Nonaka (1994)'s spiral knowledge creation model, knowledge sharing in this research is defined as two parts of a knowledge creation process: socialization (tacit knowledge sharing) and externalization (the knowledge conversion from tacit knowledge to explicit knowledge). This research is built on Nonaka's knowledge creation theory and takes into consideration of Chinese social and cultural influence to study how the Learning Groups are utilized to facilitate tacit knowledge sharing and the knowledge conversion from tacit to explicit.

In order to achieve the research aim some more detailed research objectives emerged through the data collection process. In summary, the objectives of this research were to:

Objective1: To identify the literature gap of how communities of practice are

utilized to facilitate knowledge sharing in the Chinese social and cultural context;

Objective 2: To identify the knowledge sharing barriers in Chalco's social and cultural context;

Objective 3: To explore the role of the Learning Groups in facilitating tacit knowledge sharing in Chalco's social and cultural context.

Objective 4: To explore the role of the Learning Group in facilitating the knowledge conversion from tacit to explicit.

1.5 The Scope of this Study

This is research is based in the Chinese organizational social and cultural context targeting the communities of practice in a Chinese manufacturing company. The researcher tries to get a general picture of the role of communities of practice in facilitating knowledge sharing in the Chinese social and cultural context. 20 interviews were conducted with members of staff who participate in four different communities of practice in the company. Combined with contextual factors of knowledge sharing, the researcher can study the communities of practice as a whole and understand its role in facilitating knowledge sharing in the case company.

CoPs can be spontaneously, without any involvement or development effort from organization (Brown and Duguid, 2001b). Alternatively, they can be intentionally initiated by organization to steward a specific capability (Lesser and Everest, 2001). The Learning Groups in Chalco were launched by the company with the aim of

promoting innovation and increasing the efficiency in the company. Hence, the communities of practice in this research are highly structured by having meetings, setting agendas and creating specific aims and objectives (Wenger et al., 2002a).

CoPs exist in a variety of forms i.e. virtual e-based forums or face-to-face but this research is concerned only with physical CoPs, where members interact in person because it is argued that only this will enable individuals to achieve the necessary level of engagement to develop their relationships and learn (Lesser and Storck, 2001). It is also argued that face-to-face contact is a condition to get the kind of rapport and to build trust that leads to true collaboration (Stamp, 2001). Additionally, the physical meeting creates chance for discussions which lead to new ideas and thoughts through ongoing conversations that are important for the tacit knowledge sharing and the knowledge conversion from tacit to explicit while it is hard to have this by online CoPs as they are brief and intermittent. This is because there are too many nuances associated in a face-to-face meeting i.e. gestures, grimaces, look, tones and etc., that will be missing and cannot be replicated online (Cohen and Prusak, 2001). Therefore, the researcher has chosen to concentrate on physical CoPs because by nature they require a highly interactive social process between its members in a co-located, face-to-face environment since the co-location factor was considered critical because much of the tacit knowledge is shared through direct first-hand observation, interaction with others, subtle body language and so on (Holtshouse, 1998).

1.6 Theoretical Framework

This research aims to study the role of communities of practice on facilitating knowledge sharing based on knowledge management theory and tries to explore how the Learning Groups in Chalco facilitate tacit knowledge sharing and knowledge conversion from tacit to explicit. There are two major theoretical frameworks used for this research: the spiral model of organizational knowledge creation theory proposed by Nonaka (1994) and the concept of community of practice (CoP) drawing mostly from the work of Lave and Wenger (Lave and Wenger, 1991; Wenger, 1998).

Nonaka (1994) distinguished between tacit knowledge and explicit knowledge and proposes a model of organizational knowledge sharing, storing, acquiring and applying process in order to understand the dynamic nature of the organizational knowledge creation process. His work concluded that the creation of organizational knowledge is a continuous process of dynamic interaction between tactic knowledge and explicit knowledge. He mentioned four types of knowledge-conversion in the SECI model: socialization (S), externalization (E), combination (C) and internalization (I). The model provides a logical framework which can be used to study the nature of tacit knowledge and explicit knowledge, the conversions between those kinds of knowledge and therefore the creation of knowledge and the conditions and requirements for them to be shared, stored, acquired and applied. The knowledge sharing in this research is defined as the two parts of the knowledge creation process: socialization and externalization. This research will explore how the Chinese social

and cultural factors influence on the socialization and externalization and how the communities of practice facilitate socialization and externalization in this context. Hence, this SECI model will provide a basic framework for modeling the dynamic process of knowledge creation underpinning the author's approach.

As to the CoP concept, this research focuses on its central tenets i.e. situated learning, reflective practice and legitimate peripheral participation (LPP) and communities of practice in organizations (Lave and Wenger, 1991; Wenger, 1998) to understand the properties and characteristics of CoPs. Together, the CoPs from the outcomes of past research will be discussed.

In essence, these two bodies of theoretical researches provide the framework that have shaped and refined the research questions and guided the data collection and analysis process.

1.7 Methodology of this Research

The philosophical stance underpinning this research is based on social constructionism, concentrating on the different constructions and meaning individuals place on their experience as they engage in the knowledge sharing within a community of practice (Easterby-Smith, Thorpe and Lowe, 2002). In other words, it focuses on the individual's perception constructed between members through relationships shaped by the social processes in CoPs (Schwandt, 2000). In order to understand this, one must interpret it (Esterby-Smith *et al*., 2002). Therefore, the

researcher has to interpret the different perceptions individuals have and explore the value of a community of practice in facilitating knowledge sharing.

Due to the focus on socially constructed knowledge inside the communities of practice (as opposed to the codification and storage focus provided by IT based knowledge management research) and meaning of knowledge sharing activities socially constructed within community of practice, a qualitative case study is deemed to be the appropriate research methodology. This will help to provide a great deal of descriptive detail when reporting the research findings. To achieve this, the in-depth semi-structured interviews are employed as the major data collection method.

1.8 Significance of this Research

The section of research background and context above allows the researcher to identify that there is a critical literature gap and insufficient study about communities of practice facilitating knowledge sharing in the Chinese social context. The significance of this research is described as following:

Firstly, previous research about communities of practice has been conducted in some multinational organizations in the region of USA, Western Europe and Japan, there is limited research focusing on communities of practice within the Chinese social and cultural contexts. This research therefore addresses CoPs in the social context of a Chinese organization and study how the CoPs facilitate knowledge sharing in this

social and cultural context. The unique Chinese culture factors pose a challenge to the universality of knowledge management and knowledge sharing theories. As a result, studying how communities of practice facilitate knowledge sharing in Chinese social and cultural context will help build more universal theories of the value of communities of practice in organizations.

Secondly, the current literature has discussed how CoPs are of value to an organization and how organizations' knowledge management strategy interacts with CoPs to improve their business performance. This research has studied the value of communities of practice from organizational prospective. However, there is very little research studying how the communities of practice facilitate knowledge sharing based on the knowledge management theory. This research adopts the Nonaka's (1994) knowledge creation theory as the theoretical framework and defines knowledge sharing as the two parts of organizational knowledge creation process: socialization and externalization. It extends the CoP concept by providing a detailed view of how the CoPs facilitate tacit knowledge sharing (socialization) and knowledge conversion from tacit to explicit (externalization).

Thirdly, the dynamic economic development and China's political, social and cultural transition represent a unique business environment and an enormous challenge for foreign investors and multinational companies doing business in the country. Overall, knowledge management practice in China is gaining importance. By studying how communities of practice facilitate knowledge sharing in China's social and cultural

context will help the Western knowledge managers to understand the motivation for and barriers to knowledge sharing in Chinese organizations.

Fourthly, the Chinese government is attempting to build its economy not only on its low-cost manufacturing capability, but also on knowledge-focused industries. This research will also provide important evidence that can help Chinese organizations to understand the value of CoPs for their knowledge management initiative. It is anticipated that at organizational level, managers will be better able to produce a community-based sustainable knowledge management strategy for their companies.

1.9 Overview of the Thesis

This thesis is divided into three parts that contain a total of six chapters. This section will briefly review each chapter and provides a clear picture of this thesis. At the end of this section, the Figure 1.1 will show the structure of this thesis.

1.9.1 Part one: What is this research about?

Part one of this thesis contains three chapters that essentially answer the question 'what is this research about?'

The first chapter has presented the background to the research, covering both the researcher's motivation for committing to undertake this work, and touching upon the theory and practice that underpin the research aim and objectives. Following the research aim and objectives, this chapter also establishes why this particular research is important to both theory and practice. Finally, it is finished by explicitly outlining

the structure of the thesis.

Figure 1.1 Structure of Thesis
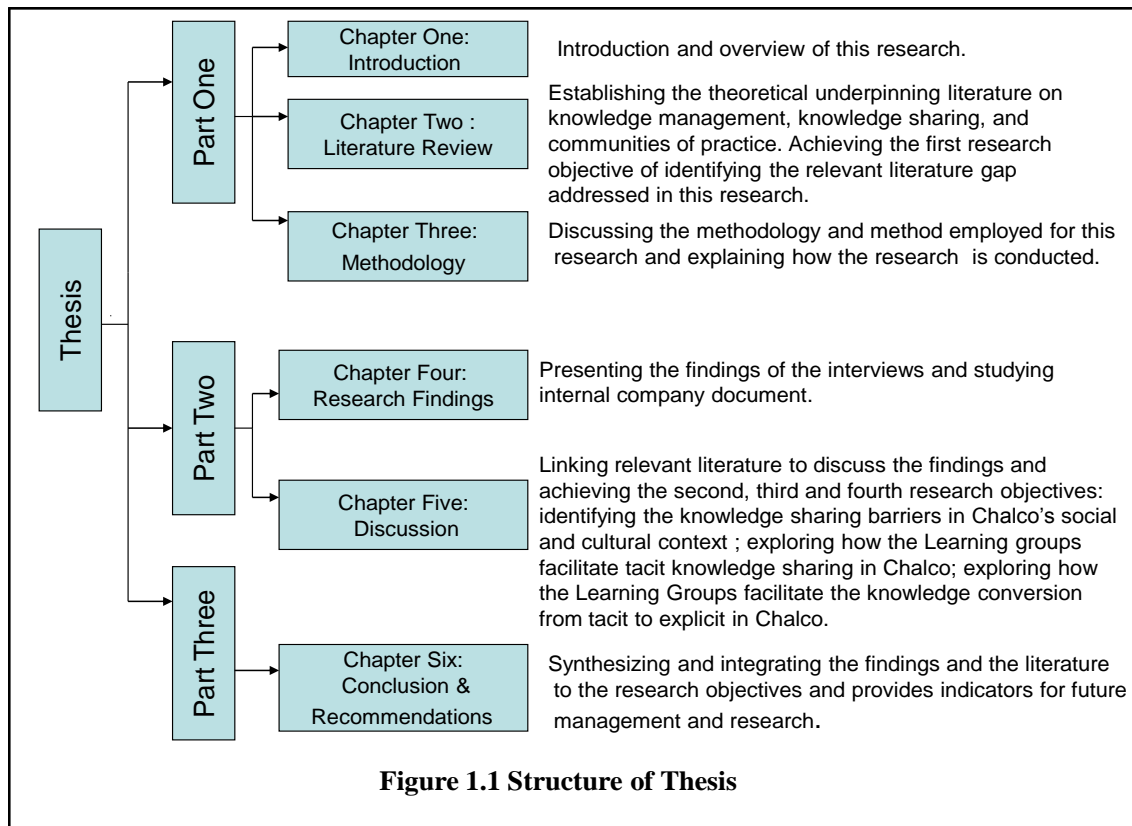
The second chapter of this thesis provides an analysis and review of the current research literature that forms the foundation of the research project. By critically examining the work that has been carried out in this area, the research aim and objectives emerge as an important area that is yet to be examined in the field of knowledge management within Chinese context.

The literature review is presented in four equally important and complementary sections. The research objectives are clearly embedded within the field of knowledge management, seen from the strategic resource view of knowledge sharing and knowledge creation within organization. Therefore, the first section of chapter two

examines the nature of knowledge and knowledge management, highlighting the tacit and explicit knowledge dimensions of knowledge within organizations. The second section of the chapter narrows the very broad field of knowledge management to a specific focus on knowledge sharing. It will introduce the theoretical framework and define knowledge-sharing for this research. This aspect of knowledge management theory is extremely important for this research, since it will examine both tacit knowledge sharing process and knowledge conversion process. The third section will discuss the knowledge management in Chinese social and cultural context and examine some potential factors that could affect the knowledge sharing in Chinese organizations. The fourth section of literature review examines the knowledge sharing literature in the communities of practice, focusing on socially constructed nature of knowledge within CoPs. By the end of the chapter, the first research objective, identifying the literature gap about communities of practice in Chinese organization will be achieved.

Chapter Three discusses the selection and application of the research methodology and data collection method used to achieve the research objectives, and explains why other methods were not used. Due to the focus on socially constructed knowledge sharing inside communities of practice (as opposed to the codification and storage focus provided by IT based knowledge management research), a qualitative case study approach is used, with in-depth interview being utilized as the major data collection method. The chapter details research design issues including a discussion of issues relating to the role of the researcher in the research and the ethical

considerations identified and resolved.

1.9.2 Part Two: What has this research found?

Part Two of this thesis contains two chapters and answers the question that "what has the research found?"

The fourth chapter reports the result of narrative analysis of the interview data and studying company internal documents, looking at the narratives as types of stories. It will combine the interview accounts with the context of case company to understand the underlying and reflective meaning in the hope to find out some features of CoPs in Chalco and how CoPs facilitate tacit knowledge sharing and the knowledge conversion from tacit knowledge into explicit knowledge.

The fifth chapter will provide a synthesis of the entire study by using more holistic approach. More specifically, based on the research findings in the last chapter it will link the relevant literature and past researchers to explain the research findings. In order to promote the discussion, the Nonaka's (1994) knowledge creation model is used as a base to support the findings of this research. At the same time, the other literature concerning Chinese social and cultural factors and the community of practice in the organization discussed in the Chapter 2 are also considered. Through linking the literature to justify the findings, the second, third and fourth research objectives will be achieved. Following the discussion, this chapter will also recommend some strategies that Chinese companies could take to promote the

development of communities of practice in Chinese organizations.

1.9.3 Part Three: What is the conclusion of this research?

Part Three of this thesis contains one chapter and answers the question of "what does it mean?"

The final chapter will provide an overview of research objectives achieved in this study. It will show how the findings of this research have addressed the objectives and aims of this research project. It will then readdress the significance of this research and discuss the implication of this research to the theory of communities of practice and the organizational knowledge management practice. Finally, the limitation of this study and some potential directions for the future research will also be discussed.

Chapter Two Literature Review

2.1 Introduction

Chapter One introduced the research, identifying the research aim, objectives, the related areas of previous research and debates. The purpose of this chapter is to achieve the research objective one, which is to identify the potential literature gap of how communities of practice are utilized to facilitate knowledge sharing in Chinese and social and cultural context. It will also cover the theoretical areas that shaped and refined the research aim and objectives.

The chapter will start with discussion of the concept of knowledge and knowledge sharing, trying to understand the nature of tacit knowledge and explicit knowledge and the different approaches to manage them. Then the theory of organizational knowledge management process and organizational knowledge creation will be introduced in order to identify the nature of knowledge sharing, the conditions and requirements for knowledge sharing and the relevant facilitators and barriers for knowledge sharing. This will be supported by introducing the pervious researches about Chinese social and cultural influences on knowledge management in organizations. The chapter will then introduce the theory of communities of practice, focusing on its natures which facilitate the knowledge sharing and learning in the community environment. Based on the researches conducted in Western companies the chapter will introduce some benefits of communities of practice to the organization in the aim of demonstrating a literature gap on the development of communities of practice in the Chinese organization. Finally,

some issues about the development of communities of practice in organizations will also be discussed.

2.2 Knowledge and Knowledge Management

In order to study knowledge sharing, it is necessary to establish the deep understanding of the natures of knowledge and how those natures affect the way in which knowledge is captured, stored and shared. Hence, this section will discuss the basic concept of knowledge and knowledge management as a foundation to study knowledge sharing in the organization. It will draw attention to the key writers and theory within literature, highlighting the role of knowledge management in organizations.

2.2.1 What is Knowledge?

Knowledge is an abstract concept that has been discussed and argued throughout history. A number of epistemological debates have been active in the academic world and have been expressed from a variety of positions (Hosper, 1967 and Hallis, 1985). Since this research is a practical, organizationally focused study that endeavors to better understand how organizational knowledge is shared rather than a theoretical or philosophical orientation, for this reason the nature of knowledge itself is not debated. The following definition of knowledge developed by Alavi and Leidner (1999) has been adopted for this study:

Knowledge is a justified personal belief that increases an individual's

a*bility to take effective action.*

<center>*(Alavi and Leidner, 1999)*</center>

In this definition, the importance of knowledge related to action has been recognized in the area of artificial intelligence. Action in this context requires physical skills (for example, playing tennis), cognitive/intellectual activity (for example, problem solving) or both (for example, surgery that involves an application of manual skills with cognitive elements in the form of medical knowledge) (Alavi and Leidner, 1999).

2.2.2 Knowledge Types

Knowledge can be classified into different types according to its nature. Different types of knowledge need to be managed differently. Therefore, it is necessary to distinguish different types of knowledge and have better understanding of how they can be managed.

Several definitions have been made between different types of knowledge. Haerem, et al (1996) present knowledge dimensions found in management literature as 'articulated' or 'non-articulated' (Itami, 1987), according to the degree of embeddedness and migratory knowledge; tacit and explicit knowledge (Nonaka and Takeuchi, 1995); transferable knowledge and non-transferable knowledge (Winter, 1987). In addition, Von Hippel (1994) and Szulanski (1996) classify knowledge as sticky or slippery in relation to how easily it can be transferred.

Quinn, et al (1996) provided a further categorization about types of knowledge that

exits in organization: know-what, know-how, know-why and care-why. Know-what is cognitive knowledge and basic mastery of a discipline that professionals achieve through extensive training and certification. This knowledge is essential, but far from sufficient for organizational needs. Know-how demands the advanced skills that translate knowledge in books into effective execution and ability to apply the rules of a discipline to complex real problems. Know-why refers to systems understanding, which is a deep knowledge of cause and effect relationships underlying a discipline. It allows professionals to move beyond execution of a task to solve large and more complex problems. Know-why is also named creativity and consists of the will, motivation and adaptability. It allows professionals to adapt to changing external conditions and innovations that may supersede their existing skills.

The various aspects of knowledge make it almost impossible to define types of knowledge unambiguously. As a result, the types of knowledge are not clear-cut and few are mutually exclusive in relation to their categorization. However, the widely discussed distinction in the management literature and one that is crucial to this research has been made by Polanyi (1966) between tacit and explicit knowledge.

2.2.3 Explicit and Tacit Knowledge

Polanyi (1966) distinguished between two forms of knowledge that can be found in organizations, namely explicit and tacit knowledge.

Explicit knowledge, known also as coded or formal knowledge, is consciously identifiable and describable. It is transferable through verbal or written forms, and is easily coded and stored in the form of documents and electronic data. This has historically been called declarative knowledge (Anderson, 1983).

On the other hand, tacit knowledge has a personal quality. It is knowledge with specific context and is difficult to articulate or communicate. Polanyi (1996) explored tacit knowledge with the opening assumption that we know more than we can tell and most of precious knowledge remains inaccessible or incommunicable. In Polanyi's word, it "indwells" in a comprehensive cognizance of human mind and body. Therefore, tacit knowledge is seen as informal knowledge and personal knowledge, rooted in individual experience and personal beliefs, perspectives and values.

While Polanyi (1966) articulates the contents of tacit in a philosophical context, Nonaka (1994) argued that tacit knowledge involves both cognitive and technical elements. The cognitive elements centre on what Johnson-Laird (1983) called "mental models" in which human beings form working models of the world by creating and manipulating analogies in their minds. These working models include schemata, paradigms, beliefs, and viewpoints that help individuals to perceive and define their world. By contrast, the technical elements of tacit knowledge cover the know-how of executing individual skills and crafts that apply to specific context.

Three broad features of tacit knowledge were identified by Horvath, et al, (1994). Firstly, tacit knowledge is procedural in structure and related to action. Secondly, tacit

knowledge is relevant to goal attainment. And thirdly, tacit knowledge is acquired with minimal help from others. Organizations performance depends on a large part of accumulated tacit knowledge, which allows intuitive perceptual orientation to the task at hand (Perkins, 1996). In addition to a stored accumulation of facts, this knowledge contains tacit elements such as remembered impressions, emotions and mental pictures, all of which are part of knowledge structures and may be utilized in decision-making processes (Leithwood & Steinbach, 1995).

Regardless of the type of knowledge, tacit or explicit, group or individual, organizations are realizing the strategic value of effectively utilizing that knowledge and are turning their attention on developing systems and processes to manage their knowledge. In this research, the case study company-Chalco, as a Chinese knowledge-intensive company, has been actively developing its knowledge management strategy, trying to maintain its competitive advantage in the global market. So what is knowledge management? What should companies do to implement their knowledge management strategy? The following sections will start to discuss knowledge management in organizations.

2.2.4 What is Knowledge Management?

Knowledge management has been studied within the field of the Business Adminstration for some time (Davenport and Prusak, 2003). It is derived from information management, in the same way that information management is derived from data management (Davenport and Prusak, 2003; Glazer, 1998; Roberts, 2000).

However, human being plays an essential role in transforming information into knowledge and this involves a level of understanding obtained via experience, familiarity and personal learning (Davenport and Prusak, 2003; Grover and Davenport, 2001; Roberts, 2000). Therefore, with the alternation of knowledge management from an emphasis on tangible resource to intangible human resource, it become clear that management of such intangible asset is a important tool for competition (Joia, 2007) since it fosters innovation and creates a sustainable competitive advantage for the company (Davenport and Prusak, 2003; Leonard and Sensiper, 1998; Nonaka and Takeuchi, 1995).

Kogut and Zander (1996, p503) have proposed that, 'an organization can be understood as a social community specializing in speed and efficiency in the creation and transfer of knowledge'. This theory of organization represents a paradigm that conceptualizes the organization as a system that processes knowledge and solves problems. Central to this paradigm is the assumption that a fundamental task for the organization is how efficiently it can deal with knowledge and decisions in an uncertain environment. In order to achieve this, the organization must encourage practice and processes that allow the right knowledge to get to the right place at the right time. In other words, it must develop and maintain a knowledge management system.

However, there is no agreed definition for knowledge management in organizations, and definitions usually depend upon researchers, their experience, background and interest (Parikh, 2001; Koulopoulos and Frappaolos, 2000). According to Wiig (1993),

knowledge management is fundamentally the management of corporate knowledge and intellectual assets that can improve organizational performance and add value by enabling an enterprise to act intelligently. Horwitch and Armacost (2002) define knowledge management as, "The practice of creating, capturing, transferring and accessing the right knowledge when needed to make better decisions, take actions and deliver results in support of the underlying business strategy." Knowledge management comprises sub-processes suggested by Sarvary (1999) listed in Table2.1.

More holistically, Hibbard (1997) echoes Quinn's (1996) know-what and know-how concept, in seeing knowledge management as the process of capturing and collecting the expertise of the organization, no matter where this experience resides (in the heads of its people, on paper or in database) and distributing it wherever it can help deliver the biggest payoff.

Organizational Learning	The process through which the firm acquires information and / or knowledge
Knowledge Production	The process that transforms and integrates raw information into knowledge, which in turn is used to solve business problems
Knowledge Distribution	The process that allows members of the organization to access and use the collective knowledge of the firm

Table 2.1 Knowledge management sub-processes (Sarvary, 1999)

The fundamental contribution of this research is to help organization to develop a proper knowledge management strategy with the aim of achieving organizational goals. Rastogi (2000) defines knowledge management as a systematic and integrative

process of coordinating organization-wide activities of acquiring, creating, storing, sharing, diffusing, developing, and deploying knowledge by individuals and groups in pursuit of major organizational goals. Hence, for the purpose of clarity, the definition of knowledge management made by Rastogi (2000) is used in this research. Each of the aspects of knowledge management highlighted in Rostogi's definition can be incorporated into three common factors in regards to managing knowledge that have been emphasized by many scholars (Beckman, 1999; Demarest, 1997; O'Dell and Grayson, 1999), that is, enablers, processes, and organizational performance.

Nonaka and Takeuchi (1995, p79) use "enabling conditions for organizational knowledge creation", while Davenport and Prusak (1998) use "conditions contributing to organizational effectiveness by enabling knowledge projects". Instead of conditions, some authors such as Nevis et al. (1995) use terms such as 'action', or activities that facilitate knowledge sharing and organizational learning. Hence, knowledge management enablers can be seen as the overall organizational activities that positively affect knowledge-creation process. These enablers might include a healthy culture, and support infrastructure (Beckman, 1999; Zand, 1997; Quinn et al. 1997); management support and proactive leadership (Davenport, 1998; Beckman, 1999); empowerment of employees (Davenport and prusak, 1998); understanding knowledge management as a business strategy (Ruggles, 1997; Holtshouse, 1998); strong communication channels (Koulopoulos and Frappaolo, 2000); and a commitment to developing and sustaining a climate for learning within the organization (Starbuck, 1997; Liebowitz and Beckman, 1998).

Knowledge management process can be thought of as a structured coordination for managing knowledge effectively. Based on Noaka and Takeuchi's (1995) work, Krogh (1998) claims that knowledge management process can take place through managing the creation of new knowledge. So, typically knowledge processes include activities such as creation (also referred to as construction), sharing, storage and usage (Alavi and Leidner, 2001; Beckman, 1999). Knowledge processes represent the basic operations of knowledge, whereas knowledge enablers provide the infrastructure necessary for the organization to increase the efficiency of knowledge processes (Lee and Choi, 2003).

Organizational performance represents the degree to which a company achieves its business objectives (Elenkov, 2002). Measures of organizational performance may include profitability, organizational learning, or other financial benefits in knowledge management (Davenport, 1999; Simonin, 1997). O'Dell and Grayson (1999) indicate that without measurable success, enthusiasm for knowledge management from employees and managers will dissipate.

There is a general recognition in the literature that knowledge management is a cross-functional and multifaceted discipline. According to Lee and Kim (2001), the most commonly mentioned components include knowledge itself, the management process, knowledge workers, trusted-based human relations, information technologies, knowledge-oriented culture, flexible organizational structure, performance measurement and rewards. However, considering all of them as target management

objectives will be difficult since some of them are not only too broad or too vague, but also too complex to manage. This research only studies one of the factors of knowledge management, which is the knowledge management enabler. The aim of this research is to study how communities of practice are utilized to facilitate knowledge sharing in a Chinese organization and it will focus on how communities of practice create knowledge sharing enablers.

The literature so far has discussed the different nature of tacit knowledge and explicit knowledge as well as the three common factors of knowledge management. This research is to study how the Learning Groups facilitate knowledge sharing in Chalco's social and cultural context. The purpose of the Chalco's knowledge initiative is to explore not only its widely existed explicit knowledge, but also its rich tacit knowledge. By clarifying the nature of tacit knowledge and explicit knowledge and understanding the relevant knowledge enabling factors, the researcher can pay attention to the activities of Learning Group and study how it facilitate tacit knowledge sharing and the conversion from tacit knowledge to explicit knowledge. The following sections will define knowledge sharing based on the knowledge creation model which is the central framework for this research. It will address the knowledge sharing enabler more specifically through introducing the concept of 'Ba', discussing the conditions and social environment for tacit knowledge sharing and the conversion from tacit knowledge to explicit knowledge, which is also as a guide for the data analysis process for this research

2.3 Understanding Knowledge Sharing

Based on the concept of knowledge management, this section will discuss knowledge sharing in organization. It will link the theory of organizational knowledge creation process to try to understand the tacit knowledge sharing and knowledge conversion from tacit to explicit.

2.3.1 Knowledge Sharing and Organizational Knowledge Creation Process

The concept of knowledge sharing is closely aligned with knowledge creation processes. Fleck (1979) argues that the sharing of knowledge is a social phenomenon and insists that knowing, thinking, and knowledge creation are not something that individual does, or can do. It occurs in social units called 'thought collectives' that are created when a relatively stable structure of meaning is established. Such a community reproduces itself through a continuous regeneration of meaning. This is in line with the knowledge-based view of organization, which regards organization as a dynamic knowledge-creating entity that actively interacts with others and environment (Nonaka and Takeuchi, 1995). Indeed, Drucker et al (1997) has identified harnessing "intelligence and spirit of people to continually create and share knowledge" as a top priority for organization to build its competitive advantage.

According to Zarraga and Garcia-Falcon (2003), the organizational knowledge creation process can be conceptualized as a process whose input is the individual knowledge of a person, which is created, shared and integrated in work teams within

the company, while its output is organizational knowledge. There are three phases of process that have to be developed in different ontological levels of the company to produce organizational knowledge. First, knowledge is buried in the minds of the individuals (Fahey and Prusak, 1998; Nonaka and Takeuchi, 1995) and those individuals are responsible for its creation. Second, the knowledge that has been created by individuals within organization will have to be transferred from those individuals to others in order to be shared. Third, those separated pieces of knowledge, once transferred and received, will have to be integrated and thus become one mass of knowledge. Consequently, the knowledge of each individual will be enhanced at the same time and an invisible link will have been created between individual minds. In that way group knowledge will have been created and will be impossible to disintegrate in the group. When the process is repeated among various groups in a single company, the organizational knowledge is achieved and the proprietor is the organization itself.

Knowledge sharing is clearly embedded in the knowledge management process and plays critical role in organizational knowledge creation. In Chalco, the company intentionally designed the Learning Groups in the hope of creating more company's organizational knowledge to keep its competitive advantage in the market. So this study adopts the organizational knowledge creation model made by Nonaka (1994) to discuss further knowledge sharing in the organizational knowledge creation process.

2.3.2 Knowledge Creation Model

Based on the assumption that knowledge is created through conversion between tacit knowledge and explicit knowledge, Nonaka (1994) proposed the dynamic ongoing organizational knowledge creation process, which involves four knowledge conversions: socialization, externalization, combination and internalization. These four knowledge conversions are also known as SECI model illustrated in Figure 2.1.

The process that transfers tacit knowledge in one person to tacit knowledge in another person is *socialization*. Since tacit knowledge cannot be expressed by spoken language, this process is experiential, active and a "living thing," involving sharing knowledge by walking around and through direct interaction with people inside the organization. According to Nonaka et al. (2000) socialization may occur in informal social meetings outside of workplace, where tacit knowledge such as world-views, mental models and mutual trust can be created and shared. Socialization is primarily a knowledge sharing process between individuals.
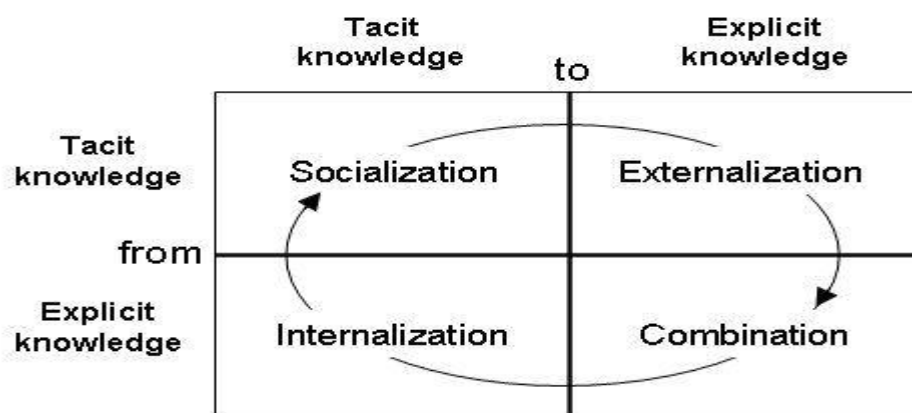
Figure 2.1 Mode of the Knowledge Creation (Nonaka, 1994)

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The process for converting tacit knowledge into explicit is *externalization*. One case is the *articulation* of one's own tacit knowledge - ideas or images in words, metaphors, analogies. A second case is *eliciting and translating* the tacit knowledge of others - experts for example - into a readily understandable form, e.g., explicit knowledge. Dialogue is an important means for both. During such face-to-face communication people share beliefs and learn how to better articulate their thinking, though instantaneous feedback and the simultaneous exchange of ideas. Externalization is a process among individuals within a group.

Once knowledge is explicit, it can be transferred as a more complex and systematic sets of explicit knowledge through a process Nonaka et al. (2000) calls *combination*. Explicit knowledge can be combined, edited or processed to form new knowledge. This is the area where information technology is most helpful, because explicit knowledge can be conveyed in documents, email, data bases, as well as through meetings and briefings. Combination allows knowledge sharing among groups across organizations.

Internalization is the process of understanding and absorbing explicit knowledge in to tacit knowledge held by the individual. The explicit knowledge may be embedded in action and practice, so that the individual acquiring the knowledge can re-experience what others go through. According to Sabherwal et al (2003), individuals could acquire tacit knowledge either vicariously by reading or listening to others' story, or experientially through simulating or experiments. Learning by doing, learning by observing, face-to-face meetings, and on-the-job training are some of the ways

individuals acquire knowledge through the internalization process. So internalization is largely experiential, in order to actualize concepts and methods, either through the actual doing or through simulations. The internalization process transfers organization and group explicit knowledge to the individual.

2.3.3 Defining Knowledge Sharing

In order to explore how community of practice facilitates are utilized to facilitate knowledge sharing in organizations, the role of socialization in Nonaka's (1994) model is of interest, as it covers the tacit knowledge sharing. According to Nonaka (1994), the key to acquiring tacit knowledge is experience. Without some form of shared experience, it is extremely difficult for people to share each other's thinking processes. Hence, socialization usually starts with the building of a "team" or "field" of interaction. This field facilitates the sharing of members' experiences and perspectives.

The conversion of tacit knowledge into explicit knowledge (externalization) is also of interest in this research. This is because externalization is triggered by successive rounds of meaningful "dialogue" (Nonaka, 1994). In this dialogue, the metaphors can be used to enable team members to articulate their own perspectives, and thereby reveal hidden tacit knowledge that is otherwise hard to communicate. Nonaka (1994) stated that people in a community-oriented environment have shared implicit perspective and it enables the metaphors to be used so that tacit knowledge can be easily converted into explicit knowledge. This indicates that communities of practice may play significant role on facilitating the knowledge externalization.

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As to combination, it is rooted in the information processing theory and involved many modern information technologies as its facilitators. As a result, it is not the focus of this research. Internalization has association with organizational learning. The process can be facilitated by encouraging experimentation and is a social process which occurs at the organizational level. It is realized through what Haken (1978) called "dynamic cooperative relations" or "synergetic" among various functions and organizational departments. Therefore, it may be beyond the power of communities of practice.

Therefore, the definition of knowledge sharing used throughout this research is: ***'The activities of sharing tacit knowledge between group members, making tacit knowledge explicit in the pursuit of major organizational goals'.***

This definition was adopted because of following reasons: 1) it is broad enough to allow the researcher to study both tacit and explicit nature of knowledge, although with a special focus on tacit knowledge sharing through examining the knowledge sharing process; 2) This deliberate choice of definition aims to balance the knowledge management literature, where the explicit dimensions of knowledge tend to be favored (Cook and Brown, 1999) through a codification and storage focus driven from an IT point of view. Recently, researchers have increasingly recognized the social nature of knowledge sharing within communities; 3) Rather than studying how members of organization codify, store and retrieve their explicit knowledge, this research examines the process by which members of organization share tacit knowledge in their working practice; 4) the key focus is the interpersonal tacit

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knowledge sharing process, identifying unwritten and tacit knowledge as a fundamental area of interest. In addition, the aim of tacit knowledge sharing is to put it into real practice. So how the tacit knowledge is converted into explicit knowledge is also the focus of this research; 5) Finally, this definition also limits the study to specific area of knowledge sharing processes that are directly related to achieving the goals of the organization, as opposed to more general knowledge sharing processes that are undertaken in everyday work life for personal or non-business related reasons.

2.3.4 The Social environment for Socialization and Externalization

As discussed in last section, knowledge sharing in this research is defined as the two parts of knowledge creation process: socialization and externalization. But what are the fundamental conditions for knowledge socialization and externalization? In order to answer this question, Nonaka and Konno (1998) added the cultural element to the SECI model. They introduced the Japanese concept of *Ba*, which is roughly translated into English as 'place'.

According to Nonaka and Konno (1998), Ba can be thought of as a shared space for emerging relationships. It is described as a philosophical construct rooted in Japanese society that relates to the physical, relational and spiritual elements of 'place', or perhaps more expansively 'context'. It provides a platform for advancing individual or collective knowledge.

There are four types of Ba that are related to the four stages of the SECI model. Each Ba

especially suits each of the four knowledge conversions. The Ba that is related to socialization and externalization are the *Originating Ba* and *Interacting Ba.*

2.3.4.1 Socialization and Originating Ba

Originating Ba is the world where individuals share feelings, emotions, experiences and mental models and is the primary Ba from which the knowledge creation process begins and represents the socialization process. According to Nonaka and Konno (1998), the physical, face-to-face experiences are the key to conversion and transfer of tacit knowledge. Lepak and Snell (2007) have noted the importance of social network made up of individuals with strong ties and reciprocal trust for knowledge sharing in an organizational environment. In terms of the socialization processes involved in the sharing of tacit knowledge through shared experiences, there is a clear role for breaking inter-organizational barriers that may be a product of proximity, language, culture or a variety of other barriers.

Emerging technology is facilitating better methods of remote communication, through the provision such technology or the use of attendance-based meetings, is often viewed as an avoidable expense. The SECI model challenges this idea and argues for the importance of face-to-face meetings to establish the basic sharing of tacit knowledge, which is the primary building block of the SECI process. According to Nonaka (1994) and Sternberg (1994), tacit knowledge is practical (i.e. it describes a process) and context specific (i.e. it is acquired in situations where it is used). Therefore, it can be better acquired through personal experience and learning by doing in practical situations entailing face-to-face interactions such as coaching,

networking and the like (Rebernik and Sirec 2007).

The concept of *Originating Ba* captures the importance of presence in knowledge transfer. It emphasizes the need to communicate more than the specific and the technical, with a focus on establishing communicating norms and exchanging emotions and developing shared mental models and experiences. In the organizational context, this will require the creation of strong personal relationships across organizational boundaries (Gann and Salter, 2000). From the originating Ba, the social relationship of care, love, trust and commitment will be emerged.

2.3.4.2 Externalization and Interacting Ba

The interacting Ba is the place where tacit knowledge is made explicit, thus it represents the externalization process. Externalization is perhaps the greatest challenge in the organizational context, as tacit knowledge is generally seen as contextually and culturally constrained and embedded within individuals and small groups (Rice and Rice, 2005).

There are two key factors that support externalization. First, the articulation of tacit knowledge---- express one's idea or image through words, concept. Dialogue is critical for such conversion and the extensive use of metaphors, narrative and story telling are required. However, meaningful dialogue has to be built on the basis of shared experiences. The second factor involves translating expressed tacit knowledge into understandable forms. This requires the individuals not only share the mental model of others but also reflect and analyze their own. As Gann and Salter (2000) stated, the explicit knowledge created should be a strong reflection of best practice

within the organization, should exhibit shared ownership, and should be able to be easily understood outside its linguistic, organizational and cultural context.

The awareness of the different characteristics of originating Ba and interacting Ba can facilitate successful support for knowledge sharing. For this research, it can help the researcher identify how the communities of practice in Chalco provide such social environment to facilitate the knowledge sharing. The following Table 2.2 summarizes the key factors of originating Ba and interacting Ba.

Ba	Knowledge Sharing		Social environment
Originating Ba	Tacit knowledge sharing	Physical interaction	Care, trust, love, commitment
		Sharing experience	Shared mental model
Interacting Ba	Conversion from tacit knowledge to explicit knowledge	Articulation of tacit knowledge	Dialogue based on the shared mental model
		Translating tacit knowledge into understandable forms	Reflecting and linking the real practice

Table 2.2 Key factors of originating Ba and interacting Ba (Nonaka and Konno, 1998)

2.3.5 Knowledge Sharing and Learning

Learning and knowledge sharing go hand in hand. Learning implies the creation of new knowledge through educational and social knowledge exchange. Organizational learning is an organization's enhanced ability to acquire, disseminate and use knowledge in order to adapt to a changing external environment. Scholars across disciplines such as management, marketing, and strategic management have proposed and found evidence that organizational learning is vital to an organization's

performance and competitive advantage (Goh, 2003; Jimenez and Cegarra-Navarro, 2006; Nonaka and Takeuchi, 1995; Stewart, 2002; Swartz, 2003).

The topic of organizational learning is populated with many theories and models. Many enduring organizational learning frameworks consist of a sequence of three knowledge processes i.e. knowledge acquisition, knowledge dissemination and knowledge use (DiBella and Nevis, 1998). The purpose of this research is not to revisit organizational learning as a key area of focus. Instead, it will specifically focus on the issues of determining how organizational members carry our learning through participating in knowledge sharing process. Chalco's Learning Groups are also part of the company's mentoring program. There are many 'master and apprentice' relationships in the Learning Groups. Through participating in the Learning Group, many less experienced members of the group learn new knowledge in a way which is different from the traditional company educational program. So studying the Learning Group in Chalco must add to concepts of organizational learning found in this area of knowledge management.

Despite the diversified organizational learning theories, several authors note that new knowledge can only be generated as a result of learning (Argyris and Schon, 1996; Nonaka and Takeuchi, 1995). Nonaka and Takeuchi (1995) allude to the nature of knowledge-sharing inherent in learning when they suggest that the most critical organizational function is not the management of existing knowledge, but the generation of new knowledge.

To create knowledge, the learning that takes place from others and skill

shared need to be internalized, reformed, enriched and translated into

the company's self image and identity.

<div align="right">

(Nonaka and Takeuchi, 1995, p.11)

</div>

This research will step into the difficult area of knowledge creation process, which takes place inside mind of people through interpersonal knowledge sharing. It involves people looking at their past experiences and applying these to new and novel situations.

The practitioner allows himself to experience surprise, puzzlement or

confusion in a situation which he finds uncertain or unique. He reflects

on the phenomenon before him, and on the prior understanding which

have been implicit in his behaviour. He carries out experiments which

serve to generate both a new understanding the phenomenon and a

change in the situation.

<div align="right">

(Schon, 1983, p68)

</div>

It is on experiencing this surprise, puzzlement and confusion that people will often look to a colleague for their opinions, views and experience relating to this specific problem (Putman, 1999; Schon, 1983). When master practitioners act deftly in difficult situations, they display knowledge that they are not consciously thinking of and often would be unable to state (Putman, 1999). This is central to our ability to act in unique, ambiguous or divergent situations (Schon, 1983). This tacit knowledge that

is learned by members of organization through participating in the practice can be viewed as the professional artistry of the profession (Schon, 1983).

Schon (1983, p56) defines artistry as "the competence by which practitioners actually handle indeterminate zones of practice; however that competence may relate to technical rationality." Learning professional artistry involves initiating practitioners into the traditions of the calling and coaching them in paying attention to important aspects of problems, framing problems, experimenting, and reflecting on outcomes in order to improve future practice. Prospective professionals no longer view their practice as a predetermined set of rules to apply to any given classroom situation, but as a practice which is grounded in a system of values, theories and practice (Schon, 1983). A professional artistry approach stresses understanding, rather than technical skill; it stresses moral, rather than purely technical, accountability (Fish, 1991). It focuses upon individual insight, staff development and gradualism and expects management to provide a framework in which professional enterprise can flourish (Fish, 1991). In other words, this approach provides professionals with certain autonomy in recognition of their specialist knowledge and moral responsibility.

Schon (1983) made the distinction between a technical rational approach and a professional artistry view, summarized in the following Table 2.3. The latter has been learned through a process of reflective learning as opposed to formal education processes.

Technical Rational Approach:	Professional Artistry view:
Follows rules, laws and prescriptions.	Uses patterns and frameworks.
Uses diagnosis and analysis.	Uses interpretation and appreciation.
Views knowledge as obtainable and permanent.	Views knowledge as temporary and dynamic.
Focuses on technical expertise.	Focuses on professional judgment.
Implies theory applies to practice.	Implies theory emerges from practice.

Table 2.3 Technical rational versus professional artistry approach (Schon, 1983)

This form of reflective learning is also recognized by Revans (1991) who states that reflective learning embodies an approach to learning based on comrades in adversity learning from and with each other through discriminating questioning, fresh experience and reflective insights. This form of learning, labelled *action learning,* offers the opportunity to integrate 'rule based knowledge' with 'experiential knowledge' through personal and collaborative reflection (Smith, 2001).

Although organizational learning occurs through individuals, there has been much attention devoted to whether organizations can learn in their own right. Hedberg (1981) states that

> *...it would be a mistake to conclude that organization learning is nothing but the cumulative result of their member's learning. Organizations do not have brains, but they have cognitive systems and memories...Members come and go, and leadership changes, but*

organizations' memories preserve certain behaviours, mental maps,

norms, and values over time.

(Hedberg 1981, p3)

In this research, it is accepted that organizations learn, and hold knowledge in conjunction with the individuals within the organization. These two forms of knowledge, as highlighted by Cook and Brown (1999), are different forms of knowledge, each doing work that the other cannot. It is beyond the scope of this research to fully cover the organizational learning literature, as this is an extensive body of research, with debates still unresolved by scholars on many aspects. The important point to note is that interpersonal knowledge sharing between individuals and groups within organization is an important form of learning, providing the know-how for organization to solve new problems, or to solve existing problems in better ways. However, knowledge sharing is not without its difficulties in any organizations.

2.3.6 Barriers to Knowledge Sharing

There are several barriers to knowledge sharing that are highlighted in the literature. Firstly, Hipple (1994) and Szulanski (1999) recognized the 'sticky' nature of tacit knowledge and the 'slippery' nature of explicit knowledge. The non-transferable and tacit dimension of knowledge has a high transmission cost, whilst the codified knowledge with a low transmission cost (Hipple, 1994; Szulanski, 1999). The

inherent 'stickiness' of certain types of knowledge enables an organization to maximize the value of its knowledge creation investment by controlling access to the repositories of uncodified knowledge. Hence, the strategic advantage of organizations may, in fact, lie with keeping knowledge tacit as opposed to capturing and codifying knowledge explicitly.

Problems exist also in sharing explicit knowledge. For instance, a shared language is necessary, as is some degree of shared experience. With different mental models of the world, and imprecise instruments such as language and text, the ability to reconstruct the original meaning of the originator of knowledge is extremely difficult (Davenport and Prusak, 1998). Different people will have different interpretations and different meanings of the same event or information. This is reduced by shared experience, but it is also context sensitive, and it is affected by the different values and attitudes of different people. Furthermore, it is an essential part of knowledge sharing if one is to have confidence in the source and accuracy of the knowledge (Davenport and Prusak, 1998).

The sharing process in an organization includes elements of communication and conflict. As a result, different parts of the organization may come to a different conclusion about the same events — they learned different thing from that same event. For instance, a single event such as the failure of a new product may be interpreted by marketing department as an engineering fault in the design, and by engineering department as a poor marketing campaign. In addition, information that

threatens the organization's collective self concept is ignored, rejected, hidden or lost. The process by which organization preserve their identities are, in many ways, analogous to the methods that individuals employ in the defense of their own self concept (Brown, 2000).

Szulanski (1996) carried out a study that describes why best practice did not transfer well between sections within the same organization. It found that a successful method of performing a certain procedure would go unnoticed or would not be shared for many years. Once the best practice was identified, however, it would still take an average of two years before the method migrated to other sections for use within company. Based on Szulanski (1996)'s study, O'Dell and Grayson (1998) summarized four main barriers causing the delay in identifying and sharing best practice in firms. The four main barriers are showed in the Table 2.4.

'Ignorance'	This means the person with the information didn't think anyone could use it and others in the company did not know that anyone had the information.
'No absorptive capacity'	Once the method was recognized, the company had no processes or resources to capture best practice.
'The lack of pre-existing relationships'	The separate sections of company have no interaction with each other. Normally people acquire knowledge from someone they admire, know or interact with. Seldom will one person adapt another person's new process if that not have a relationship already established.
'Lack of motivation'	The benefit of using the new method and how it can help a department may not be fully understood.

Table 2.4 four barriers to knowledge sharing (O'Dell and Grayson, 1999)

Although this research encounters these and other barriers to knowledge sharing, it is

not the intention to specifically identify and discuss all barriers. In discussions relating to the participation of members of the organization in the knowledge sharing process, those barriers will have a bearing on why and how they engage in the knowledge sharing process. Where identified, these barriers will be discussed in the context of answering research questions, as opposed to being separately addressed. In relation to the literature review for this research, it is sufficient to recognize that there are several barriers to knowledge sharing, and they will have an impact on sharing process preferred by members of organization.

Although the barriers discussed by Szulanski (1996) relate specifically to departmental knowledge sharing, the underlying effect on knowledge sharing applies to individuals in the organization. For instance, the barrier of 'lack of pre-existing relationships' shows the importance of relationships in an organization. Through the formation of identities within communities, members of organization build reputations in areas of their expertise and break down this barrier in a community way. This has to be noted that Szulanski (1996)'s work is based on his research conducted in a Western company. It cannot be applied universally. It might have different barriers in other social context. This research focuses on knowledge sharing in the Chinese social context. Hence, it is necessary to examine knowledge management in Chinese organization and its potential barriers for knowledge sharing.

2.4 Knowledge Management in Chinese Organization

There are a few academic contributions in international English-speaking journals

relating to knowledge management in China. In most of these researches, Chinese firms only serve as data source for theory development. Research on knowledge management with a narrower focus on the Chinese context has been carried out by Chow et al. (2000) and Lau et al. (2002).

Chow et al. (2000) tackled cultural aspects with regard to knowledge management. He pointed out that the Chinese nationals' openness towards knowledge sharing in contrast with those of the USA is related to their differing degree of collectivism - the relative emphasis on self compared with collective interests - as well as to whether knowledge sharing involves a conflict between self and collective interests. This relates to the effect of the Chinese national cultural on the knowledge sharing. It will be discussed further below.

Lau et al. (2002) investigated the knowledge management process of domestic high tech firms in China, by focusing on issues such as knowledge acquisition, dissemination and commercialization. They concluded that the Chinese high-tech firms' knowledge management was very leader-oriented, not yet institutionalized. This finding is widely in accordance with the reviewed Chinese academic research papers stating that most of these firms tend to acquire knowledge. To summarize, the English-language research works lack discussions on the motivations for and barriers to knowledge sharing at a managerial level within the specific Chinese context.

While few Western scholars have examined knowledge sharing within a Chinese context, Chinese scholars have started to explore knowledge management and

knowledge sharing in China from different perspectives. Some argue that knowledge sharing concerns the sharing of individual knowledge and organizational knowledge by all organization members using various communications tools, and knowledge innovation so as to increase the knowledge storage inside the organizations (Li, 2005); some believe that knowledge sharing is achieved by transferring all the knowledge from one individual to another (Zhao et al., 2004); while others contend that knowledge sharing is a process where individual knowledge is transferred to other members within the organization so that individual knowledge become collective knowledge or organization knowledge (Lei, 2003).

The majority of indigenous studies on knowledge sharing in China focus on how to search knowledge and how to remove the barriers to knowledge sharing within the organization or project teams (Kuang and Zhou, 2005; Wu and Zeng, 2004; Zhang, 2005; Zhang and Chen, 2006), only a few have examined different contextual factors that affect knowledge sharing. Wang and associates (2004) propose that tacit knowledge sharing is affected by three major factors, including organizational policies, corporate culture, and interpersonal relationships and the barriers to tacit knowledge sharing include lack of good interpersonal relationships, lack of incentives, and the pursuit of personal benefits with knowledge monopoly. Sun and colleagues (2005) also suggested that there were four contextual factors that influence knowledge sharing, including personal learning, organizational structure, corporate culture and technology environment, yet no empirical evidence is provided for these conceptual works.

Although there is lack of empirical evidence about knowledge sharing and knowledge management in Chinese social context, this research will try to explore the Chinese cultural factors which could affect knowledge management in Chinese organization.

2.5 Chinese Cultural Influence on Knowledge Management

The term culture may refer to two dimensions in the context of KM – organizational culture and national culture (Ford and Chan, 2003). It has been reported through a number of research projects that organizational culture is one of the most important conditions leading to a successful KM project (e.g. Davenport and Prusak, 1998; De Long and Fahey, 2000). To create a supportive organizational culture is increasingly recognized as a major challenge for many companies aiming for effective knowledge management (Gold et al., 2001).

Hofstede's (1980) theory explains that an organization's culture is nested within a national culture. Ford and Chan (2003, p15) argue that ''organizational culture can act as a mediator for national culture and knowledge management processes.'' Several prior studies (e.g. Ardichvili et al., 2006; Chow et al., 2000; Ford and Chan, 2003; Holden, 2001) have made important contributions on national cultural influences on people's behaviours in knowledge sharing within multi-cultural organizations and Chinese national culture has also been discussed extensively in these research studies because it is a representative cultural component within a multi-cultural organization.

2.5.1 The Chinese Cultural Values

It is documented and estimated that the dominant Chinese culture values are high power distance, high uncertainty avoidance, and high collectivism (Hofstede, 1993) which are diametrically opposed to those of most Western cultures: low power distance, low uncertainty avoidance, and small and medium individualism (Jaeger, 1986). For example, the confrontation meeting would be inappropriate in Chinese organizations where people tend to have high uncertainty avoidance and high power distances (Bond, 1991). In fact, as several researchers observe that open conflict and overt self-interest are seen in Chinese ethics as deeply improper, and in effect ruled out from the range of acceptable behavior. Aggressive desires, and emotions generally, are normally sublimated, and society lacks any clear guidelines for the management of conflict situations (Redding, 1993). Chinese employees are reluctant to share their views in group discussions for fear of loss of face (Redding, 1993). The Chinese doctrine in communication is indirect and implicit and do not spell out everything, but leave the unspoken to the listeners.

It is also widely agreed that the predominant social fabric of Chinese culture is the Confucian value system, which mainly refers to a number of doctrines stressed by Confucius (about 551-499 BC) and his followers (e.g. Bond, 1991; Pun et al., 2000; Redding, 1993). As a moral system, rather than a religion, Confucianism attempts to "establish harmony in a complex society of contentious human beings through a strong and orderly hierarchy" (Park and Luo, 2001, p. 456). It highlights the

sensitivity to hierarchy and the maintenance of social order via micro-units of a society, such as families and organizations (Lo, 1997).

Thus, there is a strong tendency to avoid direct confrontation in Chinese society. Instead, harmony within the group is to be maintained wherever it is possible. Though there have been some changes in cultural values among Chinese, especially the younger generation, respect for hierarchy or high power distance is still deep rooted among the majority of Chinese (Schwartz, 2006).

2.5.2 Group Membership

In China, Confucianism is also reflected on its in-group culture (Sheer and Chen, 2003). Triandis (1988) defines an in-group as a group of people who share common interests and have a concern for each other's welfare. Earley (1993, p. 321) refers to Tajfel's (1982) theory in which it is suggested that individuals form in-groups based on mutual interests and common traits since they are most likely to receive reinforcement for such traits from similar others (see also Tsui and O'Reilly, 1989; Zenger and Lawrence, 1989). It is further argued that in-group members will view their long-term welfare in terms of the successes of the group (Earley, 1993).

The value of in-groups is inextricably linked to trust and dependency with others for resources and services. Those who fall out of an in-group are regarded as out-group members and they do not share any benefits of networking with in-group members. Moreover, due to the interdependent relationships in an in-group individuals are

motivated to save face for in-group members (Sheer and Chen, 2003). Littrell (2002, p. 17) suggests that the in-group is the source of identity, protection, and loyalty, and in exchange for such loyalty, information can be expected to be shared within the group but would be expected to be restricted to those considered to be outside the group. Achieving insider status is critical in order to achieve very diverse outcomes, ranging from smoothing transport difficulties, through collecting payments (Leung *et al.*, 1996), to gaining access to organizational information (Krug and Belschak, 2001, p. 12).

2.5.3 The Importance of "Guanxi"

The central of in-group culture is the building of relationship (Tsang, 1998). It is named as "Guanxi" in Chinese. Guanxi, as a unique phenomenon in a Chinese setting, has attracted not only indigenous, but also western scholars to explore (Davies et al., 1995; Tsang, 1998). Guanxi has even affected the operation of joint ventures. A US company abandoned personal referrals as an important method of recruitment because the policy encouraged too many relatives and friends to apply for the positions (Davies et al., 1995). Guanxi can be defined as a continual exchange of favours due to personal relationships or connections (Chen, M., 1995). As a matter of fact, guanxi can be seen as one of the behavior patterns of Chinese people.

There are so many guanxis within an organization, especially in the large formal state-owned companies, which become the biggest headache issue for many executives.   It emphasizes that the individual does not exist independently but in a

network of relationships, which is called ''Guanxi''. Park and Luo (2001, p. 455) believe that ''Guanxi is a critical factor in firm performance in China''. Traditional Chinese cultural values pervasively influence on the management mode and organization and represent the outstanding characteristics of Chinese organizations (see Pun et al., 2000; Bond, 1991; Lo, 1997; Su et al., 1998; Watt, 1999).

An important concept deeply related to Guanxi is ''trust''. Trust can be defined as ''the willingness of a party to be vulnerable'' (Dirks and Ferrin, 2001).The importance of trust is generating increased interest in KM. Prior researchers delineate trust as one of the most important aspects of a supportive context for KM (see Dodgson, 1994; Von Krogh et al., 2000; Abrams et al., 2003). It was suggested that a supportive organizational culture works together with trust to enable effective knowledge work (e.g. Brown and Woodland, 1999). With respect to prevalent Chinese cultural systems, trust can certainly be identified as an important cultural factor (Alston, 1989).

However, so far there is no prevailing research that had specially looked at the influence of Chinese national culture on knowledge sharing in a Chinese organization. Therefore, the social and cultural barriers for knowledge sharing in Chalco will be examined.

2.6 Social Knowledge Sharing in Communities of Practice

This section will introduce the concept the communities of practice. It will examine the features of CoPs in the organizational context and focus on situated learning and

reflective practice as well as the progressive involvement of individuals into community, trying to explore how the CoPs can facilitate knowledge share in the organization. It also discusses some examples of CoPs in the Western company and identifies the literature gap about communities of practice in Chinese organization.

2.6.1 Knowledge Sharing in Communities

The concept of knowledge sharing within communities is not new. Since ancient times, as hunters and gatherers, communities relied on the transfer of tacit knowledge in order to survive (Berreby, 1999). Through the move from subsistence living into the industrialisation of society, knowledge sharing has remained in a fundamental function of communities. Rather than using the definition of communities as people living and working in, the term in relation to work in this research is used in its philosophical sense. The concept of community is

> ....*expresses our vague yearning for a commonality of desire, a communion with those around us, and extension of the bonds of kin and friendship to all those that share a common fate with us.*

> (Minar and Greer, 1969, p179)

Poplin (1979) builds on this concept as a moral phenomenon that seems to involve a sense of identity and unity with one's group and a feeling of involvement and wholeness on the part of the individual. This sense of community refers to a condition in which human beings find themselves enmeshed in a tight-knit web of meaningful

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relationships with their fellow human beings. This condition may be contrasted to the conclusions drawn from literature that people in twentieth century urban communities are alienated, frustrated and alone (Poplin, 1979).

Indeed, the continued alienation of people in modern society may fuel the emergence of informal communities at the workplace. According to Nisbet (1960), the only alternative to the continued spread of alienation in the twentieth century is communities which are small in scale but solid in structure because they respond, at the grass roots, to fundamental human desires: living together, working together, experiencing together and being together.

The concept of communities in the workplace, and the knowledge-sharing within them, has gained increasing attention from knowledge management scholars in recent years. Lave and Wenger (1991) have labelled these informal groups of workers that exist separate from formal hierarchies as communities of practice, and much attention has been given to their study over the past decade.

2.6.2 Communities of Practice (CoP)

Since the publication of Situated Learning: Legitimate Peripheral Participation (Lave &Wenger, 1991) almost 20 years ago, Communities of Practice (CoPs) have been the focus of attention, first as a theory of learning and later as part of the growing field of Knowledge Management (Ribeiro, Kimble and Cairns, 2010). CoPs simultaneously emphasizes storage and distribution of explicit and tacit knowledge, enhances member interaction and knowledge sharing, enables organization learning, and

induces innovation to maximize the value of Knowledge Management (Chu and Khosla, 2009). Global enterprises, such as IBM, 3M, Xerox, Cisco, and Dell, meet transformation needs by operating CoPs in their business operation, have taken CoPs as a new central role in their knowledge management strategy (Chu, Shyu, Tzeng, & Khosla, 2007). Lave and Wenger (1991) first introduced the community of practice concept, describing them as:

A set of relationship among persons, activity and world, over time, in relation with other tangential and overlapping communities of practice.

(Lave and Wenger, 1991, p98)

Over time, scholars have refined their definition of CoPs as they have done more research on these entities. A more recent definition of CoPs is

A group of individuals informally bound together by shared expertise and passion for a joint enterprise.

(Wenger and Snyder, 2000, p139)

A set of individuals who wish to interact, or who are already interacting occasionally, to share knowledge about an area of common interest in order to improve their individual or collective practices.

(Cappe, 2008, p. 115)

This definition suggests that a community of practice involves the participation of a collection of individuals sharing mutually defined practices, beliefs and understandings

over an extended timeframe in the pursuit of a shared enterprise (Wenger, 1998). They have a shape and membership that emerges in the process of activity, as opposed to being created to carry out a task (Brown and Duguid, 1991). However, since Lave and Wenger (1991) first used the term CoPs, a range of definitions with many shades has been developed but all allude to features of organizational learning and knowledge sharing. Such of definitions of CoPs by leading theorists are:

> *A CoP is defined as a group of professionals, informally and contextually bound to one another by shared interest in learning and applying a common practice (Snyder, 1997)*

> *A CoP is a made up of a diverse group of people who develop their competence, either out of pleasure or pride in their ability or as a way to making their jobs easier (O'Hara, Alani and Shadbolt, 2002).*

> *CoPs are where learning and innovation occur through open participation in the creation and sharing of knowledge evolving a practice that is highly skilled and highly creative (Stewart, 1996, p173).*

> *CoPs are groups of professionals, informally bound to one another through exposure to common class of problems, common pursuit of solutions and thereby themselves embodying a store of knowledge (Johnson-Lenz and Johnson-Lenz, 2000).*

Summing up the definitions above, CoPs can be seen as informal and self-organizing networks. They have come together by exposure to common problems, common practice for the purpose of sharing and developing more creative practice. At the simplest level, CoPs are a small group of people who have worked together over a period of time (Sharp, 1997).

The two key words in the definitions of CoPs that provide a suitable way to unpack the meaning of this complex, emergent construct. "Community" refers to the informality and personal basis of relationship in a typical CoP (Snyder, 1997). It highlights the importance of quasi-voluntary interaction (Wenger, 1996). As for "practice", it indicates that at the heart of CoPs is the shared practice which may or may not coincide to a formal function in the organization (Snyder, 1997). It also suggests that CoPs' boundaries are practice-based network that may not correspond to the organizational boundaries (Snyder, 1997).

2.6.3 The Variety of Communities of Practice

CoPs can exist in a variety of forms and they vary widely in terms of name and style in different organizations. The following are examples of the different types of CoPs and the fundamental characteristics they have in common (Wenger *et al.*, 2002).

CoPs can start spontaneously, without any involvement or development effort from the organization (Brown and Duhuid, 2001). Members just come together because of mutual needs or commitment. Alternatively, they can be initiated intentionally by

organizations to steward a specific capability (Lesser and Everest, 2001). In any way, this does not dictate CoPs' level of formality as some highly dynamic and established communities are very informal while others can be highly structured by having meetings, setting agendas and creating specific objectives (Wenger *et al*., 2002).

The relationships of CoPs to organizations can range from completely unrecognized to largely institutionalized (Brown and Duguid, 1991). Individuals meet regularly and discuss specific issues and over a period of time they share and build knowledge that can help them to perform better in their formal workplace. However, organizations may not be aware of this and they may not recognize the impact of these CoPs. On the other hand, some communities have been discovered to be valuable and they are incorporated into the formal structure of the organization (Gongla and Rizzuto, 2001; Thompson, 2005). This institutionalization can offer legitimacy and provision of resources to the CoPs. However, it needs to be well managed so that it does not violate its internal drive. Therefore, between the two extremes of relationships, there is a whole range of possible relationships and different issues arise as the relationship changes (Wenger *et al*., 2002).

The boundaries of CoPs are fuzzy and they can live within or across divisional /organizational boundaries (Brown and Duguid, 1991; Lesser and Everest, 2001). Within divisional boundaries, CoPs can occur when individuals try to solve a similar problem together. At the same time, CoPs can arise across divisional boundaries where individuals keep in touch with colleagues in various business units to share and

maintain their expertise since organizational knowledge is often distributed throughout different functions.

Communities can be homogenous, composed of people from the same discipline, function or background, they are specialized in various areas and they interested in a same topic or problem. As well, they can be heterogeneous, made up of individuals from different functions who come together to solve a common problem (Brown and Duguid, 2001). Initially, it is often simpler to start a community among people with similar backgrounds who have a problem in common. However, in heterogeneous communities, the motivation to initiate is the fact that they can build and share a practice even among people from different backgrounds. Eventually, as they engage with each other, they build relationship that knit them closely to each other (Wenger *et al.*, 2002).

In summary, CoPs exist in some form in every organization and they are known in different guises and names such as "tech clubs," "learning networks", "interest groups", "communities of practitioners", "innovation group" among others (Argyris et al., 1987; Boland and Tenkasi, 1995; Wenger *et al.*, 2002). Therefore, CoPs are diverse depending on the situation in which they exist and the individuals who make up them.

2.6.4. An Analytical Framework of CoPs

An interpretative framework developed by Scarso, Bolisani and Salvador (2009) can be used to analyze the different structures, functions and external context of CoPs (Figure 2.2). This framework is derived from a review of current studies of

CoPs-based KM programmes, which involved more than 200 papers selected from various sources. This framework has consisted of vast but heterogeneous material into a systematic and comprehensive model, in order to develop a unifying view of the main issues influencing the development of a CoP. It comprises six elements, four of which are called internal (constituting) characteristics, and two are called external influences.
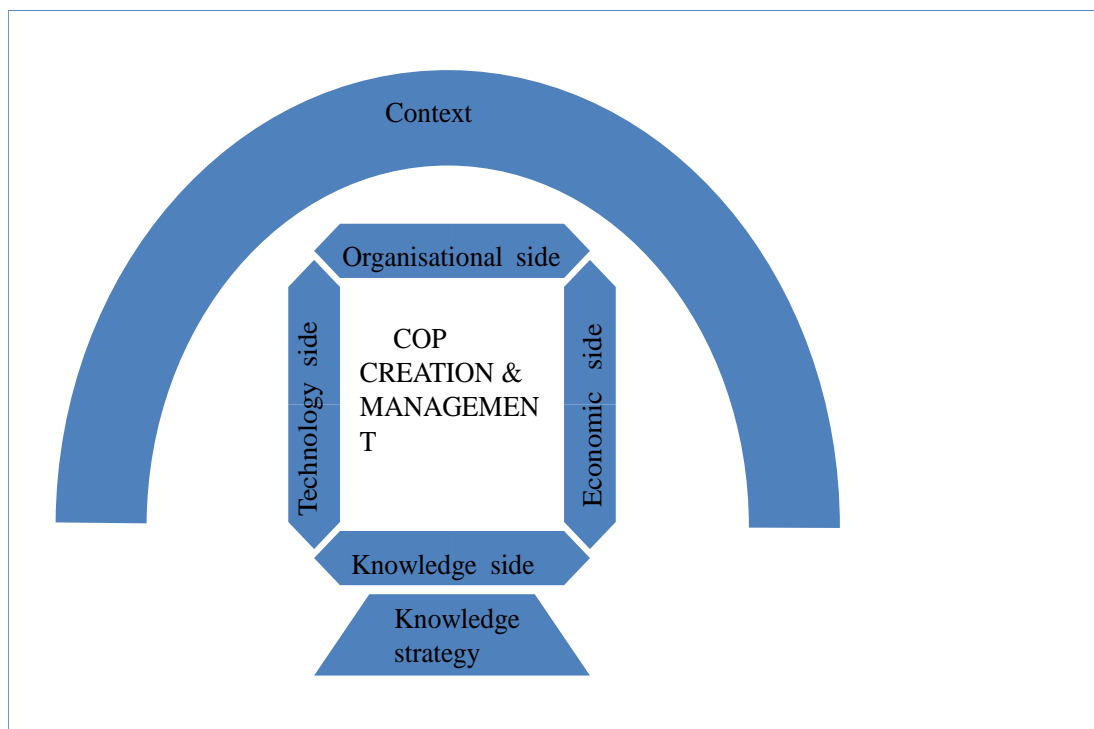
Figure 2.2 Framework for analysing functioning of CoP (Scarso, Bolisani and Salvador , 2009)

The internal elements are the four pillars of a CoP, i.e. the structural factors on which its creation grounds. They can be regarded as the design options that can be chosen, whose features thus derive from the decisions taken by the designers, managers, or sponsors of the CoP. They are:

1. the organizational dimension, that concerns roles and relationships within the CoP

and between it and the rest of the organization;

2. the cognitive dimension, that regards the specific knowledge domain, the kind of practices the CoP deals with, and the KM processes undertaken;

3. the economic dimension, that involves benefits, costs, and relevant performances;

4. the technological dimension, that relates to the role of enabling technologies.

Each pillar includes several components, the most important of which are reported in Table 2.5.

Pillar	Main Components
Organizational	Size (number of members); Degree of transverseness across the organization; Relationship with the existing structure Formal acknowledgement; Governance; Local versus centralized management; Roles of members and supporting functions; Kind of leadership;
Cognitive	Nature of shared knowledge; Cultural proximity of members; Knowledge gaps between members; Knowledge domain; KM processes and knowledge flows;
Economic	Mechanisms for evaluating costs and benefits; Budgeting, resources allocation, accounting; Systems to promote and reward participation;
Technology	Kind of technological platform; User-friendliness; KM processes underpinned by technologies; Relations with the social/organizational context; Intensity of use across the CoP;

Table 2.5 Main components of four pillars of a CoP

Since CoPs do not operate in a vacuum, their success depends both on the particular combination of the illustrated factors and its appropriateness to the specific circumstances of implementation (Paik and Choi, 2005; Kohlbacher and Mukai, 2007). Hence, the proper design of a CoP and its ''good functioning'' also rely on two external elements, which represent the ''background environment'' that entails the set of opportunities and constraints to the CoP project. These two external elements are:

1. the business context where the CoP project takes form;

2. the knowledge strategy pursued by the organization.

The business context consists of all the aspects connected with ''the way the organization runs the business'', such as: the business environment (industry, product/service, markets, typical trading procedures, etc.), the corporate culture of the organization (beliefs, basic assumptions, shared values, norms, practices, etc.), the level of ICT literacy of prospective CoP members, and the amount of resources available for the KM projects. The knowledge strategy represents the deliberate plans of the organization for making the best use of knowledge for competitive advantage (Holsapple and Jones, 2006). It stems from − or should be strictly associated with − the firm's competitive strategy.

Based on this analytical framework, the nature, characters and functions of CoPs can be identified and some external factors such cultural influences on CoPs can also be further explored.

2.6.5 Learning and Knowledge Sharing in CoPs

Through conceptualizing organization knowledge as a social and collective phenomenon embodied in the actions or practice of its members, Lave and Wenger (1991) explored the process by which new members to various professions became full members of the community of practice over time. This process, called Legitimate Peripheral Participation (LPP) involves 'learning by doing' through both formal mechanisms as well as the informal groups. LLP is defined as:

....the progressive involvement of new arrivals in the new community as they acquire growing competence in its practice. The adjective 'peripheral' denotes the existence of a route that the new member must follow to gain the esteem of the communities established members. At the same time, the idea of legitimate participation emphasizes that the route through the various stages of learning connects with the community's actual practices. Because knowledge is integrated and distributed in the life of the community, and because learning is an act of belonging, learning necessarily requires involvement in and contribution to the community's activity and development. In other words, learning cannot take place if participation is not possible.

(Gherardi, 2000, p7-19)

In communities of practice, newcomers learn from 'old-timers' (that is, more experienced long-term members) by being allowed to participate in certain tasks

relating to the practice of the community and gradually move from peripheral to full membership in that community. Lave and Wenger (1991) suggest that LLP is complex and composite in character and state that each of its three components of legitimating, peripherality and participation are indispensable.

The terms peripheral and full engagement are used by Lave and Wenger (1991) to denote the degree of engagement with, and participation in the community, but they note that peripherality

> ....*must be connected to issues of legitimacy of the social organization, and control over it, if it is to gain full analytical attention.*

(Lave and Wenger, 1991, p17)

As time passes, the new group member's identity transforms both individually and in the eyes of the other practice members, to one of full participation. Hence, learning can be seen as 'the historical production, transformation and change of persons (Lave and Wenger, 1991). It is through this process that tacit knowledge is shared, and by which the community's explicit knowledge can be recontextualised with the community's embedded meaning.

It is the process of participation that provides the key to understanding communities of practice. Communities of practice imply participation in an activity about which all participants have a common understanding of what it is, and what it means to the community. The community and the degree of participation in it are in some senses

inseparable from practice (Hildreth, 2000). Although participation is undoubtedly important, very little research attention has been focused upon the question of why community members do choose to participate.

2.6.5.1 Participation

Participation appears to be a key factor in the interpersonal knowledge sharing process in an organization, as knowledge sharing can only occur it people are prepared to engage with each other. However, the reasons why people participate are not clear.

For instance, frequent studies in diverse settings indicate that employees frequently resist sharing their knowledge with the rest of the organization (Ciborra and Patriota, 1998) or with others (Constant, et al, 1994). In addition, knowledge is 'sticky' and does not flow easily within an organization even when the knowledge is made available (Szulansi, 1996). With the focus on technology solutions to overcome this 'stickiness', it is important to note that organization culture, rather than technology, has a greater impact on whether people share knowledge (Orlikowski, 1996). The critical issue then is to understand the social, cultural and technical attributes of the knowledge management system that encourage knowledge sharing (Holtshouse, 1998; Wasko and Faraj, 2000).

Social etiquette appears to play an important role in determining the nature or participation in the community of practice. Social etiquette relates to the behaviour, manners and protocol established by convention as acceptable or required in the

specific organization or community. It comprises ongoing social processes involving socially shared values and cognitive assumptions that bind together and shape human behaviour (Parsons, 1996). The structural properties of these social systems do not exist in isolation from human action. Rather, social structures are better seen as socially recurring patterns of action (Parsons, 1996).

According to Wenger (1998), participation in the communities of practice is contingent upon knowing the accepted social etiquette and practices established by the group over time. Through the community history tied to their own time and place, people engage in practices that are guided by their level of understanding and knowledge of that situation. This local and specific knowledge that has developed in the mind of the individual over time can be conceived of as local cultural knowledge, and is that which people know about their present circumstances (Parsons, 1996). This knowledge of community of practice allows people to engage in an invisible interpersonal knowledge sharing process according to rules that allow the process to function efficiently.

The concept of cultural knowledge, and more broadly *organizational culture*, is a popular but elusive concept which has been variously defined as: a system of publicly and collectively accepted 'meanings' which operate for a group at a particular time (Trice and Beyer, 1984) and more simply as the way we doing things around here (Deal and Kennedy, 1982). Culture is seen from a community's social perspective as the product of a dynamic and collective process of 'sense-making' undertaken by members

of a group or organization (Silvester, et al, 1999). For Schein (1985), culture is a learned product of group experience. He defines it as:

....basic assumptions and beliefs that are shared by members of an organization, that operate unconsciously, and that define a basic 'taken for granted' fashion of an organization's view of itself and its environment. These assumptions and beliefs are learned responses to a group's problems of survival in its external environment and its problems of integration.

(Schein, 1985, p6)

Organizational culture is uncovered by looking at indicators of sense-making such as facts, practices, vocabulary, metaphors, stories, rites and rituals (Pacanowsky and O'Donnell-Trujillo, 1982). Often referred to as 'culture norms', it is made up of its members shared attitudes and values, management style, and problem-solving behaviour (Schwartz and Davis, 1981). Schein (1983, p13) thinks that organizational culture is 'the assumptions that underlie the values and determine not only behaviour patterns, but also such visible artefacts as architecture, office layout, dress codes, and so on'. D'Andrade (1984) concludes that organizational culture may be construed as:

....consisting of learning system of meaning, communicated by means of nature language and other symbol system, having representational, directive (task) and affective (socioemotional) sense of reality. Through these systems of meaning, groups of people adapt to their environment and structure interpersonal activities.

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Culture meaning systems affect and are affected by the various systems of material flow of goods and services, and an interpersonal network of command and requests.... Various aspects of cultural meaning system are differentially distributed across persons and statuses, creating institutions such as family, market, nation, and community, and so on, which constitute social structure.

(D'Andrade, 1984, p116)

Davenport and Prusak (1998) discuss several cultural factors that may inhibit knowledge sharing, such as lack of trust; different culture, vocabularies and frames of reference; lack of time and meeting place; a narrow idea of productive work; status and rewards accruing to knowledge 'owners'; 'not-invented-here' syndrome; and , intolerance of mistakes of mistakes or need for help. For instance, the effort involved for an 'outsider' to learn the full meaning of a single word used by the group may involve:

....carefully unraveling multiple meanings built into that simple word, and especially of working out the logic of what   was being told to us, finding the major premises on which activities are based.

(Becker, 1998, p157)

Above all else, Davenport and Prusak (1998) emphasize the importance of trust and common ground in facilitating knowledge sharing.

The closer people are to the culture of the knowledge being transferred, the easier

it is to share and exchange.

(Davenport and Prusak, 1998, p100)

Szulanski's (1996) research found that 'laborious and distant' relationship between source and recipient increase difficulty during the implementation phase of knowledge transfer, when interaction is at its most intense. This has notable implications for tacit knowledge transfer, which may necessitate numerous individual exchanges (Nonaka, 1994).

Social etiquette and culture aspects of community such as shared language and 'norms' may either encourage or discourage individuals from participating in the community of practice. Further, it appears that the reason for participation are bound up with both the reciprocal nature of belonging to the community of practice, and the notion of seeing the social sharing as individually beneficial in the long term when weighed against the amount of effort required in the short term.

2.6.5.2 Motivation to Participate

If knowledge is viewed as an individual object held explicitly or embedded within the minds of people or the organization, then it can be argued that people will share their knowledge through market mechanisms in order to receive commensurate benefits (Wasko and Faraj, 2000).

They are motivated by self interest and are less likely to sharing knowledge unless provided with tangible rewards such as promotions, raises, and /or bonuses, or intangible rewards such as reputation, status and direct obligation from knowledge seeker.

(Wasko and Faraj, 2000, p161)

Research demonstrates that when knowledge is perceived to be 'owned' by the individual, people are more likely to share their knowledge for 'intangible' returns such as reputation and self esteem (Constant, et al, 1994; Jarvenpaa and Staples, 2000). In addition, social exchange theory suggests that expertise is shared for status, respect, compliance, and obligation (Blau, 1964). Although there are several schools of social exchange theory focusing on different areas (Sprecher, 1998), most of them have same following basic assumptions (LaGaipa, 1977; Nye, 1979):

- Social behaviour is a series of sharing;

- Individuals attempt to maximize their rewards and minimize their cost;

- When individuals receive rewards, they feel obligated to reciprocate.

Rewards, costs and reciprocity are key concepts that apply to all interpersonal transactions, and they can also be applied to the interpersonal nature of tacit knowledge sharing by members of organization. Rewards are defined as sharing resources that are pleasurable or gratifying, whilst costs are defined as sharing resources that result in loss or punishment (Thibaut and Kelley, 1959). Rewards minus costs equal the outcome,

although the difference, when it is positive, has also been referred to as benefits and profits. Reciprocity is also important in relation to tacit knowledge sharing, since this is bound up with the nature of being within a community of practice. Reciprocity refers to the notion that we give something back to (and do not hurt) those who have given to us (Gouldner, 1960).

Social exchange theory proposes that human behaviour will recur through positive reinforcement, and will be discouraged through increased cost (Skinner, 1950). The assumptions are made that humans are profit seeking, behave rationally and review the cost-benefit ratio of any social exchange. The fairness or equity of social exchange process has been considered by Walster, et al (1978), who considers that individuals will try to maximise their outcomes (where outcomes equals rewards minus punishment). However, member of organizations in communities of practice also participate in sharing within the group context for rewards that appear to be motivated by forces other than self-interest.

2.6.6 Some Benefits of CoPs to Organizations

CoPs can create benefit for the knowledge management development in the organization (McDermott, 2001). Past research has focused on how CoPs can benefit some large multinational Western companies by integrating knowledge generated from CoPs into the organizations (Ardichvili et al., 2003; McDermott, 2000; Newell et al., 2002; Wenger, 1999 and 2003). However, little research has been conducted on how CoPs facilitate knowledge sharing, especially for tacit knowledge sharing, in another

social context. Hence, studying how CoPs facilitate knowledge sharing in the Chinese

organization is the focal point for this research. Based on the pervious research, this

section will synthesize some evidences about the benefits of CoPs to the organizations.

2.6.6.1 Creating Knowledge Forum in the Organization

In the environment of CoPs, members can feel safe to share their ideas or even ask

questions that reveal their ignorance (Wenger *et al.,* 2002). This means that members

are able to interact directly and help each other to solve problems. As they interact,

they can articulate their ideas or problems, they are likely to understand and obtain

other's view, discussing for the possible solution. In this sense, CoPs provide a place

where people can collaborate to create a new concept or develop an existing or a

half-baked idea (Nonaka, 1994). This provides a non-threatening forum for members

to explore and test ideas to explore ideas (Rumizen, 2002). In this forum, unexpected

ideas and innovations are fostered (Por, 2003) as members are free to think beyond

their existing knowledge. The freedom and their willingness to confront or contradict

each other's ideas can result to different interpretations leading to new idea. This will

stimulate needs for sharing and learning new knowledge. Through sharing their

experience and knowledge in a free-flowing forum, it gives members an opportunity

to reconsider their fundamental thinking and perspectives (Nonaka, 1994). This is also

because members come from different backgrounds and can have very different ways

of relating to one and another (Nonaka, 1994). It also encourages members to

contribute (Allee, 2000) and members often feel more conscious of, and confident in,

their own personal knowledge. Therefore, the interaction in the CoPs is helpful in developing a holistic view of complex problems, thereby facilitating the cross-functional knowledge sharing and learning (Bhatt, 2001).

2.6.6.2 Developing Social Network in the Organization

By participating in communities of practice, members can get to know each other though building and maintaining the strong social network that generate trust, respect and commitment. This builds CoPs' social capital, which provides foundation for ongoing interaction and sharing of knowledge (Strass, 2002). Effectively, members can tap into each other's knowledge and resources and share through these networks by pooling their resources thereby creating synergistic effect. Also, they can tap into other members' networks that cross business functions to connect different social settings (Granovetter, 1982). Other members can point then to the direction where help is available as the community is the resource of information (Fontaine and Millen, 2002). As such, this produce an environment in which people could use the large network within the organization to reach outcomes which are not possible when acting alone. This is because having access to experts also helps to expand horizons, gain knowledge and seek help in addressing work challenge (Rumzen, 2002). Members of CoPs know whom to ask when they are looking for knowledge and they also know how to ask questions so that others can comprehend (Wenger and Snyder, 2000). Hence, communities of practice provide good access of information and resources which enable members to capitalize on the basis of multi-functional

business units (Liedtka *et al.,* 1997).

2.6.6.3 Building a Trust Relationship in the Organization.

It can be seen that CoPs are forum where members meet regularly to engage in sharing and learning. It gives them a sense of mutual trust and provides a professional home for its members where they can develop their knowledge and skills in a stable, safe and trusted context (Wenger *et al.,* 2002). By participating CoPs, members gain enough visibility to become known to other members. Also, since the interactions in CoPs have some continuity, interacting regularly allows members to develop a shared understanding of their domain and approach to their practice (Brown and Duguid, 2000). They develop a common way of thinking about their work over a period of time, they share a sort of mutual identity, an understanding of who they are and their relationship to larger environment (Brown and Duguid, 2000). Therefore, members gain a reputation, achieve a status and generate their own personal sphere of influence and image. This trust relationship is created not only by their passion of the topic, but by their sense of obligation to their peers as well as the recognition and gratitude they receive (McDermott, 2001).

2.6.6.4 Providing Hands-on Experience

The knowledge shared in the CoPs is practical and personal knowledge. They are hands-on experience of members, which is the fundamental source of tacit knowledge (Nonaka, 1994). CoPs offer an opportunity for people to engage directly with one

another and find out what problems they were facing and how they were approaching them. This mutual engagement in the details of practice makes participation directly relevant to the work of members (Wenger, 2004). Their shared narrative and stories are a unique perspective original to an organization and cannot be found or codified in any of the document or manuals (Brown and Duguid, 1991; Wenger *et al.,* 2002). These original perspectives are based on individual's belief and will be a source of varied interpretations of shared experience with others in the next stage of conceptualization and re-contextualization. Therefore, in a CoP, members share experience and knowledge, talk to each other, solve problems together, and discussing specific cases so that they learn both tacit and explicit aspect of knowledge (Wolf, 2003).

2.6.6.5 Facilitating Mutual Understanding of Problems in Different Business Functions.

Apart from developing new knowledge, participating in CoPs can improve people's understanding about each other's job as the spirit of inquiry of CoPs generate help to develop skills and competencies (Allee, 2000) by including the perspectives of others thereby producing better solutions and making better decisions (Wenger *et al.,* 2002). In the course of socializing, members share their experience in their professional area, interpreting the context and developing a collective pool of practical knowledge that any one of them can draw upon (Wenger and Snyder, 2000). This knowledge is built

upon the understanding of different business functional areas to solve problems in complex situations (Bhatt, 2001).

2.6.6.6 Providing a Learning Ground.

The voluntary and informal nature of communities of practice is conducive to learning and development of new knowledge (McMaster, 2000). Sharing and building knowledge in this context is a fluid mix of framed experience, contextual information, expert insight and grounded intuition (Davenport and Prusak, 2000). Moreover, they foster interaction among members thereby building collegial relationships (Gasiorek-Nelson, 2003). This contributes to a friendly environment for learning and sharing because individuals can gradually increase their levels of participating, they learn and sharing knowledge (Lave and Wenger, 1991) that can help members do their formal jobs (Allee, 2000) and upgrade their knowledge in daily use (Por, 2003). Also, members can gain access to the collective wisdom of their multi-functional members (Liedtka, Haskins, Rosenblum and Weber, 1997). This is important to the knowledge sharing because no one has all answer and knowledge in any of the professional areas (Wenger et al., 2002). Therefore, in the CoPs, it is like a collection of experts, each of them trying to contribute to the sharing and developing of knowledge in the organization.

In summary, even though the benefits of CoPs mentioned above are discussed separately, it is inevitable that some will overlap as one benefit leads to another. These benefits of CoPs will be served as a guide for the analysis process for this research.

Many organizations have struggled with the issue of sharing tacit knowledge effectively. It is also a challenge for the Chinese companies. However, all of benefits of CoPs mentioned above were conduct in the Western company. As Gasiorek-Nelson (2003) asserted that the culture of an organization reflects the fundamental knowledge management approach. So in the unique Chinese social and economic context, what is attitude of people towards the knowledge –sharing and how does the communities of practice facilitate knowledge sharing in the organization? It appears that there is a literature gap in this area. Hence, this research will pay attention to the knowledge management in the Chinese social context and explore the role of communities of practice in facilitating knowledge sharing in a Chinese organization.

2.6.7 The Downside of CoPs

It should be emphasized that a CoP is not a silver bullet (Wenger et al., 2002). Even though this research focuses on the benefits of CoPs to the organization and studies its role on facilitating knowledge sharing in a Chinese company, it has been widely acknowledged that CoPs can have some issues or negative aspects and this will be discussed in this section.

There has been research on the downsides of CoPs (Contu and Williamott, 2003; Fox, 2000; Roberts, 2006 and Wenger *et al.*, 2002). Wenger et al. (2002) mentioned that the assets make a CoP an ideal structure i.e a shared perspective on a domain, a communal identity, long-standing relationships, an established practice, can also be a weakness. In particular, some of the limitations of CoPs highlighted by these authors

are described as following.

The tight bonds between members may not always result in positive aspects as they can become exclusive and present a barrier for entry, becoming counterproductive by forming cliques, either intentionally or unintentionally (Roberts, 2006). These CoPs are unlikely to expand their membership or it is difficult for new members to enter (Wenger *et al.*, 2002). This could lead to the resentment of jealousy and mistrust because that certain organization members are not invited to participate in the group. When this happens, some actions may be taken to limit the physical or organizational resources less available for the CoPs (Roberts, 2006).

Members may develop a shared practice that is a liability as well as a resource (Wenger *et al.*, 2002). This is because the terminology or specialized language and experience they share can create barriers to outsiders and also create boundaries for practitioners as the strong sense of competence can lead to dogmatism and members may refuse to accommodate any variation.

CoPs usually have leaders or coordinators internally in order to be effective since otherwise they will lead to fragmentation and loss in momentum (Wenger *et al.*, 2002). However, with an internal leader, there is issue of distribution of power where leaders take control of the group instead of facilitating discussion, therefore imposing their dominant view (Fox, 2000). Also, CoPs may not always be suitable in organizations especially when their interests are not aligned with those of the organization and this could create inertia in achieving organizational goals as they may operate in their own

individualistic world and cannot be utilized by the organization (Contu and Williamott, 2003).

Members may become over enthusiastic about their domain once it is widely recognized and well entrenched that lead to arrogance in the ignorance of another's new points and perspective (Wenger *et al.*, 2002). They can believe that they are experts of the domain and they may claim exclusive ownership to their knowledge. This makes CoPs that are imperialistic and not to open to alternative views, as they believe that their perspective is the right one, thereby their knowledge frame to go beyond their domain.

In addition, CoPs are made up of human beings and exist in organizations. They are influenced by the dynamics of social environment in which they exist. As a result, CoPs are influenced by the organizational context as well as the wider context in which it operates (Wenger *et al.*, 2002). Hence, CoPs may have different downsides or issues in different context. This research is studying CoPs in a Chinese organization and the issues of CoPs in such a context will also be explored.

2.7 Summary

This Chapter has incorporated literature from various disciplines, drawing from knowledge and knowledge management, knowledge sharing, Chinese social cultural and communities of practice. More specifically, it has brought together literature of knowledge management, knowledge sharing, organizational knowledge creation

process, communities of practice and its benefits to the organizations. The purpose of this research is to understand how communities of practice are utilized to facilitate knowledge sharing in a Chinese organization. Pulling this literature together has provided further understanding of the nature of knowledge sharing and concept of CoPs as they have something crucial to contribute to the knowledge which this research is trying to explore.

Chapter Three

Research Methodology and Research design

3.1 Introduction

The previous chapters have described the background to this research and the relationship of this study to existing management literature. This chapter discusses the research methodology and design used in the study. Starting with the consideration of the philosophical position underlying this research methodology, it will then discuss specific aspects of research design as the research progresses.

In developing research, considerable effort is required to think how certain philosophical factors affect the overall research arrangement which enable satisfactory outcomes from the research activity. Easterby-Smith *et al.* (2002) assert that failure to do so can seriously affect the quality of research outcomes.

Clotty (1998) pointed out that in order to ensure the soundness of the research and make its outcomes convincing, one needs to set forth the research process in terms of four elements: epistemology, theoretical perspective, methodology and method. An epistemology is a way to understand and explain how we know what we know, that is, how we think knowledge is created, and it is embedded in the theoretical perspective and thereby in the methodology. The theoretical perspective is what we hope and expect to find out from the research. The methodology is why we chose particular methods from which we can actually find knowledge. In fact, epistemology and

theoretical perspective are philosophical positioning, and understanding them is useful and important for research (Easterby-Smith, Thorpe & Lowe, 2002), as they can help to clarify the research design. For a researcher, this not only involves what kind of data is required and how to collect and interpret them, but also the recognition of how the data are going to answer the research question. Knowledge of philosophy can help the researcher recognize whether a particular research design will work for the research. That is, the research philosophy (epistemology and theoretical perspective) directs the research methodology and methods. From the meanings of these four elements, it can be seen the four basic elements inform one another, and their relationship is like figure3.1.

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│       │    Epistemology     │       │
│       └─────────────────────┘       │
│                 ⇓                   │
│       ┌─────────────────────┐       │
│       │ Theoretical Perspective │    │
│       └─────────────────────┘       │
│                 ⇓                   │
│       ┌─────────────────────┐       │
│       │    Methodology      │       │
│       └─────────────────────┘       │
│                 ⇓                   │
│       ┌─────────────────────┐       │
│       │      Methods        │       │
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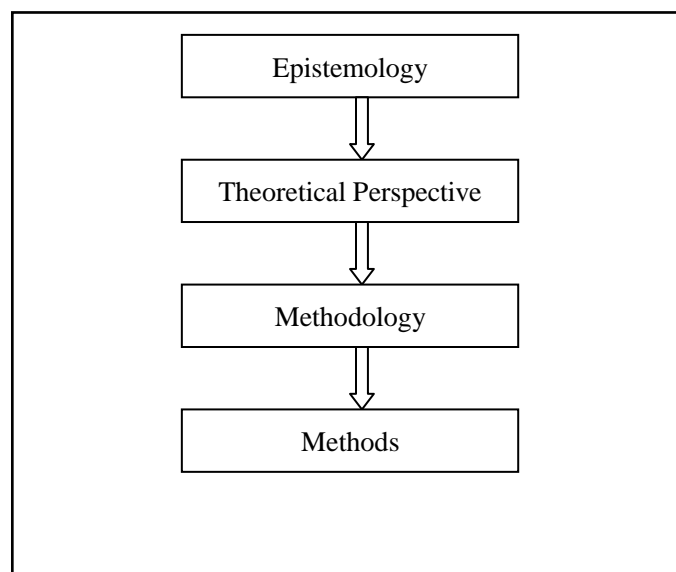
Figure 3.1 Four Elements for Research Process, source from Crotty (1998, p4).

Thus, the researcher adopts Crotty's (1998) four elements framework to build up the method of this research project. After defining the epistemological assumption and theoretical perspective, this chapter justifies the soundness of a qualitative case study

approach (methodology) used in this research in examining a Chinese company'

communities of practice and their role on facilitating knowledge-sharing in the

company, then explaining the choice of an appropriate data collection method to

achieve the research aim within context of this study.

3.2 Epistemological Consideration

The specific way in which epistemologies influence the structure and process of social

research is explained by the area of study known as philosophy of social research

(Machamer, 2002). It helps the researcher to justify the methodologies and method

employed in the research. Being clear about the philosophical assumption underlying

the research methodology will provide the researcher with a sense of stability and

direction as he moves towards understanding and expounding this research. Therefore,

the following paragraphs will discuss the researcher's epistemological consideration to

justify and explain the philosophical grounding of this research.

Epistemologies inform methodologies about the nature of knowledge, or about what

counts as a fact and where knowledge is to be sought (Sarantakos, 2005). It concerns

the question of what is regarded as acceptable knowledge in a discipline (Bryman,

2004) or is the way of understanding and explaining what is entailed in knowing (how

we know what we know) (Crotty, 1998). It is the ways in which the knowledge is

known to us.

It sits alongside ontology, which informs methodologies about the nature of reality (Sarantakos, 2005). It concerns the question of how people view their world or what they see as reality (Morgan and Smircich, 1980). Ontological and epistemological issues tend to emerge together, as the terminology has already indicated: the talk of 'how we view the world' is to talk of 'how we know what we know' (Crotty, 1998). So the researcher starts to look at different epistemological issues and decides what kind of knowledge is legitimate for this research.

There is a range of epistemological positions and each is an attempt to explain how knowledge is known and to determine the status to be ascribed to the understandings reached (Crotty, 1998). They are objectivism, subjectivism and social constructionism.

3.2.1 The Two Extremes: Objectivism and Subjectivism.

Morgan and Smircich (1980) explained the nature of knowledge along an objective-subjective continuum. At one end, the objectivist asserts that truth and meaning reside in their objects independently of any consciousness (Crotty, 1998). Ontologically, social phenomena and their meanings have an existence that is independent from social factors (Bryman, 2004). Objectivists treats social world as natural world, as being hard, real and external to the individuals (Burrell and Morgan, 2008). This epistemological stance emphasizes the importance of studying the nature of relationships among the elements constituting the social structure. It encourages concerning an objective form of knowledge that specifies the nature of laws,

regularities and relationships among social phenomena measured in terms of social facts (Robson, 2002).

At the other end of the continuum, the subjectivist asserts that meaning does not come out of interplay between subject and object but is imposed on the object by the subject (Crotty, 1998). This suggests that object makes no contribution to the generation of meaning. Ontologically, subjectivists view reality as a projection of individual imagination (Morgan and Smircich, 1980), which stresses the importance of the subjective experience of individuals in the creation of the social world. Subjectivists question the objectivists' grounds of knowledge as they are in favour of an epistemology that emphasizes the importance of understanding the processes through which human beings concretize their relationship to their world (Morgan and Smircich, 1980).

The two epistemological stances discussed above have different fundamental conceptions of social reality (ontology) which are located at the two extremes of the continuum (Morgan and Smircich, 1980). At one extreme, man and his activities are regarded as being completely determined by the environment in which he is located whereas at another extreme man is regarded as being completely autonomous and free-willed (Burrell and Morgan, 2008). The central debate here is whether social entities should be considered as objective entities that have a reality external to social actors, or whether they should be viewed as social constructions built up from the perceptions and actions of social actors. As a result, an intermediate standpoint, social

constructionism which allows for the influence of both situational and voluntary factors in accounting for the activities of human beings, has emerged where objectivity and subjectivity have been brought together indissolubly (Crotty, 1998).

3.2.2 The Intermediate Standpoint - Social Constructionism

Constructionists believe that meaning is not discovered, but constructed (Crotty, 1998). There is no objective truth waiting for people to discover. Truth or meaning comes into existence in and out of one engagement with realities in the world (Crotty, 1998). This implies that meaning cannot be described simply as objective since there is no objective truth. In the same sense, meaning cannot be described simply as subjective where it is imposed upon reality. Different individuals may construct meaning in different way, even according to the same phenomenon. In this view, subject and object interplay to generate meaning.

Hence, knowledge does not reflect an objective world and is not isolated from that which the individual considers reality to be, but an understanding of the world as it experiences (Du Toit, 2003). This means that the creation of knowledge is not a solitary process and does not take place in isolation. Instead, meaning is a result of interaction with others and is collectively created within relationships over a period of time. Gergen (1985) suggested that instead of focusing on the matter of individual minds and cognitive processes, attention should be turned outward to the world of inter-subjectively shared social constructions of meaning and knowledge. Gergen labelled this approach as social constructionism. Social constructionists do not see their

world as map reflecting what is out there, but the product of a communal interchange (Gergen, 1985), between people within relationships.

3.2.3 Philosophical Position of this Research

The aim of this research is to study how CoPs are utilized to facilitate knowledge sharing in Chalco and is trying to find out how knowledge-sharing was catalyzed by the interaction between CoPs and employees. Thereby, the researcher assumes that there is no objective truth but instead should focus on the constructed activities within CoPs. This research is neither seeking the objective nor subjective truth but is exploring the meaningful reality socially constructed within CoPs. Schwandt (2000) stated that social constructionism does not focus on the meaning-making activity of the individual mind but it focuses on the collective generation of meaning as shaped by social processes.

Hence, the nature of this research is very much in line with social constructionist viewpoint as proposed by Schwandt (2000).This is the root of epistemological consideration and the understanding of knowledge that form the central thrust of this study. By taking the social constructionist standpoint, the researcher can gain insights into individuals' socially constructed meaning as they participate in CoPs. The meaning is generated through an active process that exists neither in the head, sense organs or the environment alone but in the interaction between members in the CoPs.

3.3 Theoretical Perspective- Interpretivist

The theoretical perspective is an approach to understanding and explaining society and the human world, and is grounded in a set of assumptions that researchers typically bring to the choice of their methodology (Crotty, 1998). Guba and Lincon (1994) describe it as paradigms that represent a belief system or a particular world view that guides the researcher in the choices of methodology. There are two main paradigms of theoretical perspective: positivism and interpretivism.

Positivist approach is objective in nature and concentrates on measuring phenomena and involves collecting and analyzing numerical data and applying statistical tests (Hussey and Hussey, 1997). The key idea of positivism is that the social world exists externally. To say that reality is external and objective is to embrace the epistemology of objectivism wherein positivism is objectivist (Crotty, 1998). Positivism is grounded in a number of assumptions such as hypotheses and deduction, generalization. It requires that sample selection must be in sufficient size and factors can be measured quantitatively.

Interpretivism emerged to the contrary of positivism in understanding human and social reality. The fundamental difference resides in the fact that social reality has a meaning for a human being and therefore human action is meaningful—that is, it has a meaning for them and they act on the basis of the meanings (Crotty, 1998). Interpretivism views reality as not a fixed entity but constructions of the individuals participating in the communities of practice where reality exists within a context.

This research adopts the social constructionist standpoint with the purpose to study individual's experience of participating in CoPs and tries to find out how CoPs facilitate knowledge sharing in the company. Under such circumstances, Easterby-Smith *et al.,* (2002) suggested researchers to concentrate on the interpretation of the different constructions and meanings that individuals place on their experience, with a view to trying to understand and explain why they have such experiences and their underlying meaning. Also, these authors have suggested that in order to understand this world of meaning researchers must interpret it because an individual acts towards things on the basis of the meaning that these things have for them which is derived from and arises out of the social interaction that the individuals have with others (Blumer, 1969). Taking the above suggestion, this research takes the interpretivist paradigm where the researcher tries to gain understanding of individual's experience in participation of CoPs and seek to interpret how CoPs facilitate knowledge sharing in the company.

The essence of interpretivism is that reality is determined by people rather than by objective and external factors (Easterby-Smith *et al*., 2002). It is the job of the social scientist to gain access to people's common-sense thinking and hence to interpret their actions and their social world from their point of view (Bryman, 2004).

Based on above, it can be seen that by studying individuals through the lens of an interpretivist, the researcher can understand individuals' subjective experience in CoPs. This accepts that individuals construct their perceptions towards knowledge-sharing

through the social interaction with others and their environment. They construct experiences based on their social needs through the course of their everyday life. Therefore, individual's participation in CoPs is a process of continuous emergence rather than a static state (Crotty, 1998). This rejects the positivists' paradigm as they believe that the nature of reality is an unchanging exist, which is divisible and fragmentable whereas the interpretivists believe reality to be perceptional (Ozanne and Hudson, 1989). Positivists take natural sciences as a model and the methods of natural sciences are not suitable for this research. This research is not aimed at studying cause and effect of knowledge-sharing, but understanding the meaning individuals construct out of interaction. People are not just natural elements but social persons with their own perceptions and interests as they interact in their world (Bryman, 2004; Sarantakos, 2005) and they need to be considered holistically (Hirschman, 1986). The researcher also believes that the outcome of this research cannot be quantified and deduced but has to be identified qualitatively, focusing on where outcomes emerge from data collection. Therefore, objectivity of natural science is not necessary in this research as it cannot capture the real meaning behind individual's perception whereas interpretivism respects the differences between people and the objects of the natural sciences so as to grasp the subjective meaning of social action (Bryman, 2004; Hirschman, 1986). In fact, what matters most to this study is the individual's subjective experience as they participate and interact with others and their environment. The aim is to try to understand individuals' experiences in their own terms, which is real to them and to bring to light of how CoPs are utilized to facilitate knowledge sharing in the company.

Hence, the data are collected and analyzed in ways that do not prejudice individuals' subjective character and the researcher strives to construct a thick description (Geertz, 1973) of the phenomenon under study, which describes its complexity and individuals' internally constructed meaning.

In summary, this research is sited in the interpretive paradigm that is thoroughly social constructionist in character. Different individuals participate in a community of practice in the organization, construct meanings or knowledge-sharing experiences in different way. So this research is about interpreting a social world which individuals have constructed and reproduced through their continuous participation in CoPs. Thus, it is the social constructionist's understanding of meaning and interpretivist's understanding of reality wherein this research is rooted. Truth and meaning comes into existence in and out of interaction or meaningful reality is socially constructed. By unpacking the underlying assumptions, the researcher will be able to choose methodology, provide a context for the research process, grounds its logic and design the method to collect relevant data. These will be discussed in detail in the following sections.

3.4 Research Methodology

Methodology is the strategy, plan of action, process and design lying behind the choice and use of particular methods and linking the choice and use of methods to the desired outcomes (Crotty, 1998). Quantitative and qualitative research can be taken to form two distinctive clusters of methodology (Bryman, 2004). Quantitative research entails a

deductive approach. It incorporates positivism and embodies the view of reality as external (objective reality). In contrast, qualitative research emphasizes an inductive approach. It rejects positivism in preference for ways in which individuals interpret the world and embodies the view of reality as a constantly shifting, emergent property of individuals' creation (Bryman, 2004).

3.4.1 Qualitative Research

The researcher is trying to develop a deeper understanding of how CoPs are utilized to facilitate knowledge sharing in the Chinese social and cultural context and the descriptive experiences of members of CoPs will form the data for this research. The emphasis is consequently on exploratory research. Marshall and Rossman (2006) suggest that exploratory and descriptive research, particularly in cases of contemporary research where the phenomenon is unfolding at the time of study, is best suited to qualitative method. In contrast, quantitative methods are better for testing hypotheses, examining the frequency of social phenomena and so on (Van Maanen, 1979).

Scholars have debated the relative merit of using quantitative and qualitative inquiry for some time (Patton, 1990). However, in order to achieve the research aim, the researcher has to gather data from individuals relating to their experience in CoPs and pursue the detailed exploration on the role of CoPs in facilitating knowledge-sharing in the company. This means that this research is of a qualitative nature where the data collection and analytical approach are inductive. Hence, this research uses qualitative methodology due to its inductive, descriptive and exploratory nature.

3.4.2 Case Study Approach

This research studies the experiences of members of communities of practice in their organizational context using qualitative research approach. Many researchers in social science propose that the assessment of organizational factors require thorough investigation, which include, learning about the history of an organization, visiting the place, talking to the employees and observing their behavior (Schein, 1999). The case study approach is one of the several research strategies that are available. Other ways include experiments, ethnography, surveys, analysis of archival information (Yin, 2009).

3.4.2.1 Justification of Research Approaches

Case study distinguish itself from others such as experiment because experimental strategy are undertaken to measure the effects of manipulating one variable upon another variable and for finding causal relationships between variables (Robson, 2002). To carry out an experiment, the research selects samples of individuals from known populations and allocates them to different experimental conditions. Controlling and changing one or more variables can allow the researcher to measure the effects on the sample. It was thought that an experiment to investigate the nature of knowledge-sharing in an organization could not be achieved with the resources and time frame available. In addition, experimental strategy deliberately separates phenomenon from its context so that attention can be focused on only a few variables

and the context is controlled by the laboratory environment (Bryman,2004; Yin, 2009), which is not the case in this research and therefore is not suitable.

Ethnography has not been considered in this research because it calls for detailed descriptions, analysis and interpretation of the culture and social structure of a social group (stake, 1995). It requires researchers to immerse themselves in a social setting for some time in order to observe the behavior and gain an understanding of a social group (Bryman, 2004). This is obviously very time consuming and takes place over an extended period. Members of communities of practice in the organization are very busy and they are required to delivery specific commitments to their company. These commitments cannot be jeopardized by the researcher conducting his study. So some researchers suggest that micro-ethnography, such as case study, seeks to cut extended time down and develop an intimate understanding of the group (Bryman, 2004).

By comparison, the surveys can deal with phenomenon and context, but the ability to investigate the context is extremely limited as they tend to limited the number of variables to be analyzed (Yin, 2009). As for the analysis of archival information, it is ruled out because although it considers the entangled situation between phenomenon and context, it is usually with non-contemporary events.

3.4.2.2 Case Study

A case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between

phenomenon and context are not clearly evident (Yin, 2009). Stake (1995) recommended that the selection of the case to be researched offers the opportunity to maximize what can be learned, knowing that time is limited. Therefore the cases that are selected should be easy to access and have willing subjects. According to Morris and Wood (1991) the case study methodology will be of particular interest to any researcher who wishes to gain a rich understanding of the context of the research and the process being enacted.

In this research, the researcher tries to get as close as possible to the organization and the world of CoPs members in order to interpret this world and the role of CoP in facilitating knowledge sharing from inside of the organization. The researcher wishes to describe both unique and typical experiences and events as bases for individuals' perception about CoPs. Having the "how" and "why" questions in mind, the case study approach is deemed appropriate in this research as it is concerned with complexity and particular nature of the case in question (Stake, 1995).

The case study methodology stands out as being particularly appropriate for this research. This approach allows the researchers to explore a new phenomenon and its context in the early stages of research, especially when the research questions examine a contemporary event, and when there is little or no control over behavioral events (Eisenhardt, 1989). As it can be observed from the formulated research questions, the multiple dimensions of organizational factors are to be studied and analyzed in this research study.

The process of knowledge-sharing occurs in the context of the relevant communities of practice within the single Chinese organization. Therefore, it is possible to concentrate on some particular members' experiences and use this to link all of members' experiences together. The essence of case study is that it tries to illuminate those experiences: why they have such experiences, how they were acted upon and with what outcome (Schramm, 1971).

The organization and its communities of practice act as the focal point for the knowledge-sharing behaviors they perform. More importantly, this research is interested in gaining rich understanding of how the communities of practice are utilized to facilitate knowledge sharing in the organization, employing case study appears to be an appropriate methodology to capture all the important essentials to study CoPs, allowing the researcher to retain the holistic and meaningful information about CoPs in this Chinese organization.

The data collection methods employed in case study methodology may be various. They may include questionnaire, observation or interview. Next section will discuss the research data collection method utilized in this research.

3.5 Research Method

Having chosen to undertake a qualitative research project and utilizing the case study approach, several primary data collection methods are considered. Four fundamental methods of qualitative research have been identified by Marshall and Rossman (2006)

and Yin (1994) as participant observation, non-participant observation, document analysis and interviews. Each of these was evaluated against the fundamental research aim and objectives.

3.5.1 Data Collection Options Considered

Participant observation within a setting is a longitudinal approach requiring extensive time in observation. The aim of observation method is to provide the means of obtaining a detailed understanding of the values, motives and practices over time of those being observed (Hussey and Hussey, 1997). The nature of knowledge sharing and the method of participant observation require the researcher to stay with members of CoPs for extended times. He has to actively participate in their meetings, group events and other activities to become a legitimate member in the hope of gaining deep understanding of the nature of tacit knowledge sharing within CoPs. However, in Chalco's organizational setting, the activities of Learning Groups are regular but not intensive. In other word, carrying on participating observation requires researcher to stay at the company site with long period of time. It is not practical and feasible for the researcher to conduct his DBA study in this way. Therefore, the participant observation is not favoured in this study.

Non-participant observation of the organization is both inefficient and potentially misleading the purpose of this study. It involves observing and recording what people do in terms of activities or behaviors without the direct participation of the researcher (Hussey and Hussey, 1997). The aim of this study is not to gather an 'outsider's' view

of tacit knowledge sharing in CoPs (the outsider here being the observer). Rather, the research aims to construct an insider's view of how knowledge is shared within CoPs. The tacit knowledge sharing, the conversion from tacit knowledge to explicit knowledge, motivation and beliefs of the members of CoPs would probably remain unobserved by using the non-participant observation method, since the truth resides in the minds of the members of CoPs. Therefore this method of data collection is not chosen as the primary data collection method.

Document analysis and review is used to support the views of members of CoPs where possible, but doesn't seem to be able to represent the richness needed to create descriptions of how CoPs facilitating tacit knowledge sharing within the company. Since this study is to explore the tacit and undocumented aspects of knowledge-sharing in the CoPs, the search for a description and explanation of this process within documented sources is unlikely to be found.

3.5.2 Primary Data Collection Method----In-depth Interview

The interview is probably the most widely employed method in qualitative research (Bryman and Bell, 2003) and is one of the most important sources of case study information (Yin, 2009). It is deemed to be appropriate when achieving research objectives that require a good deal of thought and when responses need to be explored and clarified (Easterby-Smith *et al*, 2002). This gives the researcher the opportunity to probe deeply to uncover real factors, open up discussions and secure accurate inclusive accounts that are based on personal experience (Burgess, 1991).

Exploring knowledge sharing in the case company as one of the objectives for this research is essentially an endeavour of making the tacit explicit. People keep participating in communities of practice and knowledge is shared through this process. But how communities of practice facilitate tacit knowledge sharing is still remain tacit. People normally are unconscious about the role of CoPs in facilitating knowledge sharing, especially for tacit knowledge sharing. Interview is often the only way to allow the truth to surface (McDermott, 2000), uncover the role of CoPs in facilitating knowledge-sharing and gain in-depth understanding of these complex phenomena by interpreting participants' experiences in CoPs. The respondents are expected and encouraged to explain thoroughly the interpersonal knowledge sharing they have experienced during their working lives.

Bouchard (1976) suggests that interview is special form of social interaction that depends heavily on mutual trust and the goodwill of respondents. There is an element of personal interaction between the researchers and respondent that is not presented in other forms of data collection. Indeed, interview allows both parties to clarify the nature of knowledge sharing, to explore particular role of CoPs in facilitating knowledge-sharing and to build rapport and trust quickly in order to obtain valuable information. So for those reasons, the in-depth interview is seen as primary data collection method for this study.

The format of questions asked in interviews is considered by Bouchard (1976) and he proposes that questions can be categorized in three ways: totally structured (structured

interview), structured questions with open responses or open questions with structured answers (semi-structured interview) and totally unstructured (unstructured interview). Different types of interviews offer different benefits (Hussey and Hussey, 1997). Structured interviews allow between-case comparisons but are not responsive to changes in researcher's understanding; researcher cannot add new questions, pursue unexpected comments or seek explanatory information. Unstructured interviews may be overly adaptive and opportunistic; the initial plan of this research may be constantly revised and adjusted with a constant threat to construct validity. Semi-structured interviews offer a mixture of both, with some set questions to structure the interview as well as allowing flexibility to explore new issues or surprising responses.

The categories are used depending on the type and depth of data being collected. It is also possible to use several categories within the same interview and this is approach that was used for this research. When formulating the interview questions, the researcher started from focused general topics to specific questions. The general topics had previously been identified by the researcher prior to the main interviews taking place through referring to the theoretical framework, reviewing relevant literature and also data that have been collected through previous pilot study, which has been done after the researcher's Middle Point Progress (MPP) examination, to serve as a platform for the researcher to make clarification of inconsistencies and to probe more in-depth details (Bryman, 2004). So in this sense, semi-structured interviews were conducted as the researcher has entered the interview process with some views and questions in mind, having a fairly clear focus on specific issues that need to be addressed which is

often referred to as an interview guide (Bryman and Bell, 2003). However, the interview participants have a great deal of leeway in answering questions as the questions are not exactly followed in the way outlined on the schedule and may vary in the sequence when they are being asked. In fact, since this research is inductive, most questions are open-ended to ensure exploration as well as making further investigation of the value of CoPs to the organizations mentioned in current literature. Therefore, some questions that are not included in the guide are also asked when the researcher picked up clues said by participants (Bryman, 2004). Although the researcher will be pursuing a consistent line of inquiry, the actual stream of questions in the interview was fluid rather than rigid (Rubin, 1995).

So the in-depth interview method is adopted for this research and is conducted in the semi-structured interview approach. Hence, the interview has followed a fairly standardized set of questions, whilst offering some flexibility, and allowing the views of participants to become known (Easterby-Smith, 2002).

3.5.3 Interview Guide

In order to guide the interviewer, a pilot interview guide was used (see Appendix 1). Using Patton's (1990) recommendation, the interview guide included a list of questions and general topics that the researcher wanted to explore during each interview. This guide was prepared to ensure that essentially similar questions were asked at each of interviews and similar information was obtained from each person. This left the

interviewer free to probe and explore the respondent's response within these predetermined inquiry areas.

To allow the strengths of the qualitative methodology to emerge and evolve as more interviews were carried out, Lofland and Lofland's (1984) process of modifying the interview guides over time was used to focus attentions on areas of particular importance, and/or to exclude questions that the researcher had found to be unproductive for achieving the research objectives.

It is important to note that the interview guide functioned as a starting point for the interview with further questions often posed to encourage the respondents to go deeper or to clarify their responses. In some cases the wording of questions was slightly changed if a question was not understood. Some of questions that seem general in the guide were also asked with a more direct focus in light of the respondents' own activities and previous answers.

3.5.4 Interview Questions

As stated by Allee (1997), interview questions can help to open up participant's world and their awareness in response to compelling questions because the more the questions are expanded, the data become richer. As the result, when designing the interview questions, careful thought was given as to the types of question asked in qualitative research tend to be highly variable depending on interview situation. This research is trying to explore the individual's experience about knowledge-sharing in community of

practice. Employing the case study approach allowed the researcher to ask many how and why questions (Yin, 2009). So the interview questions were constructed around the research questions of 'how do CoPs facilitate knowledge sharing in the company?'

In organizing the set of interview questions, the researcher has adopted the suggestion of Kvale (1996) where questions were categorized under a list of topics to be covered but somehow in a looser format due to the interactive nature of the interview. Questions were categorized under the topic of contextual, follow-up, direct, probing and summary.

A typical interview begins with contextual questions which were concerned about the participants' role in the company, information about their CoPs and how they joined the CoP. These questions set the context of the interview and allowed the participants to feel comfortable as well as to let the researcher to know more about participants' background thereby knowing how to approach the interviews by using appropriate interview tools. Consequently, follow-up questions were asked, such as views on knowledge and knowledge sharing in the company, a discussion about communities of practice within the company and why did they join or continue joining the CoPs. These questions help to jog participants' memories and assist them to reflect on their past and present experiences. After that, direct questions that were related to the research questions, such as how knowledge is shared between member's CoP and how CoP facilitate knowledge sharing in the company. By asking the participants to focus specifically upon time or a project that they had chosen to participate in CoPs, using

example as an in-depth exploration to the nature of knowledge-sharing between members of CoPs, a rich source of data was gathered from many participants. This approach to interviews gave participants opportunities to describe and explain their experience about knowledge-sharing within CoPs and allowed them to feel free of expression. The final stage of interview is summary questions. That involved very specific questioning to cover points that researcher considered important but which had not yet been discussed.

Overall, the interview questions were intended to get to the heart of individuals to explore their experiences of knowledge-sharing and participating in the community of practice. The questions encouraged participants to give specific, detailed examples of their experiences or activities and help the researcher to identify the role of CoPs in facilitating knowledge sharing in the case company.

3.5.5 Pilot Study

A pilot study had been conducted after the researcher's middle point progress (MPP) examination in order to determine whether any modification were required to the initial interview guide. This is an attempt to avoid the misunderstanding of interview questions and receiving unclear answers. There were three test interviews that had been carried out in Chalco for the pilot study. The test interviews were started from the August of 2007 and were completed on the early September of 2007. They were conducted in two different company sites and the interviewees were introduced by researchers' internal contacts in the company. Test interviews led to changes in the

formal interview guide (see Appendix 2) and improvement of the researcher's interview skill.

The three test interviews were scheduled few days away from each other so that the researcher could transcribe, reflect and assess the outcomes, then making necessary modification before next interview. From the first test interview, the researcher found difficulty in getting the participant to focus on the research questions as they have deviated to talk about their work in general and ask the researcher's study. In the second interview, the researcher also found himself lacking in listening during conversation and not following the participants' line of thought if their answer did not adhere to the interview guide. This is because the interview guide was less flexible and did not leave enough space for research to probe further. The data collected were applicable to answer the research question but it is not rich. So the researcher modified the interview guide and made it to be less structured in a flow. The interview questions were refined to be more flexible so that it can be phrased according to the pattern of the actual communication. The researcher also reflected on the process of the test interviews and improved his communication skill to make the conversation more focused and efficient. Lastly, the third test interview helped to solve problems in terminology used as well as timing control during the interviews.

Thus, the test interviews have helped the researcher to refine the data collection plans with respect to both content of the data and the procedures to be followed. It also has

assisted in developing relevant lines of question and provided some conceptual clarification for the research design.

3.5.6 Interview Transcription

All interviews were transcribed by the researcher. So the researcher can reflect on the interview process to be more aware of the emerging themes, yielding a common understanding and interpretation of the meaning of interview conversations. All transcripts are verbatim transcription and when transcribing the data, tone of voice, pause, expressions and its environment was all considered and noted.

3.5.7 Reflexivity - the Role of the Researcher

Reflectivity involves a reflective self-examination of the researcher's own ideas and pre-conceived notions (Higgs, 2001). It can make the unconscious conscious in order to reveal how the researcher's social role (value, feelings and attitude) affects this research. It elaborates on the researcher's experiences as a researcher and this is vital because it is seen as an integral part of the research and need to be revealed and described (Reinharz, 1983).

The role of the researcher in carrying out a qualitative research investigation is that of a detective looking for trends and patterns that occur across the various groups or within individuals (Krueger, 1994). In the analysis process, it covers a continuum beginning with the definition of the research question and research design, and moving to a process with assembly of raw data on one extreme and interpretive comment on the other.

The analysis process requires consideration of words, tone, context, non-verbal, internal consistency, frequency, extensiveness, intensity, specificity of responses and big ideas (Krueger, 1994). Such demands on the researcher are not without dangers of bias and conflict. Since all researchers bring some kind of framework to the research process, it would be unrealistic to argue that researchers enter the field devoid of a framework or ideas about the important concepts in their area of interest (Krueger, 1994).

This study is no exception. In order to avoid reinventing the wheel, the researcher carried out a review of the relevant literature. This process further colours his views of the research area as he is exposed to a range of ideas, concepts and theories. In addition, all researchers interpret the world in a way which is shaped by his philosophical stance. In other word, the researcher views knowledge-sharing in CoPs through some kind of conceptual lens that determines which data are noticed, collected and therefore included in analysis. The philosophical stance underpinning this research is social constructionism and inspired by interpretivism. It is the researcher's personal experience in the sharing of knowledge as a member of Community of practice led to a view of the world that explains knowledge sharing as a socially constructed process carried out in CoPs. This conclusion is partly the result of the researcher's career background, education, exposure to the literature on the topic and the accumulated experiences that have compelled the researcher to this study.

The researcher had considerable experience in participating communities of practice, having worked for the company studied in this research for over 6 years. It could be argued that this experience within the research site is a considerable disadvantage since objectivity is lost and interacting with the individuals as a participant may affect the research (Hussey and Hussey, 1997). However, in this research experience was seen to be a considerable advantage since the researcher was better able to understand and interpret the phenomenon being studied, and participation in events may led participants to reveal matters that would otherwise be left unsaid (Hussey and Hussey, 1997). To investigate the invisible tacit knowledge sharing within community of practice would be extremely difficult to an outsider. The rapport developed in the interviews was possible because the respondents regarded the researcher as an equal, and one with whom they could freely discuss concepts in an insider's working language that to an outsider may appear strange. Being seen to belong, and speaking the same professional language as the community with whom one interacts, is important when collecting research data (Bulmer, 1988; Crompton and Jones, 1988).

As such, it is not the intention of the researcher to pretend to be independent or objective, but rather to rigorously analyze and interpret the data gathered through the reality constructed by members of CoPs. It is through rigour and strong research design that high standards of research were maintained (Yin, 1994).

3.6 Data Collection Process

Much care has been given when planning for data collection. This is necessary to ensure the smooth running of the process and the authenticity of the data collected thereby making certain that is a rigorous and robust research.

3.6.1 Data Collection Sites

The case study is based upon data collected from the Aluminum Corporation of China Limited (Chalco). This company is China's largest alumina and primary aluminum producer and the world's second largest alumina producer.

Chalco owns 10 branches, 1 research institute, and 12 subsidiaries (companies held under it) across the country. The research was carried out predominantly at its Henan Branch, Shandong Branch and Zhengzhou Research Institute.

3.6.2 Sample Selection

Convenience and snowball sample selection method were used during the data collection process. Convenience sampling is common in inductive and exploratory studies (Yin, 2003). It is chosen as sampling selection method for this research because of the familiarity and accessibility with particular individuals, the CoPs and the company sites. So apart from meeting the criteria stated above, the interview sample was chosen because of its availability and accessibility (Bryman, 2004).

Firstly, the researcher visited a member of staff with whom he used to work. He is a department director at one of the company site and has known about this study project since it was started. With his introduction, the researcher had chance to meet one of the company's senior manager who has been playing the key role in promoting the development of the Learning Groups across the company (see Appendix 3 and Appendix 4). After talking through the research project with him, the researcher was granted access to the whole organization to undertake his study. That senior manager provided the researcher with a copy of internal contact list of Learning Groups coordinators working in different company sites. To each of these knowledge coordinators, the research then sent an initial email, which explained the research project and requested their assistance in data gathering through volunteering their time to be interviewed. The researcher also asked them to distribute this email in the aim of tracking other potential interviewees for this research. It created a snowball effect leading to adopting snowball sampling.

With this approach to sampling, the research managed to make initial contact with a small group of people who are relevant to the research and then used these to establish further contact with others.

3.6.3 Interview Appointment

Within a two-week timeframe, 24 responses to the initial email were received and indicated the willingness to participate the research interview. These 24 respondents were sent another email to set an interview appointment. This email addressed further

information on the data collection process, informed consent letter and confidentiality of research data.

When an appointment is set, this implied that respondents have given their consent to participate. The interview time and venue were chosen by participants at their convenience. However, the researcher ensured that interview appointments were not too near to each other and gave the researcher enough time to travel to different company sites. This also enabled the researcher to reflect, review and make changes if necessary.

The total number of interviews carried out in this research project was twenty (20), including the three test interviews carried out during the pilot study. The shortest interview lasted for about 40 minutes, while the longest progressed for two hours. The mean interview time was approximately one and a half hours and seemed to vary mainly as a result of characteristics of individual respondent. Some talked continuously and often diverged with stories or examples, or otherwise spent much time answering questions. Some other respondents only had a limited amount of time for the interview due to personal or work commitments to give quick and concise answers.

3.6.4 Conducting Interviews

During the interview, a digital recorder was used to record the interview conversation so that the researcher can concentrate on conducting the interview. Yet, the researcher took down some important notes in case the recorder fails. Also, the researcher found

when the recorder was turned off participants often continued to ruminate on the topic and talked about more interesting things after interview. So the researcher tried to take some notes while the participants were talking or after they left as soon as possible because some accounts can be the source of revealing information (Hammersley and Atkinson, 1995).

Some of the interviews were conducted at participants' office, but most were conducted at separated board rooms which are considered as the suitable environment (quiet and peaceful) for interview with minimum disturbance.

Before the interview starts, the researcher asks participants for the permission to record the interview as some participants may be put off by the recording equipment or who became self-conscious at the prospect of their words being preserved (Bryman and Bell, 2003). Recording would not take place if participants are not comfortable. However, all participants have agreed to the recording after the researcher assured them about confidentiality and anonymity about this research.

Thus, each interview began with a statement of confidentiality of this research. Participants were also informed on the purpose of this research and how data will be used. Once the context of the interview is set, some general introductory questions were asked on participant's background and status. This is with the intent to begin with questions that are easy to answer, to start a pattern to the conversion, to establish participant's ability to answer, to put the participant at ease and to gain rapport (Dwyer, 1996). This is because deeper questions require participant to be comfortable during the

interview, confident of their abilities to answer the questions and clear about how their

experience fit within the study (Dilley, 2000). Then, more specific follow-up and direct

questions that are related to the research questions were asked to help the researcher

make sense of the nature of knowledge-sharing within community of practice.

During the interview, listening to what was said is important as well as those that were

not said, such as hesitations, the contradictions and the pause (Stamberg, 1993). The

researcher listened, paid attention, encouraged, asked to clarify questions and concisely

reflected on what the participant is feeling or assuming (Reisser and Roper, 1999).

From time to time, as uncertainties arise from the interview, the researcher verified his

understanding by summarizing what have been said. This was presented as a way of

seeking clarification. In doing so, it helped to authenticate if the thinking of both parties

were in line.

3.7 Data Analysis

Interpreting data into finding is called data analysis (LeCompte, 2000; LeCompte and

Preissle, 1993). It involves working with data, organizing them, breaking them into

manageable units, synthesizing them, searching for patterns, identifying regularities,

explaining variations, discovering what is important and what is to be learned, and

deciding what to tell others (Bogdan and Biklen, 1998). In this study, the researcher

uses the Wolcott's definition of data analysis which described it as procedures for

identifying essential features (the role of CoPs) and relationships (how CoP facilitatE

knowledge sharing). Thus, the researcher tried to display the collected data in such way

that they are easy for readers to recognize and understand the role of CoPs in facilitating

knowledge sharing in the case company.

3.7.1 The Rise of Narrative Analysis Approach

The aim of this research is to develop a deeper understanding of the role of CoPs on

facilitating knowledge sharing in the Chinese company and the data collected for this

research is formed by people's experience in participating in communities of practice.

In the social learning theory, mastery of knowledge and skills requires newcomers to

move towards full participation in the socio-cultural practices of a community (Lave

and Wenger, 1991). This learning experience is different from traditional classroom

learning where people are free from the distraction of their participation in the outside

world (Wenger, 1998). In the community of practice, learning is placed in the context

of people's lived experience of participation in the social world (Wenger, 1998).

Therefore, learning in this context is best seen as sense-making, which is a social and

situated process (Lave and Wenger, 1991; Wenger, 1998). So the challenge of data

analysis for this research is to link the context of people's social world to nature of

people's knowledge sharing knowledge sharing experience in the CoPs. Narrative

analysis provides a means of doing so.

Bryman (2004) defines narrative analysis as an approach that emphasizes the stories

that people use to account for events. Primarily, narrative analysis has become

prominent in connection with life history or biographical approach or even in disruptive

life events, but Mishler (1986) argues its use can be much broader than this. In his view,

and that of many others (Coffey and Atkinson, 1996; Riessman, 2002), the answer that people provide in qualitative interview can be viewed as stories that are potential feed for a narrative analysis. In other word, narrative analysis recounts not just to the life history but also to interview accounts relating to events.

3.7.2 The Rationale of Using Narrative Analysis

The main features of narrative analysis are the focus on the whole social context which is formed by various source of information (such as document, contextual information collected from interview) and whole narratives. Firstly, it emphasizes that the nature of an event or belief is not to be found in the event or belief itself, but in the relationship of the event or belief to a broader interpretive framework or narrative (Lezzy, 2002). The researcher wants to understand the meaning of knowledge-sharing; he must locate the event or belief in a broader social context. By using narrative analysis, the researcher can identify the broader interpretive framework, community of practice, which people utilize to turn meaningless event into meaningful episodes (Ezzy, 2002). Secondly, the emphasis on narrative embraces a situated relativity and points to the 'in-process' nature of interpretations (Ricoeur, 1984). In the literature of community of practice, Lave and Wenger (1991) argue that there is no activity that is not situated and learning should not be viewed as simply the transmission of abstract and decontextualised knowledge from one individual to another, but a social process whereby knowledge is co-constructed; they suggest that such learning is situated in a specific context and embedded within a particular social and physical environment. When using narrative approach to analyzing data, the researcher paid keen attention to the narratives that

contain participant's experience in particular situation and trying to grasp its wider social import (Dey, 1993). Effectively, the narrating process enables participants to share the meaning of their experience, to begin to recount events and reconstruct their experiences through reflecting their actions in a CoP setting (Richmond, 2002). Individuals directly or indirectly give their own interpretations and explanations of those events. They evaluate, in their own terms, their participation, the meaning of events and the wider relevant contexts (Cortazzi, 2001). This gave an insider's view of what the participation in a CoP is like and by analyzing the narratives in their interview accounts; it gave insight into the context of a community of practice and insight into participants' knowledge-sharing experiences within CoPs.

Since narrative analysis takes consideration of personal accounts in respective context, it is therefore different in style from the emphasis of coding where it does not result in data fragmentation. Content analysis is not suitable for this research as it seeks to quantify content of documents and texts in terms of predetermined categories and in a systematic and replicable manner (Bryman, 2004). Also, it is argued that it is very much a positivist standpoint to analysis as this approach is for making inferences by objectively, systematically and making quantitative description of the manifest content of communication (Holsti, 1969). As a result, using content analysis for this research will miss many contextual complications. Similarly, thematic analysis has been considered and employed at the early stage of the analysis process, but it was not used as the main analytical approach for this research. This is because it involves the coding of data, the building of a set of themes to describe the phenomenon of interest by

putting like with like (Morse and Field, 1995). In doing so, it decontextualises the data and may stop at the stage of simple listing of themes (Gordon and Turner, 2003).

So the rationale for using narrative analysis is that it can be applied to an interview (Marshall and Rossman, 2006) and it begins from the standpoint of participant and contextualizes the sense-making process by focusing on the individual's situated experience. More specifically, it studies not only the content or the context of the interview account but also links the interview account with the contextual information to analyze why people have such experience in the CoPs. Also, narrative analysis takes its object of investigation as the narrative itself (Riesman, 2002) and does not assume objectivity but it benefits the position of the narrator and subjectivity (Bryman, 2004), which is consistent with the philosophical standpoint of this research (Social constructionism and interpretivism). Thus, narrative analysis is deemed as the appropriated approach for this research.

3.7.3 The Use of Computer Software – QSR NVivo 7

At the early stage of data analysis, computer and computer software are used as tools to assist the analysis of the research data.

With the increasing information that emerged from transcripts, the task of organizing and categorizing data became laborious and time-consuming. So the assistance of specialist computer software became necessary. As the result, the computer software known as Qualitative Solution in Research (QSR) was used to manage and organize

data in this research. The researcher chose the newly upgraded QSR version, NVIVO 7 to facilitate the process of managing the huge amount of data. The following paragraphs briefly explain how NVIVO 7 has facilitated the process of category of formation for this research.

NVIVO 7 is qualitative-research software based on the concept of tree structures to facilitate the progressive elaboration of concepts into higher levels of abstraction (Gibbs, 2002). Since there is no any computer software that can support the whole scope of analytic procedure in analyzing qualitative data (Dey, 1993), the researcher solely depends on NVIVO 7 to organize the data and use it as a tool to facilitate the process of categorization.

Initially, all transcripts were imported into NVIVO 7 system. NVIVO 7 provides a filing cabinet with 2 drawers: a Document Explorer and a Node Explorer. The imported documents were stored in the Documents Explorer that assists browsing, editing, retrieving and annotating. The Node Explorer (see Appendix Five) assists the creation of categories as nodes.

When reading the text in the Document Explorer, the researcher paid attention to what was said and tried to interpret the underlying meaning of participants' narratives according to the research questions. The research objectives provided the direction for what to look for and it allowed the information of knowledge sharing to emerge from data, thereby increasing nodes and the formation of categories in the Node Explorer. For example, the researcher created a node for the question of "how Learning Groups

facilitate tacit knowledge sharing in Chalco?" Then the categorizing process is principally to browse a transcript at Document Explorer, highlighting the lines related to the activities of tacit knowledge sharing (socialization), then go to the Node Explorer to create a category or to choose a created category and after that return to the Document Explorer to click the code button. By doing that, the highlighted lines are copied and stored in the Node Explorer. This is how both drawers are related and facilitate categorization.

The above mentioned process was repeated for other research questions. At times, nodes were deleted or created to accommodate the category that didn't fit the existing labels. Main nodes were broken into sub-categories that allowed the greater differentiation. As a result, the outcomes generated from this process have helped to display data in a useful format.

Computer can do many things though, they can not think like human beings. The thinking is still up to the researcher. A computer can only help to analyze the data, but it can not analyze data (Dey, 1993; Richards and Richards, 1994). So the researcher can not solely rely on the software as a means of analyzing but as a complementary tool to organize, explore and understanding data (Atherton and Elsmore, 2004). Hence, further analysis on the explanation (the how) and the explication (what is means) were conducted by using the conventional method.

In reviewing the data generated through NVIVO 7, categories were compared, regrouped, mixed and matched until a sharper picture of participants'

knowledge-sharing activities emerged. And then the researcher transferred his attention on the actual participants' narratives. When interpreting the narratives, structural issues, the conversation between the researcher and the participant, the interaction between participants were considered. More specifically, the researcher focused on the event or story which tells people's participation of CoPs, a description which gives background information on place, people and time, to understand how knowledge-sharing activities happened in the context of community of practice and what is the meaning attached to the narrative in terms of the role of community of practice. In the end, significant quotes were summarized, highlighted and organized based on the relationship between knowledge-sharing and CoP for the purpose of data display, discussion and drawing conclusion.

In fact, this was a labour-intensive task because it involves repeatedly reading text and identifying relevant links. However, it is very crucial to this research. It helps to analysis result as a whole, to understand the meaning of narratives, to establish the link with knowledge-sharing activities. The finding can be presented in a detailed transcript of speech so that readers can see the stories apart from the analysis.

3.7.4 Data Analysis Process

As highlighted in Section 3.6, the purpose of data analysis is to manage the volume of raw data, sifting trivia from significance, synthesizing them, searching for patterns, identifying regularities, explaining variations and constructing a framework for communicating the essence of what the data reveals (Bogdan and Biklen, 1998). In

achieving this, the researcher seeks to present clear account in identifying analytic

procedures of using narrative analysis.
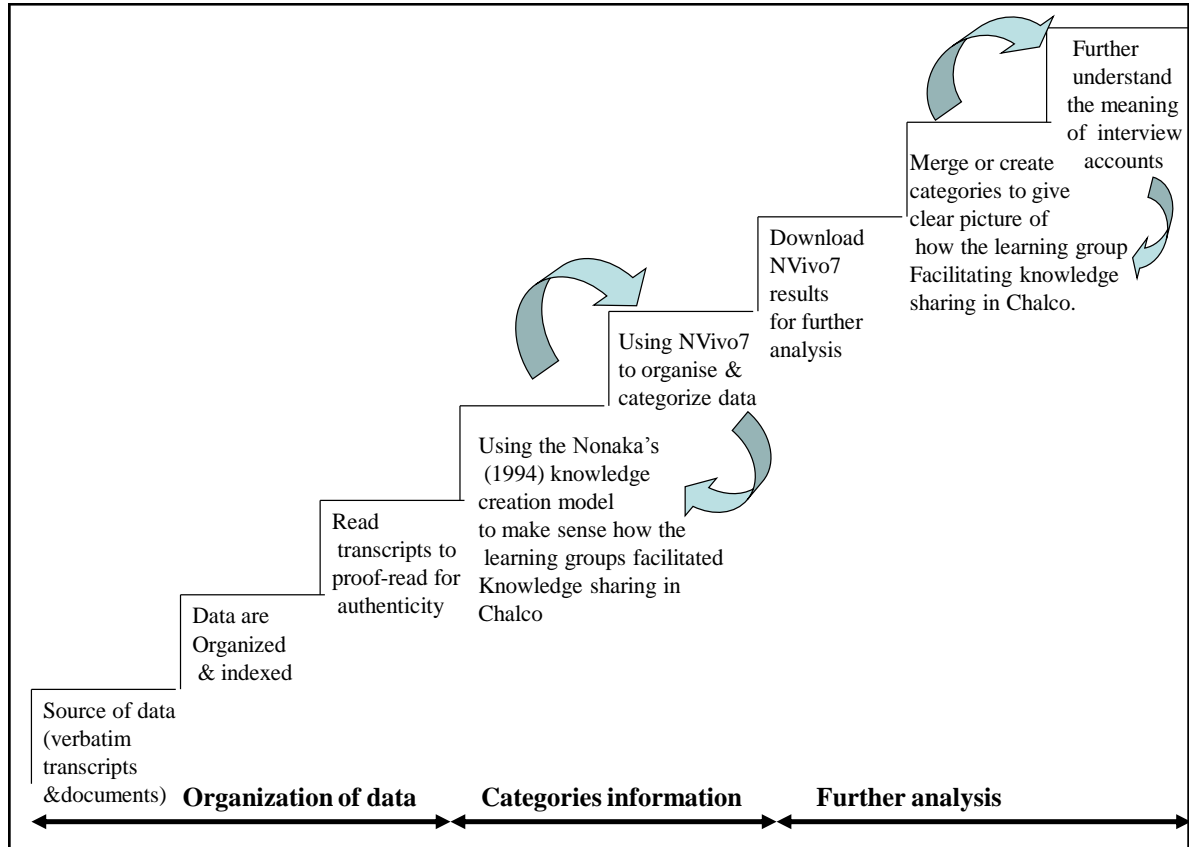
Figure 3.2 Analysis of Process

The Figure 3.2 has illustrated the analytic procedures of employing narrative analysis

for this research. The two-way arrows are to signify the concurrent flow of activities,

for example, any particular step in the process, as and when required the researcher

has to reread the data, revise any categories and generate new categories. Thus it is an

iterative process. The subsequent sections explain the data analysis process in details.

3.7.4.1 Organization of Data

After the completion of interview transcription, they were proof read for their

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authenticity. Then they were properly organized and indexed. Transcripts were read as a whole for the first time and while reading obvious categories were picked up where notes and remarks are made at the side margins of the transcripts. Besides the transcripts, company internal documents (i.e. company official report, internal newsletter, meeting records) were also considered. The reading of these transcripts was guided by the questions asked in the interview guide and bearing in mind the research objectives of this study. In addition, since all the transcriptions initially were written in Chinese they had to be translated into English before inputting them into computer for further analysis.

3.7.4.2 Category of Formation

When dealing with large quantities of data, the researcher need to develop categories for further analysis. Hence, the assistance of computer software NVivo 7 is used to facilitate the process of managing the huge amount of data. The following paragraphs will explicate how the NVivo 7 has facilitated the process of category formation.

NVivo 7 provides a filing cabinet with 2 drawers: a Document Explorer and a Node Explorer. The first step of using NVivo 7 is to import the transcriptions into the Document Explorer that facilitates browsing, editing, retrieving and annotating. The Node Explorer can help shape the data and ideas, using conceptual hierarchical "Trees" for organizing nodes. Nodes can be placed in trees as a way of setting out subcategories or dimensions of a concept

The aim of this research is to explore the role of the Learning Groups on facilitating

knowledge sharing in Chalco's social and cultural context. When reading the transcription text, the researcher paid attention to what was said and tries to interpret the underlying meaning of how the Learning Groups overcome the Chinese social and cultural barriers to facilitate knowledge sharing in Chalco. The conditions and requirement for knowledge sharing based on the Nonaka's (1994) organizational knowledge creation model (socialization and externalization) was obtained from reviewing the past literature. This has provided the direction for what to look for and it allowed the role of the Learning Group in facilitating knowledge sharing to emerge from the data. The interview accounts as narratives were analyzed according to lines and the nodes were created according to Nonaka's (1994) framework in terms of the conditions and requirements for knowledge sharing. Besides, nodes were created to extract information on individual's profile as well as activities of Learning Group. Hence, the categorizing process is principally to browse transcripts at Document Explorer, highlight the lines related to knowledge sharing conditions and requirements, then go to the Node Explorer to click the code button. By just clicking the code button, the highlighted lines are copied and stored in the Node Explorer. This process was repeated for categorizing other interview questions i.e. 'Are there issues about the development of Learning Group in Chalco?'

While creating the Nodes, NVivo allowed the researcher to write a description i.e. what it means, what it included or excluded. This was an iterative process and the researcher had to adjust the definition and the description of knowledge sharing conditions and requirement throughout the process. At times, nodes were broken into

sub-categories that allowed for greater differentiation. This was very useful exercise as it allowed sifting through data from a sharper and different perspective as well as forced him to start windowing away data that deemed 'not important'.

So far, all data were processed electronically and information can be found without having to wade through transcripts as source of data. In this research, NVivo has been used for the purpose of storage, organizing and quick retrieval of information. The researcher has only used the computer software till this stage because one should not give too much power to technology, but to the person in front of computer (Patton, 2002). Though computer can do many things, they cannot think like human beings. Therefore, there cannot be a sole reliance on the software as a means of analysis but as a complementary tool to organize, explore and understand data (Atherton and Elsmore, 2004). Hence, further analysis was needed to provide explanation (the why and how) and they were conducted using the one of the conventional methods – narrative analysis.

3.7.4.3 Further Narrative Analysis

At this stage, the NVivo 7 results of categories formation have been downloaded for the next level of inspection and interpretation. NVivo software has presented each interview transcript in an effective manner so that the further analysis can be conducted. By having all the categories in hand, the researcher can get a sense of the whole i.e. what do the Learning Group do in Chalco? How do the members of Learning Group learn and share knowledge in the groups? Those that were not

included for further analysis were data that are not directly linked to the research objectives i.e. something mentioned about the contextual information about Learning Group in Chalco, how do the Learning Groups contribute to the development of company's knowledge management? These data were acknowledged but not selected for further analysis.

The categories were compared and grouped, mixed and matched until a picture emerges that can explain how the Learning Groups facilitate knowledge in Chalco. Hence, the researcher can focus on interpret the meaning of group activities and events to knowledge sharing in Chalco's social and cultural context. When interpreting the narratives, the personal information, the structural issues and the conversation between the researcher and participant were considered. More specifically, attention was paid to the event which describes members' participation; a description which gives background information on place, people and context necessary to understand the meaning of the activities of Learning Groups. Significant quotes were summarized, highlighted and organized coherently based on their relationships to reconnect the analysis as a whole for data display.

In summary , the collected data were processed, then read and analyzed in a continuous, iterative manner, trying to determine how to display data so that they can be interpreted and be useful to draw conclusions about how the learning Group facilitate knowledge sharing in Chalco's social and cultural context. In the next section, the research findings will be presented.

3.8 Standards of Research

As in all research, consideration must be given to construct validity, internal validity, external validity and reliability (Yin, 1994). However, demonstrating the validity of data gathering method and the reliability of analysis is always challenging for qualitative research (Denzin and Lincon, 2005). Lincoln and Guba (1985) use the terms of credibility, transferability, dependability, and confirmability to impose these standards on qualitative research to explain rigour that is comparable to quantative research. This section deals with each aspect of these standards of research in turn.

3.8.1 Credibility

Credibility is about how believable are the results of the research and how they are justified (Norris, 1997). More specifically, it is how accurately the findings of this research reveal how CoPs facilitate knowledge sharing. In this study, a variety of techniques were employed to ensure credibility of data and data analysis. The researcher maintained credibility through on-going dialogue with participants, peer debriefing and by the use of feedback loops in relation to the emerging findings. Data and their interpretation were constantly scrutinized by the researcher, and the findings were tested in subsequent interviews with members of CoPs from other sites of company.

3.8.2 Transferability

Transferability is the degrees to which the particular findings of this study can be transferred to another person or to another similar context or at other times but still preserve the particularized meanings and interpretations (Leininger, 1994). This is always a problem in qualitative study and appears more difficult to attain in a single case study. Yin (1994) asserted that transferability could be achieved from theoretical relationships, and from these generalizations could be made. It is the development of a formal case study protocol that provides the reliability that is required for all research.

In line with recommendations by Lincoln and Guba (1985), transferability for this study was established through use of multiple data sources and rich description, which took into account time and context of the inquiry. The researcher has attempted to provide a detailed description of the case company to paint a picture of the members of their communities of practice, their activities, working life, and corporate environment. This is to enable other readers to identify patterns with the case company so that they can transfer to other cases which they are familiar with (Firestone, 1993), making comments or decisions about the applicability of the result to other settings or similar context (Creswell and Miller, 2000). Therefore, this suggests that this research cannot make an across the board generalization but it can generalize to a certain extent in which Stake (1995) called small-scale generalization and Williams (2000) termed it moderate generalization. Reader can understand or know something of the context

within which this research resides and is then able to make their generalization about that context.

In summary, this research can confirm how communities of practice facilitate knowledge sharing at the case company----Chalco, but cannot conclude that it is the same elsewhere. However, the purpose of this research is not to generalize across a population but to provide a picture of how CoPs to facilitate knowledge-sharing in a Chinese company.

3.8.3 Dependability

In its everyday sense, dependability or reliability is the consistency or repeatability of the measures (Trochim, 2001). It is dependent upon stability, consistency and predictability (Lincoln and Guba, 1985). It is a part of a larger set of factors that are naturally associated with changes. The researcher has to seek a means for taking into account both factors of instability and factors of phenomenal or design induced change.

Dependability in interpretive research is often accomplished using an audit trail (Lincoln and Guba, 1985) in which the researcher maintain a log containing personal notes, which allow for reflection upon what happens in relation to personal values or perceptions. The logbook for this research was in the form of a hardbound notebook that was used to record all interactions, thoughts and discussions that were carried out throughout this research project. It also included how decisions were made, what focus was taken, the creation and the revisions of categories' labels made during the analysis

to help readers follow the reasoning of the researcher (Taylor-Powell and Renner, 2003). In doing so, it gave the research transparency and provided clear documentation of all research decision and activities for audit trail at different stages of the research (Creswell and Miller, 2000).

Apart from that, dependability was further enhanced in this study as only one researcher carried out, transcribed and analyzed all of the interviews. The interviews do not differ to any considerable extent with regard to length, probing and focus.

3.8.4 Confirmability and Objectivity

Confirmability is obtaining of repeated evidence through investigation (Leininger, 1994). Guba and Lincoln (1994) proposed that establishing cofirmability should be one of the objectives of auditors. This means that researchers have not overtly allowed personal values or theoretical inclinations manifestly to influence the conduct of the research and findings developed from it (Bryman, 2004).

Objectivity exists when appropriate methods are employed that maintain an adequate distance between the observer and the observed (Lincoln and Guba, 1985). However, as mentioned in previous section 3.2.3, the researcher takes the social constructionism as his epistemological stance to underpin this research project. The findings of this research are grounded in the world where there is no objective truth waiting for people to discover. The researcher is neither seeking the objective nor subjective truth but to explore the meaningful reality socially constructed within CoPs. Also, the issue of the

researcher's involvement in the case company has been discussed in last section 3.8. Therefore, due to the nature of this research, comfirmability is no more an issue of objectivity in this research and this shifts the emphasis from the researcher to the data itself.

In this study, comfirmability was maintained by providing raw data that could be traced to the original sources and by describing how the data is to be interpreted and placed into categories (Lincoln and Guba, 1985) as described in section 3.7 and further discussions were made in both chapter four and chapter five.

3.9 Ethical Considerations

Ethics refers to the appropriateness of the researcher's behaviour in relation to the rights of participants of the research or how they are affected by it (Saunders, Lewis and Thornhill, 2003). In carrying out any form of research, formal consideration must be given to ethical consideration that will, or may potentially, arise throughout the investigation.

This research investigates how community of practice to facilitate knowledge sharing and it involves human beings. Therefore, extreme care has been taken to avoid any harm to them. The researcher conducted his investigation that is guided by university's code of ethics. Having identified any ethical issues, measures were initiated to mitigate or eliminate them. In this research, ethical concerns have revolved around the topics of informed consent, right to privacy, protection from harm and deception.

Informed consent means that prospective research participants should be given as much information as they might need to make an informed decision about whether they wish to participant in a study (Bryman, 2004). The informed consent of each respondent for this research was gained via a formal informed consent letter. This letter contained a description of the project being carried out, detailed what participation in the project involved and the purpose of this project. In addition, the consequences of participating, such as the possible outcomes, contributions and effects of the research, were also made clear to the participants to assure them that ultimate outcomes are to promote the development of company and its internal CoPs, causing no any harm to their personal development. It was only after receiving a signed written response to the consent letter, a further activity was progressed. Prior to each interview beginning, the requirement for digital recording the interview was also explained, transcription method was noted. At the beginning of each interview, prior to focusing the research topic, the factor that interview participation is voluntary was brought to attention again. Each respondent was asked again if they would be happy to participate. No respondent declined to continue.

Another ethical concern is how to meet privacy and confidentiality requirements for the research, protecting the identity of the participants. This issue is particularly pertinent because of potential freedom within the interaction for sharing information and interpretations (Easterby-Smith *et al*, 2002). Participants were assured that their rights are respected and it was highlighted that they can choose not to answer any question or provide any related data where requested. All participants and the data created from

their involvement were treated with respect, and no individual in the organization is identified in this thesis. The interview recordings were available only to the researcher and will not be used for discussions with other groups, organizations or other related parties. They will be securely stored until they can be erased.

No participant was encouraged to continue their involvement. Each was free to withdraw at any time. Participants also had opportunities to listen to the interview recordings before any textual transcript and analysis was done so that they could remove any content that provided personal ethical dilemmas.

In summary, it is to the researcher's best knowledge that all ethical concerns have been addressed throughout the period of this research. The researcher has remained sensitive to the impact which the research has caused to the company and those who have provided access and co-operation.

3.10 Summary

This chapter provided a detailed description of the researcher's philosophical paradigm, research methodology and research design by which the research objectives were achieved. The research is qualitative in nature and was carried out using single case study design. Data was collected using 20 semi-structured in-depth interviews as the primary data collection method. These interview data were recorded and then transcribed. The transcripts were analyzed by the narrative analysis approach.

In summary, the methods used for data collection are very much influenced by the methodological framework of this research (see figure 3.3). The approaches of the methods are consistent with the epistemological grounding of this research – social constructionism, where meaning is constructed through interaction and its interpretive paradigm to interpret members' experience from their own perspective. By adopting case study of qualitative methodology together with in-depth semi-structured interview, it allows researcher to collect rich and thick data that facilitate interpretation of the underlying meaning of the interview accounts.

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│        │    In-depth interview  │         │
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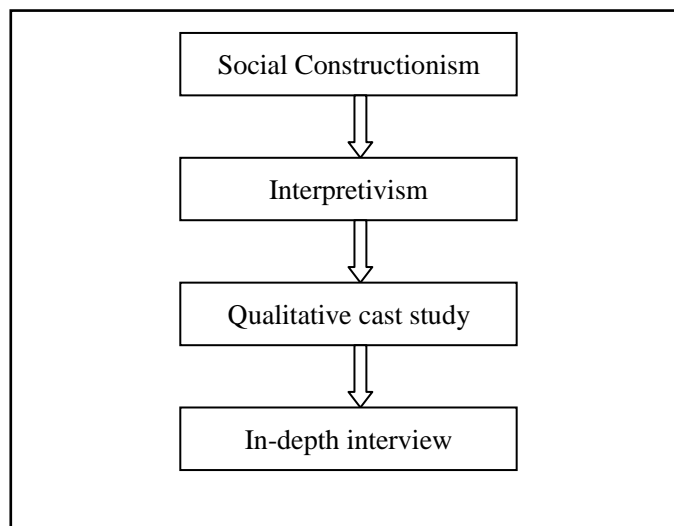
Figure 3.3 The Research Methodological frameworks for this research

The role of the researcher, the method used to ensure high quality research standards and ethical issues in this research project were also described in this chapter. By implementing these procedures, the researcher is able to explore the role of CoPs in facilitating knowledge sharing in depth. The next chapter will address the data analysis processes and research findings.

Chapter Four: Research Findings

4.1 Introduction

Chapter Three justified the research methodology and method adopted for this research. This chapter reports the result of narrative analysis of the interview data, looking at the narratives as types of stories. It will combine the interview accounts with the contextual information of interview participants and case company to understand the underlying and reflective meaning. This chapter is divided into five sections. Following the introduction section, the contextual data about the Learning Group as the type of communities of practice in Chalco and the interview participants' profile will be presented in the second section. In the third section, the interview accounts as the narrative will be interpreted. This is to allow the researcher to analysis what has been said by participants and why the participants said that. This also allows the readers to recognize how the researcher has interpreted in that way to draw the findings. In this section, all transcript quotations are highlighted in italics to distinguish them from other comments. At the final section, an overview of this chapter will be presented.

4.2 The Context information of Learning Group in Chalco

The purpose of this section is to provide background information of the Learning Groups in Chalco and the participants' profile are also introduced. This is to make the analysis more accessible in the sense of making the thesis easy to read, hence

enhancing the impact of the findings of this research.

4.2.1 Profiles of Interview Participants

This section describes the profile of interview participants. The profile of interview participants includes the code of participants' name, the years of their working experience, their job titles and their status in Learning Groups. The purpose of these profiles is to facilitate reader to know the context of whom they are, especially when the codes of the participants' name are mentioned in verbatim quotes. This is to provide background information to readers and the researcher when making sense of what has been said by an interview participant. The Table 4.1 is the summary of the interview participants' profiles.

There are three kinds of members in the Learning Group:

- Group coordinator--Group Coordinators are appointed by the company; they are the senior members of company staff and are responsible for calling meetings, setting agendas, organizing group events and producing group report to the company. In some group, they also act as core group members.

- Core Group Member--Core Group Members are the senior members of company staff, who have many years of working experience. They take the leading role in the group and have responsibility to mentor at least one group members. In some Learning Groups, they are also the group coordinators.

- Active Group Member--Active Group Members are the ordinary members of

Learning Group. They actively participate in group meetings and other events

in the aim of leaning and sharing knowledge.

Table 4.1 Summary of Interview Participants' profiles

CoP A: based in Chalco Henan branch, including 12 active members				
Interview No	Participant's Code	Years of working experience	Status in Learning Group	Job Title
1	ZQ	13	Group coordinator	Senior chemical engineer
2	LD	15	Core group member	Electrical engineer
3	XZ	6	Active group member	Laboratory analyst
4	WK	3	Active group member	Manufacturing technician
5	WF	8	Active group member	Production Supervisor
CoP B: based in Chalco Shandong branch, including 16 active members				
Interview No	Participant's code	Years of working experience	Status in Learning Group	Job Title
6	CF	11	Group coordinator	Deputy production unit manager
7	LM	16	Core group member	Manufacturing operation controller
8	NP	6	Active group member	Production quality controller
9	YQ	1	Active group member	Graduate trainee in Chemistry
10	LB	3	Active group member	Production Technician
CoP C: based in Chalco Shandong branch, including 15 active members.				
Interview No	Participant's code	Years of working experience	Status in Learning Group	Job Title
11	ZC	10	Coordinator	Project manager
12	HQ	16	Core group member	Production operator
13	NS	8	Active group member	Metallurgical Construction Engineer
14	YJ	4	Active group member	Smelting technician
15	ZZ	6	Active group member	Budget technician
CoP D: based in Chalco Zhengzhou branch, including 10 active members				
Interview No	Participant's code	Years of working experience	Status in Leaning Group	Job Title
16	AG	12	Coordinator	Senior power station engineer
17	AT	16	Core group member	Manufacturing operation controller
18	HY	5	Active group member	Mechanical technician
19	SB	2	Active group member	Manufacturing operation controller
20	ZH	9	Active group member	Senior safety consultant

The interviews were conducted in 4 Learning Groups, which are located in three

company sites. By studying some relevant company's internal documents and conducting 20 interviews, the detailed pictures of the communities of practice in Chalco have emerged.

4.2.2 The Emergence of CoPs in Chalco

The emergence of CoPs in Chalco was in the year 2000 when the company started its ambitious business expansion plan. At that time, there were many temporary project teams set up to bring people from different units together in the aim to solve some operational and technical bottlenecks efficiently. Members of project teams have various professional expertises, such as manufacturing technician, mechanical engineer, automation designer, quality controller, safety inspector and so on. Although having to go back their original formal departmental units after the completion of projects, some of project team members have remained contact and had fairly regular meetings to discuss work related issues. Those people and their meetings can be seen as the original CoPs in Chalco, even though they didn't have a particular name for their meetings. These meetings started with a small group of people, usually containing 3-5 people with strong engineer background and many years of working experience in Chalco. They understand the full spectrum of issues relating to the manufacturing process rather than just single discipline. Their meetings were very informal and they knew what information was useful, what issues should be addressed and what topic they wanted to discuss. These meetings were still going strong, especially after the company launched the company-wide knowledge initiative. They

have also been added some new features.

4.2.2.1 Company-supported Communities of Practice

The CoPs in Chalco started as an informal group and people met together without any involvement from the company. People participate in CoPs on a voluntary basis and they have great freedom in terms of planning, selecting meeting topic and organizing activities. With the launch of the company-wide knowledge management initiative, these CoPs were introduced to the entire company as examples of good practice that would facilitate company's knowledge managing initiative and enhance the innovation activity. In order to encourage more staff to get involved with these learning and knowledge sharing activities, the company appointed some middle managers and senior engineers as coordinators to promote the CoPs. The CoPs are named as Learning Group in the hope of improving the company's innovation ability through knowledge learning and sharing in the CoPs. The company has given various supports to the groups. This has been mentioned during the interviews. For example, AT described his participation that

I work in our production control centre as operational coordinator. . That is a very demanding job and we operate in 24 hours. But our department director is very supportive to the participation of group meeting and there is also a formal document about this, I get a certain time off from my duty to join the meetings. Considering the special job requirement in our department, I think this is most supportive thing they can do.

In the corporate environment, people usually have heavy scheduled workload with strict deadline. It is critical that members of CoPs can get consent from company to participant the CoPs during the working time. Like NP said that "i*f not agreed by my boss, I probably wouldn't be here anymore. Nobody wants to get bad impression because of doing this.*"

The Company had issued a document, giving the Learning Group the legitimate statue in the organization. When participating in group' meetings, event and other activities, people can get time off from their formal job rather using their spare time. The company also provides venues and other necessary facilities for the meetings, creating a hassle-free environment for the Learning Groups.

In addition, each Learning Group has a group coordinator who is responsible for calling meetings, setting agendas and recruiting new members for the group. They are selected by the top management in the aim of promoting the development of communities of practice in company and normally they are middle managers or senior engineers. The coordinators play an important role to link the Groups with company. For example, as a group coordinator CF described his role that

> *I was appointed to promote the development of our group in the company. So I got to understand the whole purpose of our group. I was constantly highlighting what this group was about. Once people achieved an understanding of the overall purpose of this group, they achieved a more insightful understanding of their contributions to the company. I think this is*

one of the intrinsic motivations for people's participation and also provides a direction for our group discussion. I am also responsible for writing our group report, recommending some important innovation project to our company. This is the way in which our company can know what we have done and what we have got.

As part of the company's knowledge initiative, the Learning groups in Chalco have been expected to make contribution towards company's knowledge management, improving company's operation efficiency and production capacity. According to the company's requirement, each Learning Groups in Chalco need to create and maintain their knowledge repositories. During the group meeting, members take turns as group secretary to take meeting notes and records. Other members are responsible for put ideas, solutions, tips or special knowledge into relevant categories. Based on the knowledge repository, group coordinator will produce group report every three months. In the report, the coordinator will summary the group's meeting and recommends some innovative ideas to the company. The group report also contains the index of group's knowledge repository so that the company can asses those information and knowledge. In addition, based on the quality and quantity of the idea and knowledge, the group will be rewarded 'point', which can be redeemed to group extra funding.

The company has promoted the development of Learning Groups in different ways, proving those groups with many resources. As the result, the Learning Groups in

Chalco can be seen as the company-supported communities of practice.

4.2.2.2 Homogeneous Memberships

The CoPs in Chalco are heterogeneous, composed of people from different disciplines and with different expertise and experience level. Members of CoPs come from different company business units. Many of them know each other through some formal cross-functional project teams or other working relationship.

The interviewees' profiles show that members of Learning Group have different job titles with more than 15 professional expertises. This is very common in the modern industry where the complexity of the operation and the application of modern technology require people with different expertises and knowledge background to work together.

4.2.2.3 Using Traditional Communication Method

From the interview, the researcher has found that the company intranet has not been used by members of Learning Groups for the purpose of group discussion, knowledge-sharing. Unlike most successful organizations in developed countries, where people utilize various IT technologies to sharing and storing knowledge, the potential of IT is not fully exploited within Chalco. Most members use the company's intranet to send email, chat online with colleagues, or use web search engines to get information. R&D engineers work on PCs everyday to design products by using relevant software. Management staffs use their computers to do paper work. Many

frontline staff doesn't have IT facility or have access to company intranet at all. These examples evidently indicate that in Chalco, information technology has been only used as a supplement for daily manual work, but not as an essential platform for work at the general management level. Although the company has given lots of support to the Learning Groups, there is no a comprehensive and fully functional IT infrastructure for the members to interact, share information and store knowledge on line. People still use traditional face-to-face communication method to have social interaction.

4.3 The Knowledge Sharing Barriers in Chalco

When the researcher tried to identify the barriers of knowledge sharing in the Chalco, he had referred the pervious literature about the knowledge sharing in organizations and the literature about potential Chinese social and cultural factors that could have negative impact on knowledge sharing to analyze the interview accounts. There are six knowledge sharing barriers that have been identified in Chalco.

4.3.1 Hierarchical Organizational Structure

Many interview participants have expressed that the hierarchical organizational structure restricted their knowledge sharing behaviour in the company. For example, ZC has explained that:

Probably because of the nature of our business, there are many units, sub-units, engineering functional departments and engineering functional teams in the company. There are different relationships between company units, like superior

and inferior, internal competitors, internal customers and service provider. It is complicated. Most of time there are some conflicts in terms of performance assessment and bonus allocation. So in this working environment, it is sometimes difficult for people just to walk out of office to ask people questions.

ZC' explanation indicates that the company structure and the management system caused the complicated relationship between different departments and business units. People feel that sometimes it is not appropriate to go to other business units to ask people knowledge or them just not willing to share knowledge with each other. ZZ also confirmed this point. He said that "I need to consider if there is any negative effect to our unit or to myself before I can share knowledge with other people." Knowledge share behaviour is not always regarded as a positive activity in the company. People have to think about other factors, such as department performance, their bosses' attitude, since these factors directly affect their personal or departmental benefits, for example personal promotion, department bonus.

Participants also talked about other aspects of knowledge sharing barriers that is also related to the organizational structure. WK complained that the knowledge and information flow are restricted by the organizational structure in Chalco. He argued that

In our company, how much information and knowledge you can get is pretty much depend on the position in the company. People who work in the headquarter have much more advantage in terms of getting access to the knowledge and information. Many internal document, project reports and technological data are

simply not available to the people in the lower rank or in the production units,

especially for the people like me working at front production line. On the other

hand, people on the top can't be bothered to ask me any questions. They might

think they've got all.

Because of hierarchical organizational structure, the knowledge flow is not smooth

between top management and front line staff. However, both sides might have

important knowledge that could benefit to each other, but they don't chance to share it.

SB further confirmed that

I haven't been with the company very long compare with a lot other people in my

department. So when I walked out of my department I don't know many people. I

just work around the control centre every day and am busy all the time. How can

I share knowledge with others? If without the Learning Group, I wouldn't have

many chance to meet new people, especially meeting those experienced senior

staff.

Like many other Chinese company Chalco is managed under the very hierarchical

organization structure, which has become the knowledge sharing barrier in the

company. The Learning Group is organized at the outside of company structure and

might have its advantage in facilitating knowledge sharing in the company. Apart

from the hierarchical organizational structure, the hierarchical consciousness that

deeply exists in people's mind has also been found as the knowledge sharing barriers

in Chalco.

4.3.2 Hierarchy Consciousness

In Chalco, the sense of hierarchical consciousness, which is affected by the Confucianism (Gao, 1995), is widely existed among its employee. This hierarchical consciousness is embodied in the relationship between seniors and juniors. Juniors obey and are loyal to the superiors. The following responses represent people's perceptions toward the influence of hierarchy consciousness to their knowledge sharing behaviour. XZ stated that

> *We all have been taught to respect elders at a very early age. So at work places, I think everybody knows that we should respect not only the people who are older than you, also the senior employees who have a higher position or started working here earlier than you, even sometimes these "elders" are actually biologically younger than you. You got to stick to these rules otherwise you almost can not work here. Listen to them and avoid challenge is the basic rule. So in our working place there is no knowledge exchange. Most of time it is just one-way knowledge flow.*

Although XZ has been working in her department for over six years, she still feel there are people that she should follow and show the adequate respect. That is why she thinks this has restricted her to express her idea and opinions. This is one of the Chinese cultural beliefs, in Chalco junior employees (younger, lower-position, or newer staff) are expected to follow seniors' advice. Seniors are supposed to teach or pass on their knowledge and experience to juniors in organizations. Chalco's

mentoring policy for new recruits has facilitated employee's hierarchy consciousness. YQ expressed his opinion that

I think this traditional teaching method [one master, one apprentice] can force me to learn knowledge from an experienced staff member fast. But because he is my teacher, and I am new staff, I do not really want to disagree with his suggestions or express my own ideas. He will not like it.

In other words, following seniors' suggestions is the right way to show juniors' respect to them in Chinese society. This situation causes an ''unequal'' knowledge sharing environment. More importantly, knowledge sharing is different from traditional teaching method. It involves dynamic discussion and interaction. However, with the hierarchical consciousness in mind, people are not willing to express their own ideas in order to avoid argue and confrontation. As the result, knowledge within the company flows from top to bottom only and relies on the traditional teaching and learning method, which is ineffective for tacit knowledge sharing.

4.3.3 Personal Network- Guanxi

Personal Network (Guanxi) has played very important role in Chinese people's daily life. It is no exception in Chalco. From the interviews, many participants stated that seeking knowledge-related help from their social network is normally their first choice when they can not solve work problem. Good personal relationship helps them track down the information they need. However, some participants feel that there is lack of important elements during the knowledge sharing in their social network. That

is learning, which is the important part of knowledge sharing process. AG has emphasized that

……asking friend is easy and simple. I like it. I got someone who can help me. Why not to use this Guanxi? They can tell you what it is and maybe where it is, but if you want to know how it goes in this way and why it can't go in that way. Sharing knowledge is just one-off action through this way and you probably haven't got the real stuff. In the manufacturing sector, many working skills you need to take some time to get it.

AG's comment indicates that personal network does help people to find the knowledge they need, but it can not help people to learn the 'real stuff'. This means that the important parts of knowledge, the tacit knowledge, can not be shared by simply asking friend in the company. As Nonaka (1994) suggested that the best way of sharing tacit knowledge is through continuous social interaction so that people can have shared experience and understands the real context. AT further echoed this point. He said that "I do like to tell people what I know. But I only can generally tell them basic information, because my knowledge is linked with real context rather than the theory." In Chalco, many people have hands-on experience, which means they have abundant tacit knowledge. This part of knowledge need to be shared based on the understanding of real context.

CF told an example about the weakness of relying on the personal network to find knowledge. He recalled that

In our unit, there was a problem with the wind stir system. For the production

reason, we can't stop the equipment to fix the problem. But it is very difficult to

carry on the job without stopping the equipment. We had to get a retired

technician through someone's personal contact. That technician had done the

brilliant job. But nobody really understood how he did it. We couldn't develop a

proper problem-solving record. Maybe next time, we have to find him again.

Personal network has double effect on the knowledge sharing. On the one hand, it is a quick way to find the knowledge. On the other hand, it has very obvious weakness. The tacit knowledge can not be shared through this way. It still remains tacit.

4.3.4 Modesty

Modesty is highly valued characteristic in traditional Chinese culture. However, the researcher found that this culture has become one of knowledge sharing barriers in Chalco. People tend to be modest about their achievement and do not like to show a high opinion of their own. LD described that

When we have a meeting to discuss some production related problems in our unit,

some people always keep low-key and tend to not to speak or speak in a very

modesty way, following others and hiding their own thinking. It is not good for

solving problem and finding solutions. People think it is a good gesture for

showing modesty.

In Chinese, it is not recommended to express your own opinions too much in public and also there is old say that is "Modesty is virtue." Many people are affected by its culture tradition and think that it will help them to build a good personal image in

their working place. However, this tradition has limited their contribution to the knowledge sharing in the company and they don't want provide their own ideas and opinions for others. During the interview, ZH also mentioned that people like to express their opinion to individuals rather than to a group of people. To some extent, it also is reflection that people's conscious about their personal image and don't want to be regarded as a show-off.

4.3.5 Competitiveness in the Organizational Culture

Competitiveness is one of the important organizational culture factors in Chalco. In the company, competition is encouraged among it employees in order to improve their personal performance. This culture has been reflected on company's many internal policies, such personal promotion, bonus allocation, internal project bidding and so on. It is no doubt that it can increase the employees' commitment to their jobs. But meanwhile, it also creates an atmosphere in which employees would not like to share knowledge with their colleagues. Just as LD has recalled that

I had involved a project relating the electric auto-control improvement last year and temporarily worked as the deputy project manager in other department. I had very good relationship with the project manager. After the completion of the project, we still kept in touch, sharing information and discussing our job over the phone. This year, there was another similar project in our company. So I started to prepare the proposal and wanted to bid for the leader for this project. When the pervious project managers knew it, he stopped call me. When I called

him to ask some questions about the project budget, he only made excuse to say

that he couldn't remember the details and only gave me very ambiguous answer. I

can sense that he had seen me as his competitor for that bid and is not willing to

share knowledge with me any more.

Chalco has the internal market policy. When the company wants to appoint someone to take charge of a project, it opens to all the relevant senior engineers. If people want to take the job, they have to write a project proposal and bid for it. The quality of the proposal and the pervious project management experience are the major factors considered by the top management. As the result, once people have to compete with each other, they need to keep their knowledge as the personal advantage rather than sharing with others. LD's story indicates that under the influence of company's competitiveness culture and policy employees' personal interest can be conflict to each other and therefore affects their motivation to share knowledge with other. The following NS's example further confirmed this. He stated that

Recently, the management in our unit organized a working knowledge theory and

practice test among all of the frontline staffs. According to the guidance of this

test, five people who had lowest score will be suspended from their job and get

retraining for one month. During the period of retraining, they only get their

basic salary without bonus, which will cause significant reduce on their income.

The initial purpose of this test is reasonable but the downside of the test is serious.

People compete with each other and have to fight to stand in the front. How can

we expect to share knowledge with each other?

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HQ worked at the same unit with NS. He also explained this: "In China there are too many people trying to cross ''the single narrow bridge'', so the competition is really high. Everybody has to struggle for their career target. If you and I are competitors at workplace, then I will not share what I know with you, as this might be a good or the only chance to defeat you. People are selfish in this sense." Affected by this competitiveness culture, people regard their knowledge as personal advantage; they would not share it with others unless to do so not affects them to achieve their personal goal or job security.

4.3.6 Low organizational commitment

With the rapid development of China's economy, both Chinese employees and employers have sufficient freedom to choose each other, Chinese employees has increasingly become mobile in the job market. This leads to the reduced organizational commitment among employees and also is reflected on the motivation of knowledge sharing. AT has expressed his concerns during the interview:

In my department, people's working attitude has been changed. In the past, when people have problem that they can't solve, people would actively try different avenue to find solution, such as organize brainstorm meeting, and visit other production site, on-site experiment. Nowadays, people just don't want to put too much effort into it. They do try to solve it, but after a couple times of trial and error, if it still doesn't work, they will give up and leave to the manager to decide if we continue to carry on the task. Basically, especially among those young

people, they are just lack of motivation for learning and sharing.

Echoing the AT's concern, NP also expressed that people increasingly believe that "we do not owe anything to the company. Therefore apart from my job requirement, I don't have to contribute anything to the company." Since people have less moral obligations to the company's knowledge development, they therefore have less motivation to participate in the knowledge sharing activity in the company. As the result, the low organizational commitment appears to be one of the knowledge sharing barriers in Chalco.

Table 4.2 Knowledge sharing barriers in Chalco

	Findings	**Justification of Findings**	**Evidence found in interview No**
Knowledge sharing barriers in Chalco	Hierarchical organizational structure	1. Complicated relationship between departments and units has negative impact on the knowledge sharing; 2. Knowledge flow is restricted between top management and front line staff; 3. Lack of chance to meet people in other units means lack of chance for knowledge sharing.	4,5,7,10,11,15,19
	Individual's hierarchy consciousness	1. Following seniors causing knowledge sharing only as one-way knowledge flow; 2. Lack of dynamic discussion, simply listen to it and accept it, which is ineffective for tacit knowledge sharing.	3,9
	Personal network- "Guanxi"	1.Only for sharing explicit knowledge, tacit knowledge still remains tacit; 2.Knowledge remains personal	6,16,17
	Modesty	1. Discourage people from expressing their opinion; 2. Choosing not to speak out in the group limits the dynamic group discussion.	2,20
	Competitiveness in the organizational culture	1. Competitive internal environment reduces the motivation of co-operation and knowledge sharing; 2. People regard knowledge as their personal advantage and try keep it to remain competitive in the job market.	2, 12, 13
	Low organizational commitment	1. Less motivation to seek knowledge; 2.Less motivation to contribute company's knowledge development	8,17

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In summary, the findings have revealed six knowledge sharing barriers in Chalco. They are **Hierarchical organizational structure, Hierarchy consciousness, Personal Network (Guanxi), Modesty, Competitiveness in the organizational culture** and **Low organizational commitment.** Some of these barriers are caused by Chinese culture and social factors. The rest of barriers are caused by the company's organizational factors. The Table 4.2 has summarized the findings above.

4.4 How Do the Learning Groups Facilitate Knowledge Sharing in Chalco?

Since the knowledge sharing is defined as two parts of knowledge creation process-socialization and externalization, from the data analysis the researcher has identified how the Learning Groups facilitate tacit knowledge sharing and the knowledge conversion from tacit knowledge to explicit knowledge. According to Nonaka's (1994) knowledge sharing starts from socialization, which is tacit knowledge is shared through social interaction. There are two key requirements for socialization: physical interaction to develop the sense of care, trust, commitment; developing shared mental model through experience sharing. This is because the tacit knowledge is a distinctly personal concept, without the shared common perspective, i.e. shared experience; it is difficult to grasp other people's world from "inside". The key for the knowledge externalization is to use meaningful dialogue, which is based on the shared mental model, to articulate the tacit knowledge. People also need to translate the articulated tacit knowledge into the understandable format by reflecting and liking the real

practice. The following section will present the findings of how the Learning Groups facilitate knowledge sharing based on the key features of knowledge socialization and externalization.

4.4.1 Overcoming the Barrier of Hierarchical Organizational Structure and Providing a Platform for Knowledge Sharing

As identified in pervious section, Chalco is a traditional native Chinese organization that has a hierarchical organizational structure, which appears to be a knowledge sharing barriers in the company. The Learning Groups in Chalco are a kind of heterogeneous communities of practice. They bring people from different business units with different expertise to come together. They allow people to have a chance to meet each other and provide a knowledge sharing platform. Just as ZC explained that

> *Often being assigned to replace the old control system for a more computerized one stretches me. I got help from IT people and contractors, but they know little about the real operation conditions. This makes me feel desperate to find the knowledge that I need to get the job done. I know some people in the group from other working units might have same problem. That's why I join them and try to find out how they deal with it.*

People in Chalco usually work at their own organizational units and most of time they have to concentrate on their own work. When the needs arise for knowledge, they immediately tackle the question: "where will I get this knowledge from?" People have

to find a way which they can get the knowledge. It is the Learning Groups that provide opportunity for people to meet together and break the intellectual isolation. In the ZC's case that with the application of new industrial technology, people are often put on a new project where they feel they haven't got sufficient knowledge on a certain area. In the search of new knowledge, they need work cross department boundary and break the intellectual isolation to meet others. In Chalco, the members of The Learning Groups came from different business units with different expertise and skills. Hence, participating in Learning Group creates opportunity for members to get knowledge out of their working boundaries and develop their own social network. Also, when individual's work is highly laboratory based, they need to link their work in practice and look into the practicality of their work outcome. LB described that

I am the only spectrum analyst in our laboratory. My working task tends to be very narrow and focused. I think most of people in the production unit don't really fully understand what I am doing. They only concerned the analytical result. When I work independently, it can be very lonely and isolating. When I am on my work it is important not to bury myself too much in my own daily task but to be kind of look out , thinking about the way in which my analytical results are applied in the real production and the way which I can connect to other people. So by joining the group, it isn't necessary playing on my strength or my area of expertise, it's kind of forcing me to make connections with other people, pay a bit more attention to what they're doing and think about what I am doing, how what I am doing might contribute to what they are doing.

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From what has been said above, people need to have opportunities for people to meet to talk about their job. Otherwise, it would be difficult for them to challenge each other's ideas and to build relationships. HQ commented that '*we see each other more because of the group and that, in practical terms allows us to say we've got to talk about such and such.*" Hence, the group is their meeting point and meetings are important for getting together, to meet each other for that relationship to flourish. LD confirmed that

> *There is often not an opportunity for people in the different units to meet or do anything collaboratively. We wouldn't have the same point of contact if we didn't meet through the group. It wouldn't have happened without the forum and we wouldn't have had such close contacts.*

Another interest point made by YQ, who just join the company as a graduate trainee not long ago, is that by joining the group he had chance to get to know quite a few senior staffs who can provide many help for his job. He explained that

> *The reason why I go to the Learning group is to get something for a change. I joined the company one year ago after finishing my university study and am working as trainee. I am on my team most of time with my own work. I don't have chance to attend meeting and discussion like this. It's just nice to hear what other people are doing as well as to meet people from different job positions. I like to listen to those very experienced people talking about their job. I think it is important for me to understand the whole picture of our company. I got the*

theoretical stuff from university. But Learning Group just provides the opportunity for me to link that stuff with real industrial knowledge.

In light of these comments, it is clear that participants are aware that at times, the nature of their job is too focused and by participating in these Learning Groups can help them overcome isolation in their work. Hence, it is apparent that individuals need to have a forum to talk about their work and get to know more people. The Learning Groups have created this opportunity for members to meet on an ongoing basis, especially those with common interest. Members found these meetings valuable because they might know each other but they may not have the chance to meet periodically. In other words, these The Learning Groups bring people together physically and this is valuable because most social interactions of knowledge sharing occur during the meeting. If they did not have the meetings, they would be really disconnected and knowledge-sharing would not happen.

The knowledge-sharing begins at the points when the needs for knowledge are recognized. Learning Groups are not only a platform where people can meet together to share knowledge, they are also the places that foster creativity as members actively have informal discussion about their work. This stimulates people's thinking, encourages them to explore new knowledge and also help them to find the right knowledge holder. It was mentioned by people that the inspiration and urge of explore new knowledge come from the informal chats they have in the meeting. LB confirmed that *"my thinking is stimulated by being part of the group discussion. People said that*

a kind catalyst is very effective in their chemical reaction. But I know it doesn't work

on mine. I realized there are issues about timing and pressure. So I want to know more

about this. That is how the need of knowledge sharing comes out."

People commended that their participation in the group is challenging as it helps refine the thinking and contribute to development of new insight. The Learning Groups initiate thinking and help spark-off new idea which may lead to necessary knowledge seeking activities. CF has proved that.

> *There was a time when I was discussing about a particular area of water pipeline*
>
> *design with another member. Most of people were not familiar it. It was an area,*
>
> *quite good and it was about the project which I was doing. And two other*
>
> *members joined in and started to throw idea around. I never think other people*
>
> *can have such the idea about my work. I thought that it was really good idea.*
>
> *Although I am not sure weather it is practical, it is worth try out. So we decide to*
>
> *work together to do something and I need to know some more about their work.*

It is natural that meetings in the Learning Groups can provide the unplanned opportunity for the accidental coming together of ideas that may lead to sharing knowledge with each other. Therefore, the communication and discussion between members opened up new way of thinking and this helps people to identify the need for sharing particular area of knowledge.

The Learning Groups link people from different part of organization and help them to

find a way which they can get the knowledge they need. In Chalco, identifying the knowledge holder appears to be one of the most important parts of tacit knowledge sharing process. From interview and studying company's internal documents, the researcher found that there is company intranet that all the employees can get access to it. However, the information for the ordinary employees is very basic and some of them are just newsletters. Under the influence of the Chalco's hierarchical organizational structure, there are very strict rules and policies, indicating whom and how to get the detailed information in the company. As the result, when people search for knowledge, they have to spend a lot of time and effort to find relevant people in the hope of getting some useful advice and knowledge. On the other hand, The Learning Groups have been seen as important media for identifying the right knowledge holder as this is where the most time can potentially be saved by people who can rely on their personal network developed within The Learning Groups. LD pointed out that

> *Finding the right person who has the knowledge is the most important factor when we try to share the tacit knowledge. It's not like something that you can find just by clicking mouse or checking the list. This is something that most of time you don't know where to find. Asking people for help in the group is best way to do it. The reason for that is that it certainly is immediate. In the group I can just ask and quickly get information that I need, because people in an expertise circle know to each other.*

Unlike the explicit knowledge, people may search from database or internet. Tacit knowledge is embodied in people's mind. So identifying the right knowledge holder is the key for the efficient tacit knowledge sharing. In The Learning Groups, people come from different department and unit, sometimes even different profession. They may also have their own people network. Hence, using the member's network is efficient and effective way to identifying the knowledge holder, saving a lot of time. Confirming LD's assertion, SB provided an example that

When I used the knowledge data base to find someone with expertise, A and B were named all over this stuff, but they left some time ago. So I wasted a lot of time and had to give up and asked someone in the group instead.

A search on the explicit databases, documents will indicate who the author was, or who had involved the particular job. However, sometimes the information is not up to date, people involved the job had left, or the information was out of date in some other way, which is useless to people.

Many people commended that they prefer to ask people directly over using the internet or database when they search for knowledge. For example, AG asserted that *I go to the meeting to find the person. My experience has always been face to face. That is best. Go to somebody that knows something. Alternatively, go to somebody who is recommended by people in the group as the knowledge holder. It's quite straight way. I can also ask people to introduce me to that person. It's much better than sending email or making phone call if we don't know each other.* Chalco is a very large

organization and employs over 20,000 staff in one local division. If people never have any working relations, they hardly know each other. So using the people network developed in The Learning Groups is effective way to find the relevant knowledge holder.

There is another advantage for using network in Learning Groups to identify the right knowledge holder. As YJ stated that *I think people are really effective. Unlike the computer, people contextualize the information. If I was doing a search from database, I might come up with answers, but how do I interpret the answer.* As the internet or database only provides basic information, without further explanation and verification, people are not sure whether the information is what they need. YQ further echoed this point

> *……I am looking for information, and the context of how to use the information, which is why I find people useful. And they can either give it to me, or point me to other people who may know it.*

In Learning Groups, people want to provide information as precisely as they can. They may know more than one person relevant to the knowledge and the decision has to be made as to which knowledge holders are most relevant to the knowledge that people are looking for. Through the communication and interaction in Learning Groups, people can better understand what they are looking for so that others can provide information much more precise. NS claimed that

Often the process of finding the right knowledge holder allows me to understand better what I am looking for because people keep asking me back to verify my questions and confirm the context. This is the way that in the group people usually does. You have to ask them for their time anyway, so once you have their attention, you might as well gain full commitment for more time here.

Through the verification and confirmation within the Learning Groups, people can have a firm judgment as to who has the up to date and expert knowledge in the specific area of interest. This acts as an information quality control process, which ensures that the information is highly relevant and credible.

4.4.2 Developing the Informal Learning Partnership among the Group Members

From the interviews, the researcher found that one of the Learning Groups' important activities is the 'Group Learning Time'. Every Learning Groups in the company have to periodically schedule a group meeting, called 'Group Learning Time'. During the meeting, every member have chance to do a presentation. They can freely choose a work-related topic that they think it is worth to share with others. Follow the presentation, there will be the question time and the presenter will accept questioning and challenging. XZ stated that

I especially like to go to Group Learning Time meeting. It is nice and informal enough. And it is not connected with my department. It is much easier to communicate with experienced staff. If I say anything that is not their taste,

people just have a laugh. Because I think they get used to this kind of challenge.

Because of some of the Chinese hierarchical cultural consciousness, in Chalco junior employees (younger, lower-position, or newer staff) are expected to follow seniors' advice. Seniors are supposed to teach or pass on their knowledge and experience to juniors in organizations. As the result, in the company's formal education and training system, not everyone can have chance to share their thoughts and ideas with others. Knowledge sharing to some extend is just one-way flow. Chalco's mentoring policy for new recruits has facilitated employee's hierarchy consciousness. YQ expressed his opinion that

I think this traditional teaching method [one master, one apprentice] can force me to learn knowledge from an experienced staff member fast. But because he is my teacher, and I am new staff, I do not really want to disagree with his suggestions or express my own ideas. He will not like it.

In other words, following seniors' suggestions is the right way to show juniors' respect to them in Chinese society. But this situation causes an "unequal" knowledge sharing environment, because knowledge within the company flows from top to bottom only. While in the Learning Groups, everyone is equal and everyone can make contribution to the knowledge sharing. Many people stated that they had the autonomy, personal freedom and free to act independently in the Learning Groups because they are not bound by institutional or departmental boundaries and hierarchies. Participants felt released from moral or social obligation of acting within

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a particular role or acting out a single characteristic that constrained them from sharing. HY indicated that *there was no hierarchy. There is no member of staff from my department, no particular supervisors. There is nothing hinging on us.* This learning style enables them to independently pursue and explore their own ideas and creates an environment conductive and critical enquiry. As a experienced senior staff, ZQ also expressed his opinions that

Being in the group has forced me to be a bit more flexible and to think about ways in which I think I can collaborate with other people rather than just simply showing to people. So I think that some of challenges during the meeting are good for me. It kind of stretches me in ways otherwise I wouldn't be stretched.

Additionally, China has high level of collectivism in its society. In collectivist culture, individuals feel a moral obligation towards their in-group and lack of interest in those that are considered as out-group. This is significant for knowledge sharing behavior. In in-group, people feel the sense of belonging, strong intra-personal trust, which increase the people's motivation for sharing knowledge. In Chalco, the reason of people participating in the Learning Groups is because they feel emotionally involved and engaged. The Learning Groups as the knowledge learning and sharing communities, people have developed a kind of learning partnership with each other. As the result, people can feel the sense of belonging. As NP indicated that *"…… there is feeling of being connected. The feeling is that there is a fit between us. We are working in conjunction with each other".* In The Learning Groups, people build the

relationship over a long period of time through frequent interaction. After long period of time, people may have been emotionally connected, having the sense of belonging. LB reinforced this point that

There is a sense that other people are working alongside me and it is everything that goes with being part of our group.

In line with the Chinese traditional in-group culture, members felt happy and good belonging to these groups. People feel the moral obligation to the Learning Groups and they were in high spirits to contribute knowledge to the group. WK further reinforced that

.....being a member of this group, it gives me a sense of belonging and a sense of place. It also gives me the motivation to contribute and to be successful. Even though I am the only laboratory analyst involved in this group, I'm still part of community. Personally, that's very satisfactory way to go on. I still have my own work to do, but I'm also part of the team.

The Learning Groups also create the sense that there are a group of people for them, people who are caring and committed. ZC expressed that

I haven't been very active in participating in the group in the past couple of months simply because my managerial duty takes a hold back on that and it has been predominant. When that stops or slow down, I will certainly engage again. I know that there always is something that I can engage with. I have a group of

people who expect me to be there, who like me to be there. And you know that

they are there for you.

The Learning Groups create a place where people show their concern when member do not show up in meetings and they felt responsible for each other. People feel that they have an intellectual home, knowing that they belong to a place where they can go to when they need to talk or to work things together. LD commented that *"it is beneficial I terms of having a home, somewhere to go to talk to people."*

In Chalco's Learning Groups, members organize work-related group events but also organize some informal social activities outside of their working place. These activities fostered closer personal relationship and develop the sense of trust. In the interview, WK claimed that

> *In our group, we always organized some social events, such Karaoke evening,*
>
> *group dinner. It has helped me to develop networks and relationships with*
>
> *people that will continue to exist. I have made friends in the group. Even*
>
> *when we are out of working situation, we still keep in contact and sometime*
>
> *hanging out which is nice.*

Moreover, since members are not bound by hierarchies and together with the informal social environment, members felt comfortable to talk and this has created an opportunity for them to build and cement relationships. This led members to know each other at further level. They can chat on professional matters as well as personal

matters. NS illustrated that

> *It is nice to get to know people on a more informal level so I can talk about*
> *their personal past time, family that kind of things. It is very nice because it*
> *helps me get to know people as individuals and not just by their work in the*
> *company, you probably know someone working in a unit and do a job, and*
> *you say hello to them. But by talking about personal things, our relationship*
> *can get much closer.*

As the result, people interact with each other both at working place and outside of working place; they can develop a trust relationship and increase people's openness because they get to know each other better.

As identified in pervious section, Chalco has a competitive organizational culture. From studying some human resource documents, the researcher noted that Chalco is a company where the working relationship is governed by formal rules, policies and standard procedures. Standardization is one of company's development strategies. However, this caused some negative impact on people's knowledge seeking behaviour. When people identified the needs for them to learn some new knowledge, instead of asking colleagues, they choose to use their personal network, which is beyond their unit or department, to find the right knowledge holder. For example, HY explained that

> *People wants get promotion and pay rise. But there are rules and policies over*

there. In addition to meet those criteria, you need perform well in the job and also need to get good assessments by your superiors and your colleagues. So working here is not like "get the job done and go home". It is competition. You need to get on the road, keeping move. Otherwise, while other people get pay rise, you could end up with stay at bottom for ever. So it is reality. People keep knowledge till they find the 'right time' to share it. So I feel sometime people is showing off knowledge rather than sharing it with others. How can you expect to share knowledge with people who have such attitude? So I rather go to my group. Sometimes, that might not be straightway, but it at least makes you feel comfortable, just exposing my ignorance for the case of practicing. It just seems a very non threatening space to practice.

The meeting in group is very informal and people feel lesser pressure because there is no competition or people getting at your back. For example, SB motioned that "*there was no any scoring and nobody is out to win. Nobody is competing against to each other and nobody is seen as having to.*"

Some member expressed that the Learning Groups can give them maximum flexibility for joining the meeting, which means it doesn't have to be conflict with their formal jobs. For example, HQ has conformed that

The group is very informal and there is no pressure in the sense when you have time you can go in and when you are busy you just step back a little bit. If you can't go you can't go. But the very fact is that it exists and when meeting is called,

that is place you can go.

AG indicated that "*it was completely a non-threatening environment and I am not being part of anything that I have to fulfill, something I do because I want to. I felt very comfortable.*" It implied that when in the groups, members can forget about policy, power and rules. They talk to each other without regard to departmental or vocational boundaries. Therefore, the atmosphere is relaxed, informal and friendly. This creates an environment that is conductive for people to open up and share knowledge.

4.4.3 Developing like-mindedness

The process of knowledge socialization requires people to develop a shared mental model through experience sharing. This will lead to a mutual understand and facilitate the tacit knowledge to be articulated. One of benefits of the Learning Groups that people have highlighted during the interview is that they can develop the sense of like-mindedness. In Chalco, the activities of the Learning Group are closed linked with its members' real practice. Through participating in group's activities, they get chance to know the nature of other people's job, developing common interest and aims. ZZ has pointed out that

> *In our group, if there are some incidents or major overhaul occurred at any of our group members' working places, we often organize a group event to visit the site. The group member who works on that site will be playing as a*

tour guide to show us what it is, where it is and how this happened, etc. This is a really good opportunity for people to get a closed view about others' job. We all know each other and know what everyone does in their job. But by visiting the actual working place, we can really understand their working conditions and requirements. More importantly, it makes us think how their jobs are related to our own. So when next time, people talk about their work matters, we can have a better understanding.

ZH further proved that

I worked as a health and safety consultant in our unit, which is only person doing this job in our group. So we had a group event last year and got everybody to spend half day to work with me. People were very excited about that event and asked many questions. I showed them what I normally look at when I am doing a safety inspection and where the safety protection system is and how they work. I think they had learned a lot during the event.

Members indicated that they participated in the Learning Groups events, visiting other members' working place and getting chance to know exactly what it is like, where it is and giving them a better mutual understanding.

Another point the participants made during the interviews is that in the Learning Groups people can develop common interest and goals, working together to form synergy and leverage to solve working problems. This is because that in Chalco, many

working problems are related to different professional area. Since the Learning Groups have people from different professional areas, they can bring their questions and problems to the group discussion in the hope of find the suitable solutions. WK, who is a smelting technician in one of the production units, explained that

I was working on a project in our unit and was trying to improve the energy efficiency. After the group discussion, we decide that I would concentrate on the improvement of operation procedure which is my particular interest area. NS can work on particular things on changing the material of furnace, LD would concentrate on how to ensure the stability of power supply and so it will break down in this way. The general idea is you think how your skills and knowledge can fit into that, and would help to solve the problem.

Moreover, during the meeting members were seen to have been allocated and shared their work based on each others' strengths and skills. This is also evidenced in Learning Group where ZC confirmed that

When I tried to bid for project, quite a few people in our group had got involved. One person will do a budget planning and bring the report back to the group. I got the job of looking at what the major challenges in the project. So we allocated different task to people and depends on the skills of the group and maybe people's interest.

Hence, by bringing the work-related problems to the group discussion, people develop

a common interest and goal. They work towards the same goal but from their different professions. As the result, it can generate synergy and leverage. Members also indicated that people whom they are sharing knowledge with need to be at their level and have basic foundation of knowledge for the sharing to be successful and to be of quality. People need to understand their work and need to be talking at a level where one do not have to keep going back to explain. This adds on to the quality of sharing and avoids frustration. Through the group discussion to solve work problems, members of the Learning Groups also broaden their own knowledge boundary, facilitating mutual understanding, CF explained that,

> *I can't just discuss with anybody. I got to have a person that at least have a certain level of understanding of the complexity of the work that I am trying to disentangle. They don't necessarily need to know the intricacies of my work but they at least need to have a common understanding established. I have to make sure that the person that I am talking to understand what I mean by that word. Now if I just want to sit and throw ideas around. I don't want to have to go back to that level all the time as establishing a shared understanding. I need to know that the level of understanding just exists, that I can just share my thoughts straightway. In our group, I just can to sharing something without having to keep stopping to explain the terminology. These are the people I can hold an ongoing discussion.*

In Chalco, people participating in the Learning Group may come from different

profession, different working departments and units. However, they share the same goal but make contribution from different angles. They come together in the aim of learn from each other and find the solution for the problems. By participating in Learning Groups, it helps them to establish that fundamental understanding. It enabled members to fully immerse in the discussion and sharing, and enjoy it. ZC mentioned that "*I like the pleasurable interaction in the group because I don't necessarily get to talk to people who are not in my department understand what I am doing and are interest about my job.*" To share knowledge with a group of like-minded people because it creates opportunity to share similar opinions, idea or interest. This is valuable as they felt that people talk the same language and they understand each other. HY expressed that "*it is good to come together to meet people who think similarly to what I do and that it's good to share ideas and it's good to be able to liaise with other people*" while NP spoke that

> *As a quality controller, I often have to force people to listen to my idea. But in the group I just have people who have natural interest and motivation to pursue the high quality product. It's fundamentally important. I'm not having to persuade them, I'm not having to throw the view of we really need to be doing this. So I feel I can talk more and I want to share more with people. It's fundamental to our practice.*

In Chalco, people in different functional department or unit could have job-related conflict. For example, there are conflict between production team and quality control

team over the issues about production deadline and quality of product. Apparently, they have different aims and hardly understand to each other, let along sharing knowledge. By participating in the Learning Groups, they can find their common goal through interaction and discussion and develop the sense of like-mindedness. It is essential for knowledge sharing. LM further confirmed this point, and he excitedly stated that

> *Everybody is like-minded and is working effectively towards the same goal. It's really gives me a feel good factor which sometimes I don't get from daily working life as it can sometimes be full of conflict and be quite hard to get things done. To have a situation where every one around the table is working towards the same objective is like minded, value each other's contribution is really cheering me up. I remember walking out the meeting and thinking, that's what it's all about.*

This indicated that members of The Learning Groups feel good to know that their area of interest corresponds with people coming from different perspective towards the same aspiration. It gives them a sense of satisfaction and encourages them share thoughts and ideas with others.

Hence, people found that through keeping participation in the Learning Groups, they can develop a sense of like-mindedness, increasing the mutual understanding of each other's work Regardless of the differences in their area of profession, their education level and their working experience level, they reflect or ask questions from their perspectives. This contributes to the intensity and depth of discussion, facilitating the

sharing of tacit knowledge.

4.4.4 Developing a Dynamic Dialogue Environment

The emphasis of personal social network is the primary feature in Chinese society. People expect to be part of their own social network. It is also reflected on people's the knowledge seeking behaviour in Chalco. Good personal relationship helps people to find the right knowledge they need. But knowledge sharing is likely just one-off action. The tacit knowledge still remains implicit. In the contrary, the Learning Groups provide people with a long term dynamic knowledge sharing and learning environment and create a continuing dialogue channel. The examples below verify some of members' learning experience when participating in their Learning Groups. In his reflection, ZZ stated that he has learned a great deal of knowledge about smelting operation and process cost analysis. He believed that by learning some knowledge beyond his job boundary he can better understand other people's view and opinion. When he reflected the tacit knowledge such other people's experience and opinion on to his own job, he always finds that there are lessons to be learned which can be used in his workplace. He stated that

The fact that we work in different professional area has diversified our group. It offers an opportunity to know about other's working environment, learn their expertise, what kind of problem they often come cross and how they approach it. Over the time, it has really expanded my knowledge. What they were talking about might not directly relate to my job or even not my professional area.

Participating in Learning Group is a long period of activities. I have been in this group for three years. As long as you keep going, get yourself involved, you start to understand and gradually find something useful to you. That's the benefit. I found that there are lessons that could be brought forward to be used in my own job.

Knowledge conversion from tacit into explicit requires people to express themselves based on the mutual understanding. This understanding is built upon the ongoing interaction between members of group. But in Chalco, people may not fully appreciate the meaning of what other people try to delivery due to different educational background and experiential level. From the interview, people mentioned that during the meeting they discuss some particular job-related issues and learn from each other and it led to an increased knowledge when members bring in their specific knowledge and respective experience to the group.

Based on the relevant professional knowledge they gained from participating in the Learning Groups, members are able to better understand other people's experience, thinking and consequently can reflect the knowledge on their own job. Also, ZQ who has similar experience, noted that,

It makes think outside the normal area of thoughts. It also makes me engaged with material in a way that I haven't thought of looking at it myself before. I have been with the group since the beginning. I have learned a lot. Because of my job, I work with people from different department. I know what they do,

but I know little how they do and why they do. In the group, we have chance

to discuss some issues and ask questions. So I have more clear pictures in my

mind now. I can easily state my views about the issues.

As an experienced senior engineer, he has been cooperating with people from different units to carry on some projects. When he talked about his project in the group, he needs to explain some issues relating other people's job which is not his area. Now with the accumulated knowledge he learned in the group, he felt more confident to explain those issues to other people. Members also mentioned that the group has been useful in giving them ideas or solutions that they have used in their job or formal tasks, and it has become a critical collaborative tool to help them perform their job. They have applied these practices in their different functional jobs and this evidenced learning and the transfer of best practice. Like NP mentioned that "*it has also enabled me to develop useful practice that is beneficial for improving the quality control procedures and upgrading our product quality level.*" LD also claimed that

I was able to bring an enormous amount of experience of keeping stable

power supply in some unstable production operation events. I am glad to see

that people are interest about my experience. They ask questions want to

know more detailed information, such as national grid constrains, peek time

constrains. To my surprise, some questions are quite precise, using many

technical terms. The questions gave me new thinks and new ideas. Clearly,

they've learned a lot in the group. That's why we can keep our dialogue

going. We understand to each other and we have mutual benefits.

Members of the Learning Group bring, hear and learn the knowledge which is not necessarily their areas. It is very normal in Chalco. In the modern manufacturing company, people need to work across their traditional job boundaries and quite often have to work with others. So they are keen to share their ideas and thinking with their working colleagues. WF further emphasized that

In a wider sense I've been exposed to ideas in our group, we don't know

everything. I know something and I know a lot of things in my subject. You

know, that in it have been valuable...... We all have something to give and

take and start a discussion. For example, there is a valve design that is very

useful to the medium-pressure steam control. I am interested in the valve

design. I have not used it because it's not my job. It's not my area and need

some enhancement in this area so that I can have more practical idea. But

this is how I accumulate ideas.

In WF's example, it implied that members are aware that they do not know all of things and understand that knowledge in any one field is too complex to grasp. The Learning Groups create a unique social environment where people can have continuous knowledge learning and they can grasp that complicate knowledge. People mentioned that the Learning Groups is like a learning place which is different from the formal learning and training in their working unit. WK commented that "*there*

were no deadlines and we do not necessarily have to delivery any result to the company." Confirming WK's comments, YQ mentioned that

> *It is very informal and welcoming. It doesn't have to have an outcome. When I come in the first meeting I don't think I said anything (laughed). I just sat there. Some of points that I understand and some of points that I don't understand. But there was no pressure. I know I got plenty of time to get used to them, I do feel relaxed......Gradually you felt you were able to say something. Even if you said something that is not particularly brilliant no one is going to mind. So it is a good learning place.*

YQ's example indicated that the informal setting of the Learning Groups has encouraged members to relax and open up themselves for informal chats and gradually absorbing the knowledge.

AG mentioned that the learning method they used in their group is the another feature of this informal learning ground. He said that "*in my group, ZH told a lot of real safety incidents as examples to explain things and also try to link my job to explain things. So for me they are absolutely vivid learning and training. It was hugely important to me from the level of knowledge development and application of knowledge in real production. It's very important.*"

In the groups people use the real case study method to learn others' hands-on experience. It is very useful for people to articulate their tacit knowledge. Members

also expressed that through their participation they learn about practical tips and hands-on experience in a wide broad range, which is impossible to get from their formal training. LB stated that

> *When people talk about their story during the meeting, I enjoy listening it because I can always learn something which I normally wouldn't learn at my department. I have training program in my unit, but of course they only tell you what really matters to your job. You wouldn't get such variety in my group. Plus it is not theory, it's real stuff and problems. It's really interesting and is another way to learn.*

Other comments reflected that the Learning Groups permits a newcomer or novice to be involved in the practice and to be exposed to the wider learning community. It provides them with opportunities to engage with members who are experienced. This is evidenced in the interviews. HY stated that he has gained understanding and skills of working knowledge in the wider context.

> *The knowledge and expertise I've gained because we've got the two people who have many years of working experience in power station. So they are sort of a lot ahead of me. At the beginning, I didn't really understand the things they were discussing. But after three months or so, I gradually start to understand the point. Here participating is the key. You listen to them, asking them. I can learn from them in their discussion and what they bring to the group. They always come up with something new......It's not just about the*

knowledge in their professional area, but also ways of doing job, about

different approaches to tackle problems.

In addition, in the Learning Groups even members appreciated the common perspective developed through the social interaction, with the increasing knowledge and comprehension on each other's professional area they do not have to convince each other to see their point. Members of the Learning Groups do not mind if others have alternative views to raise a debate around the area of interest because members denoted that this made the discussion more meaningful. For them, Common perspective or like-mindedness does not mean homogeneity. Instead, to have people coming from different perspectives may cause contradiction and paradox during the dialogue, which in turn making the discussion more rewarding as members can gain a wider view of their subject and stimulate creative thinking to the original knowledge. Eventually, they are able to re-contextualize the tacit knowledge and make it explicit. XZ commented that

We are working in different setting and we have got a mix of people......We're

multi-disciplinary and we are lucky we have got people in the group who are

all experienced in some area so that is the benefit of it and I can get feedback

from others. So for me I get a lot broader perspective as well.

This exemplified that members found these different perspectives valuable as they believed that these are feedback or comments from knowledgeable peers. They welcome the exchange, the interaction and the availability of feedback because it was

noted that they gained insights from responding to questions and then comparing their response with others, gauging their ideas and expertise. This is evidenced in NS's example where he indicated that one of the greatest benefits is the rich debate and questioning offered by the community since they are coming from different department and has different professional areas. He mentioned that not only is the debate and questioning but also is the exposure to a variety of viewpoint and experiences that gives him broader perspective about his job.

> *In term of my job, it is very useful because the group is inter-disciplinary and that I think for me has been really helpful. For example, there are some of things to do with the construction of a setting bath. I was asked how to decide what kind of insulating layer to choose and what the specification of the stirring mill suitable for the setting bath. It is interesting to look at how this occurred. I don't often get the chance to interact with people outside your own department. The questions I was given are fascinating. People asked questions from their disciplinary perspective, it has given me opportunity to address people who weren't in my area and just get different sets of question. I get to know what other people concerns about the construction and bring it into my mind and usually that is useful.*

Moreover, members recognized that there are many solutions or ideas to each problem and that by proposing theirs, it may get critiqued and they will find a better solution or acknowledgement that theirs is alright. Thus, they share ideas, get help, learn about

new ideas and verify thinking. In CF's case, he gave a presentation and he claimed that

>*I have had a very good discussion with them and they have given me lots of ideas and so it's been great really. It helped to confirm things that I have been wondering. You know I have an idea, I have something that I am interested in and I'm not sure what other will think of it. It is just an idea and not much work has been done on it. It is nice to know that for that area is worth spending some time on it. So it is giving me all sorts of information from discussion and the idea might be able to put into real practice.*

Therefore, these discussions has created a forum where members bring in their own style and different perspectives that the individual would not have thought of or even known about. Sometime people had very positive response, but sometime they were questioned with doubt or even challenge. AT affirmed that

>*It is interesting to see how different people respond to it. It is also interesting to see what different people say different things and say things in different ways. People bring to it their own particular interpretation or their own particular set of interest. Sometime people try to take things into the direction which is entire different from original thought and questioned about my direction. It makes me think differently. You know sometime I might be wrong. But anyway, I think differently. My experience can applied in this area and how it can be used in another area. So it is interesting to listen to and I enjoy*

it really.

Member further claimed that these types of discussion keep them on the cutting edge of their functional discipline and The Learning Groups has helped to inspire them to initiate efforts to further widen and build up their area of knowledge, YJ explained that

> *It happens here that somebody is asking something a bit obscure even it is within my area. What I do is that I am trying to tie in to what I know. I would think about how I would contribute to the discussion and how I think about the topic. So I would try to use new information to see how it alters my own perceptions. And possibly in fact, I always pick up ideas like that. It might spark off some new ideas that are within different context.*

This demonstrated that there is mix of ideas with people bringing their own tools, background, past experience and personal perspective into the discussion winch stimulating new thinking, ideas or re-contextualize the knowledge across normal working department and personal paradigms. LD stated that these discussions were *"handy and very useful because there is a lot of theoretical paradigms and cross over smelting, R & D, electronical, automotive control and electrical. So I can draw upon that general basis that also gives me a common ground and I get to see how it is interpreted differently in different areas."* ZZ, a member of another Learning Group in planning and budget department confirmed that *"the activities that happed here are sort of cross-fertilizing really. I sit on discussion with one people and I bring back*

ideas for another people here. I hear things from other members of group and I relate

my experience to have some new thinking in my area and all that sort of things."

From these comments, they demonstrated that members of group are aware that multiple minds are better than one and this is one of reasons why they participate in the Learning Groups. They have used these groups as forums to get questions about their job from different perspectives and re-contextualized the original tacit knowledge with those perspectives and make the tacit explicit. As these exampled illustrated, there is clear evidence of the benefit of getting alternative perspectives. Given that feature of members crossing divisional boundaries, the above have shown that ideas expressed are never the creation of solely of individuals. It is in fact rooted in the relationships and communications of group members who have directly influenced their thinking and help to facilitate tacit knowledge to be converted into explicit knowledge.

When the tacit knowledge is articulated, people need to reflect the knowledge and think how to link it with their own practice. They may have new ideas or new thinking and there need to be a place where they can bounce it off or test them out. NS pointed out that

> *I just have those sparky ideas running through my head and the way those sparky ideas turn into something is when I have it and it's fresh,I can talk to somebody. I need somebody to bounce it off.*

ZH mentioned that "*if I was thinking about putting a new bid or considering something I could take that to the group and they allow me to brain storm and also give some good feedback.*" This pointed out that the group provides an occasion for members to learn how to explicate their thinking, especially those half-baked ideas. It enables them to throw or bounce off ideas, be reflective and to establish their thinking. Members found this valuable because the process of tacit knowledge articulation can result in feedback and solutions. Quite often during the process of articulation, they can listen to themselves and may see the answers for themselves. XZ indicated that "*it is not just talking through certain things that I have been thinking to me but I need to articulate it to other people to see what they may think and also to hear how it sounds.*" Members found the Learning Groups act as sounding boards to ponder on common issues and explore ideas. As they spend time together, they typically share insight and this help solve each other's problems since they can get other people to listen to their situations, their aspirations and their needs.

In short, the comments above reflected that people found that the Learning Groups can develop a dynamic dialogue environment. In this environment, members learn, share and interact with each other, fostering a continuing dialogue channel. They use different learning method, such as incident case study. They allow people to provide different view, encourage debate, and discuss issues from different perspectives. This has helped them articulate their tacit knowledge. As members reflect the articulated tacit knowledge on to their own practice, the Learning Group act as the sounding board to test their ideas and thinking. This helps members to translate the tacit

knowledge into their own practice.

4.4.5 Building and Maintaining Group Knowledge Repository.

As the member of the Learning Groups exchange information, it often creates a body of knowledge through meeting notes or threaded discussion. It could contains some important explicit knowledge as member often write down some key points of an idea, particular solution to problems or summary of a discussion. This information can easily become some simple disorganized insights if they are not edited, categorized and stored in time. In Chalco, building and maintaining a group knowledge repository through managing the information generated through the group meeting and discussion has become one of important group common activities in the Learning Groups. As the founder and group coordinator, ZC has explained that

> *It is kind of rules in our group. When we started this group, we agreed that we all have responsibility to our group knowledge repository. At each meeting, we have pre-arranged group secretary to take and edit note for the meeting. Normally at the end of each meeting we spend some time to review those notes. Because those notes contain solutions to specific problem, people's reflection to an incident, an innovative idea for improving our operation, they are all valuable products from our group meeting. When we review those notes, people can add some points which haven't been taken or equip the reflection with some real cases. Eventually, if everyone is happy about these notes, we'll keep them in file. At the moment, we still use*

traditional paper file, we hope we can use some IT technology very soon.

ZC's statement indicates that the knowledge repository contains "solutions to specific problem, people's reflection to an incident, and an innovative idea for improving the operation", which are people's understanding and interpretation of other's tacit knowledge. This is the result of group members' regular social interaction, persistent communication and learning in the Learning Groups. It is form of explicit knowledge which can benefit both to the individuals and to the company. CF confirmed that

The knowledge files are always ready for group members to review and to search information. Whenever they need, they always can come to see me to browse the file or borrow away. Because this is group collective assets, everyone has right to use it.. There are relevant categories; they can search information by referring those categories. On the other hand, because we are sponsored by our company, we need make some contribution to the company. So the knowledge repository can be seen as a contribution we made to our company. I am appointed by the company as group coordinator. So every quart, I must generate a group report to the company. I include some useful information, such as suggestions to any aspects of our company operation and innovation ideas, into the report for the senior management to review.

The meeting note usually was organized by the actual date. However, because of the informal nature of the Learning Groups, sometimes the topics were overlapped and are not easy for people to read. In Chalco, members of The Learning Groups have

common reasonability to categorizing the information and knowledge generated during the meeting. They use more than one taxonomy methods, such by meeting dates, by subjects, by different working units or even by the features of information. Every groups has their own taxonomy method to meet the members' knowledge seeking need. For example, SB explained that

> *In our group, we categorize the information according to people's disciplines. As the result, people in our group all gave got some job to do with the knowledge repository. People need to maintain the category relating to their own discipline. After each meeting, people select relevant material produced by duty group secretary to put under each catalogues. I know that some people also create sub catalogues according to the features of the knowledge, such basic general knowledge or knowledge with real case. Basically, design of the taxonomy so closely to the members' practice needs make both contributions and access to the community's knowledge more efficient and more engaging for members.*

In fact, creating and maintaining the knowledge repository requires large amount of work to do. It is impossible for anyone to work individually on managing the knowledge. However, people commented that in The Learning Groups people tend to combine their efforts working together to create a synergistic effect. As XZ stated that

> *Each of us was providing a different element of what will be required to the job. It felt like the pieces of wood that come together to have a bonfire. It's*

like the right people with the right knowledge in the right place and that was

important to moving forward.

Therefore, members believed that through joining the Learning Groups, they can pull together their skills and resources by allocating and sharing work according to their expertise and skills. This led to a highly efficient work to convert and manage knowledge as well as a stronger representation as a group.

In summary, the findings above have presented that the Learning Group in Chalco facilitate knowledge sharing from five aspects. Since this research uses the Nonaka's (1994) organizational knowledge creation model and explores how the Learning Groups facilitate tacit knowledge sharing (socialization) and the knowledge conversion from tacit knowledge to explicit (externalization), the researcher tried to put the findings in the format in line with the process of socialization and externalization. The Table 4.3 has summarized the findings above.

	Findings	Justification of Findings	Evidence Found in interview No.
How the Learning Groups facilitate knowledge sharing in Chalco?	Overcoming the barrier of the hierarchical organizational structure and building a platform for sharing knowledge	1.Heterogeneous membership allow people from different business units with different expertises to meet together; 2.Forster the creative thinking to stimulate the need for sharing knowledge; 3.Developing a network to help people identify the knowledge holders..	2,6,9,10,11,12,13, 16,19
	Developing the informal learning partnership	1."Group Learning Time" creates opportunity for everyone to get involved into learning and sharing activity; 2. Learning partnership creates a sense of	1,2,3,4,8,9,10,11, 12,13,16,18,19

	among the group members	belonging; 3.Group social events help people develop close relationship; 4.Informal learning atmosphere create freedom for knowledge sharing	
	Developing like-mindedness	1.On-site group activities increase people's understanding about members' working scenarios; 2.Discussion focusing on problem-solving develop common interest and aims and generates synergy and leverage; 3. Participating group activities leads to increased personal working knowledge and facilitates mutual understanding.	4,6,7,8,11,15,18,20
	Developing a dynamic dialogue environment	1.Focusing on fostering long-term knowledge learning environment and developing a continuing dialogue channel; 2.Incidents case study helps people articulate their tacit knowledge; 3.Provide the alternative view to raise debate; 4.Group discussion used as sounding board to facilitate new thinking.	1,2,3,4,5,6,8,9,10, 13,14,15,16,17,20
	Building and maintaining group knowledge repository	1.Recording people's reflection and thinking facilitate knowledge translation; 2.Categoriezed contextual information helps people translating the articulated tacit knowledge; 3. Facilitating knowledge to be further internalized as organizational knowledge.	3,6,11,19

Table 4.3 summary of how the Learning Groups facilitate knowledge sharing in Chalco.

4.5 Some Issues of the Learning Groups in Chalco

From the analysis above, the Learning Groups in Chalco have clearly shown benefits on facilitating knowledge sharing and knowledge conversion in the company. However, some members of The Learning Groups have also mentioned some issues

and concerns about negative impacts that The Learning Groups have caused on the knowledge sharing in the company.

4.5.1 The Value of Intellectual Property

The Learning Groups create a natural environment where people can share and learn knowledge. The shared tacit knowledge can be interpreted and re-contextualized so that it can be converted into explicit knowledge and is stored in the knowledge repository. The explicit knowledge is usually regarded as group asset and all of the group member can have benefit from it. In Chalco, based on the knowledge repository, the coordinators of each the Learning Groups also have produce knowledge report to the company. This is the part of company wide knowledge management initiative where the company can utilize the knowledge generate from The Learning Groups to improve its operation efficiency. However, during the interview some of members expressed their concerns. LB has told one of his experiences.

> *Last year the production unit A has successfully applied a thermal recycling technology into their operation. This idea actually came from our group. We had discussion about turbine waste vapour recycling in power station and possible application in the smelting operation. This idea has been highly recognized by our company. As the result, they used unit A as the first experimental location to try the idea. But none of us had been involved in the project because nobody in our group works in unit A. The project seems quite successful, but we felt we had been forgotten. People say you had bonus for*

this idea and the group is get more support from the company. But this is not

the all about. It is about the value of the original idea and real value that we

bring to the company. I am not trying to say that we were used by the

company because this is one of aims of our group. But I do feel that our idea

had been easily taken away.

In Chalco, if any The Learning Groups make contribution to the company knowledge development they are usually rewarded points which can be redeemed for the funding to their group. But group members don't see that he cash reward can reflect the value of their idea, especially when their idea has directly made contribution to the company development. As member of the same group with LB, LM echoed that *"we are glad to see that our idea has made difference to company's energy-saving project. We would be much happier if we could be involved in that project in some way and we could all get benefit from that."* In Chalco, followed the successful completion of a project like that, apart from cash reward many people involved could get promotion, publish a paper, which are important to their personal development. So that is why the group members feel that they were left out. This potentially could damage the members' motivation for knowledge sharing in the Learning Groups. As the group coordinator, AG expressed his concern that

I know that our company is expecting us to make contribution to its

development. That's what we here for. Company provides time, space, funding

and all sorts of resources. But people coming here also want something for

themselves. They are here for their personal development. It is possibly the motivation that keeps our group going. If their idea hasn't been valued before other people use it, it is just not right. It is probably only an internal issue, but may affect the Learning Groups seriously, because people care about their knowledge repository and they think that is their asset. They are the result of the intellectual discussion in the group and don't want it to be mistreated.

Although the Learning Groups in Chalco is partially company supported group and is part of company's knowledge management initiative, there is no any policy and system to measure the value that The Learning Groups created for the company. Therefore, the reward might not reflect the contribution that members made. LM stated that *"I am not against the company policy. Support the group is a good initiative. I mean that they could make things even better and treat this more seriously. In return people could also make more effort."* ZH further suggested that *"there always have more things we can do. The knowledge repository is precious for us and is also precious for the company. So it is in the best interest for both company and our group to have some kind of system and make things better."*

People in the Learning Groups are aware that they are the part of company knowledge initiative and they are happy to make contribution to the company. On the other hand, they see that the knowledge repository is their group intellectual asset. When company uses it, they expect their asset to be valued and their contribution is to be

valued. So the company should respect the group's intellectual property and develop a more rational system to measure and manage the value the Learning Groups has contributed to the company.

4.5.2 Relationship with Non-members

Although the Learning Groups in Chalco is supported by the company, it doesn't mean that they have been institutionalized by the company. In fact, the Learning Groups still enjoy the great degree of informality. The company has little interference on group's activities. The company, members' formal working units and other non-members may not be aware of their meeting, discussion and other social events. This could cause a misplaced perception towards the Learning Groups by non-members and lead to negative impact on the relationship between group members and their formal working colleagues. WF stated that *"one of my colleague asked me about our Learning Group and he was wondering why I can take time off to go to the group event. He asked me why he hadn't been invited to join the group. You know according to the rules our group coordinator only can invite a limited amount of people to join the group because they don't want affect the company's normal business operation. Not everyone can take time off to participate in group event. I can feel that my colleague think it is not fair for him. I am afraid that he could have a misunderstanding about the Learning Group."* WF's story indicates that not everyone in the company is aware of the rules and policies of the Learning Group. This could lead to the resentment about the Learning Group, such as jealousy or a misplaced

mistrust.

These potential issues of the Learning Groups are not coming from the groups themselves. They are caused by pitfall of the company's knowledge management policy or by other non-member's wrong perception about the Learning Groups. So the company should take some measures to remove any negative perceptions about the Learning Group. The Table 4.4 summarizes the findings above.

	Findings	Justification of Findings	Evidence found in interview No
The issues of the Learning Groups in Chalco	The Value of Intellectual Property	Lack of recognition to the value that the Learning Groups has contributed could reduce the member's motivation for participating in the group.	7,10,16,20
	Relationship with Non-members	Limited membership and lack of transparency of the recruitment policy for group lead to resentment or negative perception about the Learning Group.	5

Table 4.4 Issues of the learning Groups in Chalco

4.6 Summary of the Findings

In summary, the researcher use narrative analysis method, combining the data from the company's internal documents and the in-depth interviews, to understand the underlying meaning of interview accounts. The findings have presented the barriers of knowledge sharing in Chalco's social and cultural context, showing the influence of Chalco's social and cultural factors to the knowledge sharing in the company. Following this finding, the chapter revealed how the Learning Groups facilitate knowledge sharing in Chalco's social and cultural context. Since this research adopts

the Nonaka's (1994) organizational knowledge creation model and explores how the Learning Groups facilitate tacit knowledge sharing (socialization) and the knowledge conversion from tacit knowledge to explicit (externalization), the researcher tried to put the findings in the format in line with the process of socialization and externalization. In addition, some issues of The Learning Groups in Chalco also appeared from interview analysis. These issues are just some negative consequences or other people's misperceptions during the Learning Groups' development in Chalco. The Table 4.5 is the summary of these research findings. The next chapter will use more holistic approach to discuss how the Learning Groups facilitate knowledge sharing in Chalco and will study and interpret these findings more in-depth, explicating its significance in the Chinese organizational environment.

	Findings	Justification of Findings	Evidence found in interview No
Knowledge sharing barriers in Chalco	Hierarchical organizational structure	1. Complicated relationship between departments and units has negative impact on the knowledge sharing; 2. Knowledge flow is restricted between top management and front line staff; 3. Lack of chance to meet people in other units means lack of chance for knowledge sharing.	4,5,7,10,11, 15,19
	Individual's hierarchy consciousness	1. Following seniors causing knowledge sharing only as one-way flow; 2.Lack of dynamic discussion, simply listen to it and accept it, which is ineffective for tacit knowledge sharing.	3,9
	Personal network- "Guanxi"	1.Only for sharing explicit knowledge, tacit knowledge still remains tacit; 2.Knowledge remains personal	6,16,17
	Modesty	1. Discourage people from expressing their opinion; 2. Choosing not to speak out in the group limits the dynamic group discussion.	2,20
	Competitiveness	1. Competitive internal environment reduces the	2, 12, 13

	in the organizational culture	motivation of co-operation and knowledge sharing; 2. People regard knowledge as their personal advantage and try to keep it to remain competitive in the job market.	
	Low organizational commitment	1. Less motivation to seek knowledge; 2. Less motivation to contribute company's knowledge development	8,17
How the Learning Groups facilitate knowledge sharing in Chalco?	Overcoming the barrier of the hierarchical organizational structure and building a platform for sharing knowledge	1. Heterogeneous membership allow people from different business units with different expertises to meet together; 2. Forster the creative thinking to stimulate the need for sharing knowledge; 3 Developing a network to help people identify the knowledge holders..	2,6,9,10,11, 12,13, 16,19
	Developing the informal learning partnership among the group members	1. "Group Learning Time" creates opportunity for everyone to get involved into learning and sharing activity; 2. Learning partnership creates a sense of belonging; 3. Group social events help people develop close relationship; 4. Informal learning atmosphere create freedom for knowledge sharing	1,2,3,4,8,9, 10,11, 12,13,16,18 ,19
	Developing like-mindedness	1. On-site group activities increase people's understanding about members' working scenarios; 2. Discussion focusing on problem-solving develop common interest and aims and generates synergy and leverage; 3. Participating group activities leads to increased personal working knowledge and facilitates mutual understanding.	4,6,7,8,11,1 5,18,20
	Developing a dynamic dialogue environment	1. Focusing on fostering long-term knowledge learning environment and developing a continuing dialogue channel; 2. Incidents case study helps people articulate their tacit knowledge; 3.Provide the alternative view to raise debate; 4. Group discussion used as sounding board to facilitate new thinking.	1,2,3,4,5,6, 8,9,10, 13,14,15,16 ,17,20
	Building and maintaining group knowledge	1. Recording people's reflection and thinking facilitate knowledge translation; 2. Categorized contextual information helps people translating the articulated tacit knowledge;	3,6,11,19

	repository	3. Facilitating knowledge to be further internalized as organizational knowledge.	
The issues of the Learning Groups in Chalco	The Value of Intellectual Property	Lack of recognition to the value that the Learning Groups has contributed could reduce the member's motivation for participating in the group.	7,10,16,20
	Relationship with Non-members	Limited membership and lack of transparency of the recruitment policy for group lead to resentment or negative perception about the Learning Group.	5

Table 4.5 the summary of research findings

Chapter Five Discussion

5.1 Introduction

This Chapter will provide a synthesis of the entire study by using more holistic approach. More specifically, it will link the relevant literature and past researches to discuss the findings. In order to promote the discussion, the Nonaka's (1991) knowledge creation model is used as a base to support the findings of this research. At the same time, the other literatures concerning the Chinese social and cultural influence on knowledge management and community of practice in the organization discussed in the Chapter 2 are also considered. This Chapter is divided into seven sections. After the introduction, the next section will summarize the main features of the Learning Groups in Chalco. The third section will discuss the knowledge sharing barriers in Chalco's social and cultural context and achieve the research objective two. The fourth section will explain how the Learning Groups facilitate knowledge sharing in Chalco and achieve the research objective three. The fifth section will explain the issues of Learning Groups in Chalco and achieve the research objective four. In the section six, the researcher developed the knowledge sharing model in Chalco's Learning Groups to further illustrate the main research aim that has been achieved in this study. Finally, a summary section will also be provided.

5.2 The features of Communities of Practice in Chalco

Community of practice exits in a wide range of social forms in terms of its development style, types of communication, structure, membership and relationship with organizations (as mentioned section 2.6.3). Much of variation among communities of practice is caused by its community intent, organizational purpose and their social environment. As Wenger *et al,* (2002) describe that communities of practice, like people, change and grow during their development as much as they do during their formation. They may contain new memberships and more levels of connection. New members bring new interest; market and organizational needs change; the community's relationship to the organization shifts. These changes give the new features to the community of practice and drive the community to new levels of activities. However, how effectively communities of practice perform with their different features is the central interest of this research. From the findings, the researcher identified the following features of the Learning Groups in Chalco.

5.2.1 Supported by the company

The communities of practice identified in Chalco were started without any intervention and development effort from the Company. People got to know each other through their pervious working relations and they spontaneously meet together for the purpose of knowledge sharing and learning. The form of those meetings was in line with the description of community of practice that Wenger and Snyder (2000) stressed that CoPs are "informal – they organize themselves, meaning they set their

own agendas and establish their own leadership" and that "membership in a community of practice is self-selected". With the launch of the knowledge initiative in Chalco, the company identified those groups as role model and introduced them to the whole company with the hope of facilitating the development of its knowledge management. The company drew up a formal document, giving CoPs the legitimate statue in the company. Those groups were also given an official name as 'Learning Group'. Some middle managers and senior engineers have been selected as group coordinators and they are responsible for calling meetings, setting agendas more importantly producing group report to the company. In addition, the company provides time, venue and other necessary resources for the group meetings. As the result, the 'Learning Groups' in Chalco can be seen as the company-supported community of practice and it is initiated intentionally by organizations to steward a specific capability (Lesser and Everest, 2001).

However, these features of The Learning Groups have led to some debate. For example, Stewart (1997) argued that "indeed, *managing (them) can kill them*" and Liedtka (1999) stated that "*communities of practice evolve, they are not created.*" Stamps (1997) also insisted that CoPs are natural part of organizational life and they will develop on their own and many will flourish whether or not the organization recognizes them and their health depends primarily on the voluntary engagement of their members. There is nothing one can do to cultivate communities of practice. Those standpoints have expressed the concerns about the change of CoPs' spontaneous knowledge-learning and sharing nature. However, there is evidence

derived from this research that the conventional view of CoPs may no longer capture what passes for a CoP in today's organization. There is a need for adaption and cultivation to the CoPs so that they can fit the needs of an organizational knowledge creation and sharing (Davenport and Prussk, 2000; Holden, 2002; Leonard).

Chalco is typical Chinese organization and is deeply under the influence of Chinese culture Confucianism (Bond, 1991; Pun et al., 2000; Redding, 1993). Confucianism attempts to establish harmony in a complex society of through a strong hierarchy (Park and Luo, 2001, p. 456). It highlights the sensitivity to hierarchy and the maintenance of social order via micro-units of a society, such as organizations (Lo, 1997). Under this cultural influence, there is a lack of just environment, no democratic leaders and no empowerment in the teams. From this perspective, it is necessary for members of The Learning Groups to seek top management support in Chinese corporations. Top management as sponsors of the community can provide various support to The Learning Groups. They are also key people in decision making because their opinions decide if these groups can continue in their organizations. In a Chinese company, this issue is more important than in a western enterprise. Martinsons (2004) has investigated the implementing of ERP systems in eight of Chinese enterprises including four SOEs and four PVs. The result was that all four successful cases were initiated by top management in contrast to all three cases of failure which were initiated by IT engineers.

On the other hand, just as important, Chinese company should create an environment

in which communities of practice can prosper: valuing the learning they do, making time and other and other resources available for their work, encouraging participation and removing barriers. Creating such context also entails integrating communities into organization, giving them legitimacy in influencing operating units and developing internal processes for managing the value they create (Wenger et al., 2002).

In Chalco, people are dedicated to their formal jobs. They will not put their personal interest, such as participating communities of practice before their daily working task. This is because China is a strong collectivism society (Sheer and Chen, 2003), where Individuals tend to prioritize the group interests higher than their own and make decisions based on the benefit the collective (Ho, 1979). In Chalco, the top management has given the Learning Groups legitimate status in the company and provides members with time, space and other facilities for their meetings. The company also appointed some group coordinators to promote the development of Learning Group. These coordinators work as agent to make the Learning Groups in keeping with the needs of organizational development. They delivery high level statement of group purpose and translate the general company's knowledge management mission into specific objectives and tasks for their groups. Based on the understanding of benefit of Learning Groups to themselves as well as to the whole organization, members can immerse into the environment that CoPs create and make contribution to knowledge sharing and creation.

If organizations fail to take active steps in this direction, communities of practice may

still exist, but they are unlikely to achieve their full potential. In the corporate environment, some communities may not develop at all, either because people do not have time and energy to devote to community development or people concern that their regular participation in CoPs will affect their formal working schedule. So without the active engagement and support of the company, it is difficult for members to balance the formal job and the commitment to the CoPs. The communities will depend on the spare time of members, and participation is more likely to be spotty. As the result, the CoPs will have less impact on the organizational development.

5.2.2 Heterogeneous membership

From the interview, the researcher has known that many members of Learning Groups got to known each other through formal cross-functional project team. People who work in cross-functional teams often form communities of practice to keep in touch with their peers in various parts of the company and thus maintain their expertise (Wenger, *et al,* 2002). Therefore, the Learning Groups in Chalco are heterogeneous communities of practice. The groups are built to bring together managers, workers, engineers and technicians, regardless of their job titles, to tackle a shared problem and sharing knowledge. It provides a platform and effective means of leveraging knowledge to solve problems or to make multi-disciplinary decisions (Mohamed, *et al*, 2004).

This feature of Learning Groups in Chalco could help the company become the learning organization and promote the development of knowledge management across the

company. Francis and Mazany (1996) concluded that to become a learning organization, an organization must develop a wide range of knowledge, skills and characteristics. Innovation groups involve collaboration of people from various functions, divisions, and entities that result in a blend of individual backgrounds, behavioral patterns, awareness and tacit knowledge. Mohamed (2004) stressed that this integration will strategically push the organization into the direction of holistic system thinking in which people envision the whole interacting system rather than focusing on isolated elements that form it. Senge (1990) points out that the learning organization is where people continually expand their capacity to create results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together. Learning in organizations takes place when the experiential awareness traverses across departmental boundaries and results in leveraging the strategically valuable knowledge to improve goods and services. The heterogeneous feature of Learning Groups in Chalco has led positive impact towards tacit knowledge sharing in Chalco. This will be discussed in the later section.   .

5.2.3 Using traditional communication method

Unlike in many Western companies, where they usually have fully functional IT infrastructure and people can virtually meet on online, Chalco only has very basic IT facility and people only use it to do normal paper work. There is a company intranet available for employees, in which people post message and information. However,

researcher found that most of people are reluctant to use it (for example, see section 4.2.2.3). There are several reasons for it. Firstly, the company intranet system is not fully functionally IT system. People cannot have dynamic interaction on line but post message and information, which is not effective for knowledge sharing. Secondly, Chalco is a manufacturing company and many people need to spend significant working on the production site rather sitting in the office. This means they cannot always get access to the intranet. Thirdly, under the influence of Chinese culture, Chinese people are generally reluctant to sharing their views without knowing to each other or having trust relationship with each other (Dodgson, 1994; Abrams et al., 2003 As the result, people prefer to use traditional face to face communication method for the communities of practice.

This feature of The Learning Groups in Chalco seems to have some positive impact on knowledge sharing, especially for tacit knowledge sharing. As mentioned in literature section by Schon (1983), perspective professionals no longer view their knowledge as a predetermined set of rules to apply to any given classroom situation, but as a practice which grounded in a system of values, theories and practice.   Haldin-Herrgard (2000) concluded that tacit knowledge cannot be given in lectures and it cannot be found in databases, textbooks, manuals or internal newsletters for diffusion. It has to be internalized in the human body and soul. Different methods like apprenticeship, direct interaction, networking and action learning that include face-to-face social interaction and practical experiences are more suitable for supporting the sharing of tacit knowledge. This indicates that the complexity of tacit knowledge is far from simply

post message and sharing information on the intranet, it requires people's interaction and informal learning processes, such as storytelling, conversation, coaching and apprenticeship of the kind of communities of practice provide. Ss as confirmed by Bennett and Gabriel (1999) that face-to-face meetings are the key driver for knowledge transfer and crystallization of new ideas and best method for manifestation of alternative opinions. Hence, this feature of The Learning Groups in Chalco has the positive impact on knowledge sharing and this will be further discussed in next section.

In summary, the Learning Groups in Chalco are intentionally initiated by the company and get many supports from company management. This is very necessary for the communities of practice to seek support from top management in Chinese organizational environment where empowerment and free-style of team development are not encouraged. For the individual group members, without permit and encouragement from the company, they wouldn't have much motivation to participate in the groups. The Learning Groups' members come from different professional areas so that people can develop and share a wide range of knowledge as well as new thinking. This may lead to positive impact on knowledge sharing in Chalco. Within the groups, people prefer to choose to use face-to-face communication method rather than the on-line virtual communication. This is the reflection that the importance of trust relationship in Chinese society to the knowledge sharing.

5.3 The Knowledge Sharing Barriers in the Chalco's social and cultural context

This research has identified five knowledge sharing barriers in the Chalco's social and cultural context. They are hierarchical organizational structure, hierarchical consciousness among its employees, personal network (Guanxi), sense of modesty, competitiveness organizational culture and low organizational commitment. These barriers are also the reflection of the Chinese social and cultural influence on knowledge management in organization. The following sections will link the literature about Chinese social and cultural context to discuss how these factors have become the knowledge sharing barriers in Chalco.

5.3.1 Hierarchical organizational structure

Under the influence of Chinese Confucianism culture, in Chinese society people tend to use hierarchy to establish the social harmony (Park and Lou, 2001). This culture has been reflected on the hierarchical Chinese organizational structure. In Chalco, the highly hierarchical organizational structure has caused complicated relationship between different departments and business units. They are can be competitors or servicer user and service provider. There could be some conflict in terms of performance assessment and bonus allocation, which hinders the flow of information across functional and hierarchical boundaries.

Hierarchical structure also means the centralized power and control. The information and knowledge flow is limited from top management to frontline staff. Some

organisational knowledge is only available to staff on a certain level. On the other hand, lack of empowerment to the employees leads to lack of motivation for the employees to contribute their personal knowledge to the company (Hankinson, 1999).

Another impact of hierarchical structure to the knowledge sharing is people's knowledge learning and sharing behaviours restricted within their own working boundaries. There is limited chance for people to cross their boundaries and meet other professionals. According to Nonaka (1994), physical interaction is the first step of knowledge creation. Constrained by the business structure and department rules and policy, many people in Chalco hardly get chance to have face-to-face communication with people from other business units.

5.3.2 Individual's Hierarchical Consciousness

The Chinese hierarchical culture also affect people's relationship in the society. In Chinese society, people accept the inequality as normal and generally tolerate or even intentionally foster the hierarchical order. While in contrast, people in the Western society regard anyone as equal in social status and try to reduce the "pecking" orders (Hofstede, 1994). When it comes to knowledge sharing, people in China are more sensitive to information and clues coming from authorities and more sensitive to knowledge including information on hierarchy (Bhagat et al., 2002). Because of this social belief, in Chalco junior employees (younger, lower-position, or newer staff) are expected to follow seniors' advice. Seniors are supposed to teach or pass on their knowledge and experience to juniors in organisations. As the result, knowledge

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sharing can be a one-way flow and junior staffs just simply listen and follow senior staff's advice and suggestions. There is lack of interaction among employees, which is one of the important factors for tacit knowledge sharing. For the tacit knowledge sharing, people need develop mutual trust and understanding through social interaction so that people can share their experience together and develop a common perspective.

5.3.3 Personal Network (Guanxi)

Personal network (Guanxi) is said to be the source of sustained personal competitive advantage in China (Tsang, 1998). However, the researcher found that Guanxi has the double-edged effect for the knowledge sharing in Chalco. Good personal relationships help people to track down information they need, but heavy dependence on personal network in knowledge sharing prevents people from realizing any potential risks of keeping knowledge implicit. This is because that knowledge, especially for tacit knowledge sharing is different from simple information exchange. It is a new approach of learning process (Dogson, 1993). As Nonaka and Takeuchi (1995) confirmed that the nature of knowledge-sharing inherited from learning. They called the tacit knowledge sharing as an artistry approach of learning (Schon, 1983). This approach stresses on developing mutual understanding, rather than technical skill; it stresses moral, rather than purely technical, accountability (Fish, 1991). It focuses on the interpretation of individual insight (Fish, 1991). In other words, knowledge sharing a continuing social interaction process rather than a one-off information

exchange. On this sense, rely on social network to get knowledge is just one-off knowledge flow, which is ineffective for tacit knowledge sharing. As the result, heavily relying on personal social network can become a knowledge sharing barrier in the company.

5.3.4 Modesty

Unlike in the Western culture, where the assertiveness, expressiveness, and competitiveness are often regarded as socially mature and confident (Rubin, Burgess, & Coplan, 2002). In traditional Chinese culture, however, modesty, sensitive, and restrained behaviours are considered an indication of social accomplishment and maturity (Chen, Rubin, & Li, 1995). Under this culture influence, some staff in Chalco is not willing to express their opinions in front of people. This has significantly restricted the knowledge sharing behaviours in the company as dynamic group discussion and interaction are essential to the increasing of people's mutual understanding and articulating tacit knowledge through continuing dialogue.

5.3.5 Competitiveness in the Organizational culture

Culture defines relationships between individual and organizational knowledge, determining who is expected to control specific knowledge, as well as who should share it (Davenport and Prusak, 1998). From the interviews and studying company's internal documentation, the researcher found that there is a strong competitiveness culture in Chalco. Staffs in Chalco are provided with rules and policies related to their annual personal assessment, promotion and bonus allocation. Competition is

encouraged in the company. This organizational culture affects people's motivation on co-operation of learning and sharing knowledge. Instead of creating a trust and caring environment, which is the basic concept of requirement for knowledge management (Moffett et *al.*, 2003), this culture encourage people to see knowledge as their personal advantage and try to keep it to remain competitive in the company. Therefore, the competitiveness in Chalco's organizational culture is one of the knowledge sharing barriers in the company.

5.3.6 Low Organizational Commitment

From the interviews, some participants expressed their concern that the people in Chalco currently have low organizational commitment. This feature can imply that the current dynamic economic development in China and the transition of the labour market relationship in Chinese society have been dramatically changed. The low organizational commitment indicates that the previously forced loyalty in employee-organization relationship has been changed to flexible loyalty, and the central planning economic model that used to create forced loyalty on the part of employees has gone away. As social and economic restrictions have been disappearing, Chinese employees have become increasingly mobile and flexible in job market. Employees and employers have more freedom to choose each other. As a result, the lower organizational commitment of the employees lead to the less motivation of seeking knowledge to improve their job performance as well as less motivation to contribute company's knowledge development.

The discussion above has provided an overall picture of Chaco's social and cultural influence on people's knowledge sharing behaviour. The next section will examine how the Learning Groups as the forms of communities of practice facilitate knowledge sharing in Chaco's social and cultural context.

5.4 How Do the Learning Group Facilitate Knowledge Sharing in Chalco's Social and Cultural Context?

Based on the Nonaka's (1994) organizational knowledge creation model, the knowledge sharing in this research is defined as two parts of organizational creation process: Tacit knowledge sharing (socialization) and the knowledge conversion from tacit knowledge to explicit knowledge. The Nonaka's (1994) model has provided the basic conditions and requirements for socialization and externalization. Thus, this section will discuss how the Learning Groups facilitate knowledge sharing in Chalco under the Nonaka's framework and also link the pervious research on Chinese cultural influence on knowledge sharing and features of communities of practice.

5.4.1 Tacit Knowledge sharing (socialization)

According to Nonaka and Konno (1998), there are two key factors that are in the process of socialization. The first one is physical social interaction and second one is to develop a shared mental model. People need to develop a sense of care, trust and commitment through physical social interaction and at the same time they can develop a shared mental model based on mutual understanding and experience sharing.

5.4.1.1 The Learning Groups can overcome the barrier of hierarchical organizational structure and build a platform for knowledge sharing

The Learning Groups in Chalco bring people from different business units with different expertise and skills together for knowledge sharing and learning. They are established at the outside of people's working boundary and provide an opportunity for people to have face-to-face social interaction through different group activities and events.

Those Learning Groups have created the opportunity to have face-to-face interaction, which is essential for tacit knowledge sharing (Nonaka, 1994). In Chalco's context, people's knowledge sharing behaviour is constrained by the highly hierarchical organizational structure. The Learning Groups provide a good opportunity for people to meet across different business departments and units regularly.   It is very valuable because the modern industrial production requires people with different expertise to work together and solve problems efficiently. However, in Chalco's case people mentioned that they all have busy work schedule and only focus on their own departmental task, there is rarely time to meet and interact with people from other units. Additionally, with the rigid hierarchical corporate structure in Chalco, it is even more difficult for people to meet some highly experienced senior members of staff in the organization.   Duo to this, opportunities for knowledge sharing are eliminated or reduced and this also inhibited knowledge sharing as members are not aware of each other or are not in regular face to face contact.

Under such circumstances, an opportunity to meet people cross business departments and units face to face is considered to be very important contribution that the Learning Groups has made to knowledge sharing in Chalco. Because otherwise people cannot discuss with or challenge each other if they do not come together as a community. And also the social interaction is effective way to share people's tacit knowledge. This argument is in line with the work of Lesser and Storck (2001), which they asserted that meeting in face-to-face, is a condition to real tacit knowledge sharing.

Thus, in line with Holtshouse's (1998) argument on co-location as a critical factor to share especially tacit knowledge, the researcher argues that sharing insight or tacit knowledge is essentially a person-to-person activity. The Learning Groups in Chalco have overcome the barrier of hierarchical organizational structure in creating the human interactions for members to build enough contexts to understand each other, enough trust to be willing to share knowledge, enough sparks to draw out the tacit knowledge others have. This is paramount since tacit knowledge is what made these Learning Groups valuable. Indeed, the Learning Groups in Chalco create a platform as a point of contact or physical meeting to achieve the necessary level of engagement, where on this platform people can identify their needs for knowledge sharing as well as identifying the potential knowledge holder.

In addition, by joining the Learning Groups, members stated that they can know and communicate with people from professional areas. It enables them to learn form each other, identifying their knowledge gap and stimulating the needs for knowledge

sharing. The Learning Groups also enable people to develop close relationship and collegiality between each other where they not only know each other conceptually or professionally, but also personally. Through the social interaction in the group, members are aware of and familiar with each other's situation, areas of expertise what kind of work they focus on, "has anybody worked on this before" and etc. Given this understanding it has facilitated them to pursue the potential knowledge holder and foster possible knowledge sharing activities. Also, supported by Liedtka et al. (1997) and Rumizen (2002), these relationships have assisted members to gain access to expertise in terms of knowing who to ask when they have a need of seeking new knowledge. This enabled them quickly to find the most suitable knowledge holder to ask.

Even if other members are not able to help, in line with Fontaine and Millen's (2002) suggestions that members pointed each other to some directions as they all have their other social or working networks. Hence, the benefits of participating in these Learning Groups are when people are seeking knowledge they are not confined to the links of immediate members but also to other networks which members are part of. As the result, members can find the knowledge more efficiently and effectively.

It also has been noticed that although there is a company intranet and other training and learning materials available, people still prefer to seek knowledge holder within their groups that they belong to rather than from intranet, internet or other paper documents. This is because they can find that people with hands-on experience and

abundant tacit knowledge can have better understanding of their problems and put the question into the practical context. In fact, most of what has been shared is the implicit or tacit knowledge as members pull together were based on their work or real experience. They have argued that the knowledge that they are looking for is not paper work stuff and they are connected with real context. In fact, the knowledge they shared in the communities of practice is based on people's reflection on their practice and is drawn upon their pools of tacit, and these cannot be found in formal places or any documents (indicated by Brown and Duguid, 1991 and Wenger *et al*., 2002). Thus, what makes those Learning Groups useful is they can help people identify the knowledge holder with tacit or practical knowledge directly relevant to their jobs.

In general, the Learning Groups in Chalco have overcome the hierarchical organizational structure barrier for knowledge sharing, bringing people across organizational departments and units together to have physical interaction. In this sense, people can develop a knowledge sharing platform through their social interaction. On this platform, people can identify their needs for knowledge sharing as well as identifying the potential knowledge holder.

5.4.1.2 The Learning Group can overcome the Chinese hierarchical consciousness barrier for knowledge sharing and develop the informal learning partnership among group members

Chalco is a traditional Chinese company in which the traditional Chinese cultural values influences people's thinking and behaviour in many ways including the

knowledge sharing behaviour.

People mentioned that in their formal working place knowledge sharing is one-way flow because the people often follow others who have higher organizational status. This is reflection of people hierarchical consciousness in the company culture that is mentioned in Section 2.5.1. Seniors are supposed to teach or pass on their knowledge and experience to juniors in organization. Following seniors' suggestion is the right way to show juniors' respect to them. As the result, knowledge sharing in Chalco is just the knowledge-flow from the top to bottom only. This is ineffective to the tacit knowledge sharing. As Nonaka (1994) stated that tacit knowledge sharing requires people to engage into the social interaction to develop a common mental world so that the tacit knowledge can be articulated in the form of metaphor, storytelling and reflection.

However, the Learning Groups are different from formal company unit. In the groups, people organize different group events and meetings, such as the 'Group Learning Time', which is a group meeting where every one can have chance to do a presentation. They can talk about any topic that they are interested in or they think that it is worthwhile for their group to know. Under such environment, people feel relaxed and equal (Wenger, *et al.*, 2002). People had the autonomy, personal freedom and free to act independently. It enables people to express their thinking freely and pursue their own ideas. Instead of one-way teaching, the discussion in the Learning Groups is dynamic and supportive. This allows people to feel secure enough and

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comfortable enough to challenge and be challenged in ways that move things forward rapidly and be counted on to produce results (McMaster, 2000). Therefore, the Learning Groups is helpful to reduce the hierarchy consciousness among members and facilitate the two-way knowledge flow in the company.

As members interact in these Learning Groups, they placed themselves in the context of a community with shared perspectives and purposes. They learn to each other and share knowledge with each other, developing an informal learning partnership in the group. This learning partnership serves as a platform to build their relationships (Castro, 2003). Building relationship is coming along with social interaction. Members of Chalco's Learning Groups also organize group social activities outside of their working place. They have group social events, such as group dinner or outdoor adventure. During the events, people talk about more than their jobs. They talk about their family, their past time and other wide range of topic. It has been noticed that people in the Learning Groups feel that they were emotionally involved and engaged with their groups. This is because in the Learning Groups members built relationship through social interaction and participation. People care and show concern between each other and there is a sense of responsibility between each other. Those groups are a place where people go beyond the requirement of their jobs to help their communities succeed. In this sense the Learning Group help people to build a trust relationship with each other. This mutual trust relationship is very important to the tacit knowledge sharing. This is because tacit knowledge sharing involves repeated, time-consuming dialogue among members. Mutual trust is an indispensable base for

facilitating this type of constructive collaboration (Schrage, 1990). This trust relationship is created not only by their passion of topic, but by their sense of obligation to their peers as well as the recognition and gratitude they receive (McDermott, 2001).

Participants of interview have mentioned that as the result of Chinese social and economical change, nowadays people in Chalco have lower organizational commitment. It has caused negative impact on people's motivation of seeking knowledge as well as contributing knowledge to the company. It has been proved that the Learning Groups can be useful to develop in-group cultural among members. Since members develop close and trust relationship through regular social interaction and they feel emotionally involved. It has created a sense of belonging and they feel that they are member of an in-group. According to Triandis (1988, see Section 2.5.2), an in-group is a group of people who share common interests and have a concern for each other's welfare. It is widely acknowledged that China is a highly collectivistic country (Hofstede, 2001), where group interests and collective good takes precedence over individual interests, quite different from individualistic Western countries. In the group, people are committed to each other and they are willing to do what is good for the success of their group. So the group members feel moral obligation to contribute the group knowledge sharing. In this sense, the Learning Group can increase the people's commitment to the company's knowledge development.

Furthermore, the Learning Group can overcome the knowledge sharing barrier caused by the competitiveness in the organizational culture. In Chalco, with the company's participation in the global competition, the governor has developed very strict management and operation policy to make the whole company work efficiently and effectively. Employees' promotion, wage and bonus are directly linked with their job performance. As the result, there is a strong sense of competition among employees in Chalco. People are concerned about their pay and promotion. This is clearly evidenced in Section 4.3.5. People are fear that sharing knowledge with others might make them to lose their personal advantage in the competitive organizational environment.

However, members have commented that the environment of the Learning Groups is relaxed and conductive. There is no formal deadline and assessment for their work. The Learning Groups break the internal organizational boundaries and bring people from different business unit. They come together not for competing with each other but learn to each other. They have great degree of autonomy and are free to perform without having to consider the consequences. Members are aware that the groups are not place to criticize but to be constructive in a supportive way as nobody is out there to boast and they are genuinely interested in the topic. They created an honest discussion within the group. The seniors were willing to leave their power behind in coming to the table, try to relax the distance between them. By sharing their stories and experience, they realized that they are not alone and they felt relieved as they have such a group of friend to support and help them. The bonds here are tighter and

more resilient.

This provides members with incentives and motivation to learn as well as taking responsibility to accomplish goals since it is not forced thing and they can set their own deadline. Hence, the Learning Group have created a safe, relax and comfortable environment to overcome the competitiveness organizational culture barrier and facilitate the knowledge sharing in the group.

5.4.1.3 The Learning Group can develop the like-mindedness to facilitate the tacit knowledge sharing

In line with Wenger and Snyder's (2000) statement that CoPs are usually made up of like-minded people. They understand the domain and are aware of the developments and the cutting edge in their field. In the context of Chalco, people come together for the purpose to solve problems to meet their business operational needs. Their domains are more related to the business requirement. They share the similar aspirations and motivation, having the fundamental knowledge to bring the discussion to a higher level. In this sense, members in the Learning Groups have special connections among each other and they understand each other's stories, difficulties and insights. They have developed the like-mindedness in their groups.

The central issue of the like-mindedness is that members found others understood their job which made discussion relevant and related to their own practice. In the Learning Groups, members have on-site group activities, vesting their working places

and gaining insights about each other's job, such as what kind of equipments they have, what kind of working conditions they have, what kind of constrains of those equipments and what is the main bottleneck in their job. People have gained deep understanding about other's working scenarios, building the foundation for the working related group discussion.

Based on the mutual understanding about each other's job, members of Learning Groups bring the problems and issues that they come cross from their normal job for the group discussion. So the members work together and try to find the solution. They can develop a common interest and aims. They are willing to contribute their experience from their different professional areas. Because they have mutual understanding about each other's job, they share their different experience and use the synergy and levergy to solve the problems. Hence, the intellectual discussion in the Learning Groups inspired the emergence of like-mindedness among members.

In addition, by participating in Learning Groups, members have the work related intellectual discussion, this also broaden the members' knowledge across different professional area. Members' increasing professional knowledge also facilitates their mutual understanding.

In the organizational knowledge creation theory, like-mindedness is regarded as shared mental model or common perspective (Nonaka, 1994), which can be shared by members as part of their respective bodies of tacit knowledge. This is in line with Nonaka's (1994) view that the key to acquire tacit knowledge is shared experience.

Without some form of shared experience and perspectives, it is extremely difficult for people to share each other's thinking processes. Hence, it is important to have a group which contains people with like-mindedness and shared experience.

In summary, the Learning Groups have overcome the barrier of hierarchical organizational structure to bring people together. They create the knowledge leaning and sharing platform that is different from normal social environment. This platform removes the Chinese culture barriers and people can develop a learning partnership in the group. Because they gain enough visibility through social interaction and become known to other and also the interactions in the Learning Groups have some continuity, interacting regularly allows members to develop a shared understanding of their domain and approach to their practice (Brown and Duguid, 2000). It creates a sense of mutual trust and provides a professional home for its members where they can develop their knowledge and skills in a stable, safe and trusted context (Wenger *et al.,* 2002). They develop a common way of thinking about their work over a period of time, they share a sort of mutual identity, an understanding of who they are and their relationship to larger environment (Brown and Duguid, 2000). Therefore, members developed the like-mindedness that facilitates the tacit knowledge sharing.

5.4.2 How do the Learning Groups Facilitate the Conversion from Tacit Knowledge to Explicit Knowledge

After the initial social interaction in the Learning Groups, tacit knowledge is shared between group members. However, the tacit knowledge need to be converted into

explicit knowledge, which is in the form of actual words, metaphors and analogies with real context, so that the knowledge can be utilized by other people in the organization. This section will link the theory of knowledge externalization, organizational learning and communities of practice to discuss how the Learning Groups facilitate the conversion from tacit knowledge to explicit knowledge in Chalco.

5.4.2.1 The Learning Groups can provide a dynamic group dialogue environment to facilitate the articulation of tacit knowledge

People mentioned that the environment of their groups is relaxed and the discussion is informal and dynamic. This environment gives members the freedom challenge idea and they permitted freedom to think beyond their existing knowledge frame and identify the need for knowledge sharing, In line with past research conducted in Western company (Nonaka, 1994), members found the Learning Groups to be places where they can articulate, sharing, and challenge and refine their thinking. They shared ideas, even if they are half-baked or not eventually realized.

By joining the Learning Groups, members stated that they are part of a network. Where they can know and communicate with people in or related to their job. This network is different from their other social network, where they can directly ask for help when having a problem. But these knowledge sharing are just one-off information exchange. In Chinese traditional cultural, people's personal social network (Guanxi) play very important role in their daily life. As the result, people

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heavily rely on their social network to find the knowledge they need. In fact, people found this is very effective way to find the knowledge in Chalco. However, the researcher can argue that this could prevent people from realizing the potential risk of keeping knowledge tacit. However, in the Learning Groups, people have developed the learning partnership among the members, which is different from people's other social network. The Learning Groups are places where members meet regularly to engage in knowledge sharing and learning on the long-term basis. They use the approach of the real case study to understand the issues holistically from different perspective. In this sense, the Learning group has fostered the long-term knowledge learning and sharing environment and developed a dynamic group dialogue channel to help people articulate their tacit knowledge.

In Chinese culture, it is not recommended to express your own opinions too much in public. As the result, some people in Chalco are not willing to raise debate and provide different views. Cultural expectations related to modesty were an important influence on participation in knowledge sharing within Chalco. Given the Learning Groups in Chalco is cross-functional group, members think this is good for them as they can study an issue from different points of view, getting alternative perspectives. As mentioned in Section 2.6.5.1, people join the Learning Groups to get broader perspective, for problem solving or to develop their expertise and knowledge. This is because the organizational structure of the Chalco is highly specialized and people are aware that often they work in their own narrow functional areas (see Section 4.3.1), this is not necessarily beneficial to the knowledge development in the company. With

the increased complexity in business operation (Henkel, 1997) as well as the increased specialization and advancement in product development (Marginson, 2006; Smeby and Trondal, 2005), this led to an increasing demand to bring people together to show their thinking from different angles based on their disciplines. Having people coming from different perspectives may cause contradiction and paradox during the dialogue, which in turn making the discussion more rewarding as members can gain a wider view of their subject and stimulate creative thinking to the original knowledge. Hence, the dynamic dialogue environment that the Learning Groups have provided can help people overcome the modesty cultural barrier for knowledge sharing in the company and encourage people to provided the alternative views for the group discussion. In turn, it stimulates people's thinking and reflection. It has been mentioned by the members in the interviews that they sometimes get inspirations from the dialogue and discussion when they brainstorm to solve a problem. This confirmed Nonaka's (1994) and Orlikowski's (2002) works on creativity as people have discussion under such dynamic environment, they are more creative and their interaction with others have been the source to new ideas. Moreover, with the multiple perspectives, it allowed a diversity of ideas and experiences to expressed and articulated. This is important to stimulate thinking beyond their area and therefore spark-off the new ideas in their practice. This has demonstrated the central tenets of communities of practice i.e. situated learning and reflective practice, where people reflective with other on their practice and the knowledge obtained are used in their everyday practice. In this sense, the Learning Groups also help people translate the

articulated tacit knowledge into their own practice.

5.4.2.2. The learning Groups can facilitate the translation of articulated tacit knowledge through building and maintaining group knowledge repository

As the member of the Learning Groups articulate their experience, ideas and thinking in the meeting, it often creates a body of knowledge through meeting notes or threaded discussion. It could contain some important explicit knowledge as member often write down some key points of reflection, particular solution to problems or summary of a discussion. According to Nonaka (1994), the conceptualization of tacit knowledge involved the process of deduction and induction which are generally used when a thought or image linking to a preexisting concept or real practice. Hence, the Group members' reflection and thinking during the discussion are very important resource for the translation of articulated tacit knowledge. This information, however, can easily become some simple disorganized insights if they are not edited, categorized and stored in time.

In Chalco, building and maintaining a group knowledge repository through managing the information generated through the group meeting and discussion has become one of important group common activities in the Learning Groups. As the company supported by communities of practice, they are encouraged to contribute new ideas to improve the company operation. Their ideas and new knowledge need to be internalized and can be used by the company. As Nonaka (1994) stated this process are facilitated by experimentation. This usually involves dynamic cooperation among

various business functions and organizational department. It should be noted that although this process occurs at a collective organizational level rather than at the single communities of practice, without the knowledge repository in those Learning Groups the company would not be able to utilize the explicit knowledge for the benefit of organizational knowledge creation. In this sense, maintaining and building group knowledge repository can facilitate the knowledge to be further internalized as the organizational knowledge.

5.5 Issues of the Learning Group in Chalco

From interviews, a few participants have expressed that there are some issues in terms of the Learning Groups in Chaloc. Firstly, members feel that their contribution to the company's knowledge development haven't been fully recognized and valued. Secondly, because there is lack of transparency to the Learning Groups' recruitment, some non-members have the wrong perception about the Leaning Groups. These issues could limit the development of the Learning Group in the company.

These issues are not the direct consequence of the Learning Groups, but the pitfalls of the company's knowledge management system and the wrong perceptions of non-members. The company should realize these issues and adopt a proper knowledge management strategy, that incorporates, for example a suitable measuring and rewarding system to recognize the contribution that the Learning Groups have made to the company's knowledge development and adopting more transparenting recruitment policy for the Learning Groups, to ensure that pitfalls are avoided, thereby

guaranteeing the Learning Group have a beneficial and positive effect on knowledge sharing.

5.6 The Knowledge Sharing Model in Chalco's Learning Groups

Through the discussion above, the research has identified the knowledge sharing in Chalco's social and cultural context, how the Learning Groups facilitate knowledge sharing in this context and some issues of the Learning Groups in the company. Hence, the researcher is able to develop the knowledge sharing model in Chalco's Learning Groups and illustrate the main research aim achieved in this study: **How do the communities of practice (Learning Groups) facilitate knowledge sharing in Chalco's social and cultural context?**

This research has identified that the Learning Groups facilitate knowledge sharing from 5 aspects. As illustrated in Figure 5.1, there are three aspects that are related to tacit knowledge sharing (socialization) and the other two aspects are related to the knowledge conversion from tacit knowledge to explicit knowledge (externalization). The researcher has also identified the six knowledge sharing barriers in Chalco's social and cultural context. There are four barriers that are related to process of socialization and there are two barriers that are related to process of externalization.

Figure 5.1 Knowledge Sharing Model in Chacol's Learning groups
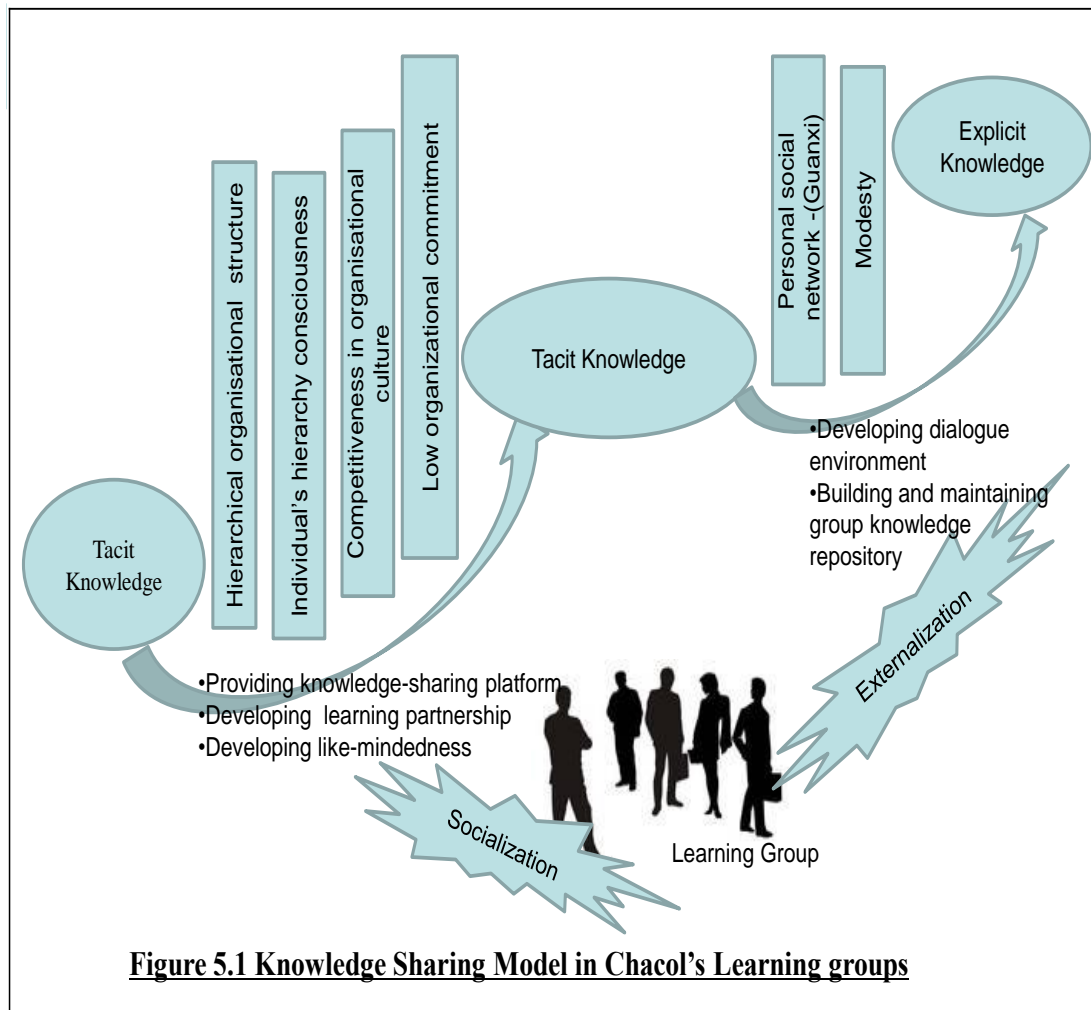
Hence, under the Chalco's social and cultural context, the Learning Groups facilitate tacit knowledge sharing from the following three aspects:

1. *The Learning Groups can overcome the barrier of hierarchical organizational structure and build a platform for knowledge sharing.*

   The Learning Groups in Chalco have overcome the hierarchical organizational structure barrier for knowledge sharing, bringing people across organizational departments and units together to have physical interaction. They develop a knowledge sharing platform through their social interaction. As people coming

different professional areas, they can learn to each other, making up their knowledge gap and identifying their needs for knowledge sharing. On this platform, people can identify their needs for knowledge sharing as well as identifying the potential knowledge holder.

2. *The Learning Group can overcome the Chinese hierarchical consciousness barrier for knowledge sharing and develop the informal learning partnership among group members.*

The Learning Groups create an environment where people feel relaxed and equal. It enables people to express their thinking freely and pursue their own ideas. Instead of following and listening to the seniors, the discussion in the Learning Groups is dynamic and supportive. This allows people to feel secure enough and comfortable enough to challenge and be challenged in ways that move things forward rapidly and be counted on to produce results (McMaster, 2000). Therefore, the Learning Groups are helpful to reduce the hierarchy consciousness among members and facilitate the two-way knowledge flow in the company. The learning partnership developed in the groups serves as a platform to build their relationships. They can build close relationship through social interaction and participation. It generates the sense of trust and belonging, creating in-group cultural among members. Hence, it can overcome the lower organizational commitment barrier for knowledge sharing and increase members' moral obligation to contribute the group knowledge sharing. Furthermore, people joining the Learning Group is not for purpose of

competing with each other but learn to each other. They have great degree of autonomy and are free to perform without having to consider the consequences. Hence, the Learning Groups have created a safe, relax and comfortable environment to overcome the competitiveness organizational culture barrier and facilitate the knowledge sharing in the group.

3. *The Learning Group can develop like-mindedness to facilitate tacit knowledge sharing.*

The Learning Groups can develop the like-mindedness among the members. They have various on-site activities which help the members to have deep understanding about each others' job, working environment. Based on the mutual understanding about each other's practice, group members bring the problems and issues that they come cross from their normal job for the group discussion. They work together and develop a common interest and aims. They are willing to contribute their experience from their different professional areas. They use the synergy and leverage to solve the problems. In addition, by participating in Learning Groups, members have the work related intellectual discussion, this also broaden the members' knowledge across different professional area. Members' increasing professional knowledge also facilitates their mutual understanding. Hence, the Learning Groups has inspired the emergence of like-mindedness among members, which is important for the tacit knowledge sharing.

And, under the Chalco's social and cultural context, the Learning Groups facilitate the

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conversion from tacit knowledge to explicit knowledge from following two aspects:

1. *The Learning Groups can provide a dynamic group dialogue environment to facilitate the articulation of tacit knowledge.*

   In the Learning Groups, people have developed the learning partnership among the members, which is different from people's other social network. However, heavily relying on people's social network (Guanxi) could prevent people from realizing the potential risk of keeping knowledge tacit since the knowledge sharing is just one-off information exchange. The Learning Groups are the places where members meet regularly to engage in sharing and learning on the long-term basis. They use the approach of the real case study to understand the issues holistically from different perspective. In this sense, the Learning Group has fostered the long-term knowledge learning and sharing environment and developed a dynamic group dialogue channel to help people articulate their tacit knowledge. The Learning Group also can overcome the modesty cultural barrier for knowledge sharing in the company and encourage people to provide their alternative views for group discussion. As a result, it makes the discussion more rewarding as members can gain a wider view of their subject and stimulate creative thinking to the original knowledge. In this sense, the Learning Groups also help people translate the articulated tacit knowledge into their own practice.

2. *The learning Groups can facilitate the translation of articulated tacit knowledge through building and maintaining group knowledge repository.*

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The Learning Groups are responsible for recording the Group members' key points of reflection, particular solution to problems or summary of a discussion generated during the group discussion by building and maintain the group knowledge repository. This information is regarded as very important resource for helping people to translate the articulated tacit knowledge. This information, however, can easily become some simple disorganized insights if it is not edited, categorized and stored in time. In addition, as the company supported by communities of practice, the Learning Groups are encouraged to contribute new ideas to improve the company operation. Therefore, the group knowledge repositories are also the knowledge resources for the companies that facilitate the further internalization of group knowledge into organizational knowledge.

The knowledge sharing model in Chalco's Learning Group has provided a synthesis for this study. This has demonstrated the research aim and the research objectives that have been achieved in this research. It also gives knowledge management practitioners a clear picture about the Chalco's social and cultural influences on the knowledge management and how the Learning Groups can overcome the knowledge sharing barriers to facilitate knowledge sharing in the company.

5.7 Summary

Through linking the relevant literature to discuss the research findings, this chapter has identified the knowledge sharing barriers in the Chalco's social and cultural context (research objectives 2), identified how the Learning Groups facilitate the

knowledge sharing in the Chalco's social and cultural context (research objectives 3) and identified the potential issues of the Learning Groups in Chalco (research objective 4). The knowledge sharing model in Chalco's Learning Group has provided a synthesis for this study so that the researcher can make the conclusion for this research in the next chapter.

Chapter Six Conclusion and Recommendations

6.1 Introduction

The result of this study indicated that the Learning Group have played significant role on facilitating knowledge sharing under the Chalco's social and cultural context. It has provided further understanding about the value of communities of practice in facilitating knowledge management in the organization. This chapter makes some concluding remarks based on the key findings of this research. Consequently, it will explain the contributions of this research towards knowledge management theory and organizational practice. This will be followed by the recommendations about how the findings of this research might benefit some practitioners. Finally, the chapter looks into some of the limitations of this research and makes some suggestions for future research on communities of practice.

6.2 Conclusion

This research has set out to study the role of the Learning Groups (communities of practice) on facilitate knowledge sharing in Chalco's social and cultural context. Taking the social constructionist' standpoint, the aim is to unravel the people's reflection on their experience as they participated in the Learning Groups, studying from lens of an interpretivist. It interprets the people's knowledge sharing experience in the Chalco's Learning Groups.

The main conceptual framework utilized in this study is the Nonaka' (1994)

organizational knowledge creation model. The knowledge sharing in this research is defined as the two parts of organizational knowledge creation process: socialization and externalization. This research also adopted the analytical framework of Communities of practice, which was developed by Scarso, Bolisani and Salvador (2009), trying to understand how the Learning Groups facilitate tacit knowledge sharing and the knowledge conversion from tacit to explicit in Chalco's social and cultural context. Hence, the more specific research objectives have been able to set up. The research objectives are:

Objective1: To identify the literature gap of how communities of practice are utilized to facilitate knowledge sharing in the Chinese social and cultural context;

Objective 2: To identify the knowledge sharing barriers in Chalco's social and cultural context;

Objective 3: To explore the role of the Learning Groups on facilitating tacit knowledge sharing in Chalco's social and cultural context.

Objective 4: To explore the role of the Learning Group on facilitating the knowledge conversion from tacit to explicit.

The first research objective has been achieved in the Chapter 2. The researcher has reviewed several different areas of literature, including organizational knowledge management, organizational knowledge creation, potential China's social and cultural factors that influence the knowledge management in the organization and the theory of communities of practice. He has identified the literature gap that there is limited research about how the communities of practice facilitate knowledge sharing in the

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Chinese social and cultural context. As the result, this researcher can have a clear research direction in mind to conduct the research design and tried to find out the role of communities of practice in facilitating knowledge sharing in China's social and cultural context.

Based on the data generated from conducting twenty in-depth semi-structured interviews and studying company internal document documentation, the researcher has used the narrative analysis method to reveal some features of the Learning Group sin Chalco, the role in facilitating tacit knowledge sharing, the barriers of knowledge sharing in Chalco, the role in facilitating the knowledge conversion from tacit to explicit and some potential issues of Learning Groups in Chalco. As a result, the research objective2, objective 3 and objective 4 have been achieved.

In addition, based on the research findings the research developed the knowledge sharing model in Chalco's Learning Groups (see Figure 5.1), which provides a synthesis for this study result. This model can help related academics and practitioners to understand the Chinese cultural and social influences on knowledge management practice as well as the role of communities of practice in facilitating knowledge sharing in Chinese organisations.

6.3 Research Recommendations

Evidently, the findings of this research can benefit to both academics and practitioners, especially to the knowledge manager in organization.

6.3.1 Recommendation for Academics

Firstly, in review the literature of knowledge management and communities of practice, the researcher gained valuable insights and also found literature gap to which this study have addressed. As introduced in chapter one, the previous researches focus on some multinational organizations in the region of USA, Western Europe and Japan, there are barely research focusing on knowledge management within other social cultural contexts. This research addressed the Learning Groups in the social context of Chinese organization and study the characteristics of knowledge-sharing occurred in Chalco's Learning Groups. It extends the CoP concept by providing a detailed view of how the CoPs facilitate knowledge sharing in other social context.

Secondly, current literature only discusses how CoPs are of value to organization and how organizations' knowledge management strategy interacts with CoPs to improve their business performance. There is limited research studying communities of practice based on the knowledge management theory. The research adopts the Nonaka's (1994) organizational knowledge creation theory and examined the Chinese social and cultural influence on knowledge sharing in the organization. It will help the related academics to understand how the Chinese cultural and social influences on knowledge management practice and how CoPs facilitate tacit knowledge sharing (socialization) and the knowledge conversion from tacit knowledge to explicit knowledge (externalization).

6.3.2 Recommendation for Practitioners

This research has helped members of communities of practice in Chalco recognize and identify the values of the Learning Groups for their knowledge learning and sharing. The research process has assisted them to unravel the complicities of their experiences in the Learning Groups. Thorough these reflections, participants make sense how the Learning Groups assist them improve their personal knowlwdge and working performance. The outcomes have indicated that most members have found the Learning Group to be valuable and wish to continue to participate in the future. On the other hand, this research also helps managers in Chalco to be more aware of the benefits that a CoP can offer to their organization. It has guided the company's future strategy for knowledge management and Chaocl will continue to use Learning Groups as a mechanism to facilitate its knowledge sharing and creation.

By understanding how communities of practice facilitate knowledge sharing in the Chalco's social and cultural context, it is also hoped that these findings will provide important evidence that helps managers in other Chinese companies to recognize the role of communities of practice in facilitating knowledge sharing in organization. In addition, although it is noted the issues of the Learning Groups in Chalco is associated with organizational context, it is worthwhile for other companies to take active measures to promote the development of communities of practice and avoid the potential pitfalls.

In addition, many Western enterprises in China are plagued by a high rate of staff turnover (Voelpel and Han, 2005). Building long-term staff loyalty is thus a challenge

for human resource managers in China. This issue is particularly relevant for knowledge management, given that knowledge travels with people. And because the Chinese culture is characterized by a strong in-group/out-group distinction, the in-group relationship has a multiplicative impact on knowledge-sharing behaviour. Within the Chinese environment, creating a company culture that creates an ''in-group'' feeling will therefore effectively leverage knowledge sharing. Company should develop appropriate knowledge management strategy to support the communities of practice and foster the health learning partnership, which is useful for the development of in-group culture.

In recent years, the Chinese government has encouraged domestic knowledge creation in both universities and enterprises for establishing a knowledge style society. So the findings from this research can also be utilized by the Chinese government to introduce the Chalco's Learning Group to many more organizations as an example of best practice on knowledge management. It will increase the awareness of the role of communities of practice in facilitating knowledge sharing in Chinese society and promote the developmemt of knowledge social network in China.

6. 4 Research Limitation

Every study has limitations (Taylor-Powell and Renner, 2003) and this research is no exception. Therefore, this section discusses the potential limitations that exist within this study as it was designed and implemented.

6.4.1 Personal Involvement

The researcher worked as an engineer in the case company before this study. Personal contacts in the company facilitated access to participants and the insider knowledge certainly influenced the interpretation of data. It was considered to be a positive asset to this study in the Section 3.7 since the researcher could freely discuss concepts in an insider's working language and was regarded as equal to the participants and it enabled the researcher to contribute to richer and more accurate description of the knowledge sharing activities in the company. However, it is accepted as a potential limitation because it inevitably skewed the results through a non-conscious filtering process by the researcher. To reduce this bias, the interview participants were fed back with transcripts before they were analyzed. It helped to confirm that the findings as an accurate reflection of participants in the company.

6.4.2 Generalisibility of the Findings

Another limitation of this research is that the findings are not generalisable. The findings of this research afford a window into constructing meaning of knowledge sharing through participant's experience in the Learning Group. This research was conducted in a Chinese company - Chalco. So, the findings are restricted to the specific context of this research. However, qualitative methodology contributes to thick and rich data and it gives an understanding of the phenomena under study within the context of the research. Therefore, readers can decide and make their own generalizations. This research has included plenty of context and detailed descriptions

of participants' experience in the Learning Groups. From this detailed information, the readers or users can identify whatever is helpful and adapt it to the context in which they wish to use it. Thus, the findings may have some commonalities but they cannot be generalized across the sector.

6.5 Future Research

The body of knowledge of CoPs is growing rapidly. This study's findings contribute to that body of knowledge by providing insight of how CoPs facilitate knowledge sharing in the Chinese social and cultural context. In addition to contributing to the body of knowledge, this study's findings may serve as an underpinning for future research. The following are implications for further research that emerge from this study.

- This study is conducted in a large Chinese manufacturing organization where the knowledge sharing is deeply influenced by traditional Chinese cultural. With the dramatic change of Chinese society, many newly established companies or foreign owned companies in China many have different social context. People in those companies may have different attitudes and means to share knowledge. It would be useful to find out the development of knowledge management in those companies.

- In Chalco, people share knowledge largely relying on the face to face interaction. Further research can also study CoPs with no face to face interaction i.e. virtual CoPs who only interact via telephone and online communication. The CoP

members in this study mentioned that their face to face interaction was a significant contributor to their knowledge sharing because it allowed them to build personal relationship with one another. It would be useful and of interest to study a CoP that has no face to face interaction and find out how does it facilitate knowledge sharing in a organization

- Communities of practice provide great benefit to organizations. They create value by stewarding highly prized knowledge resources. It is in the best interest of both community members and managers to see that the contribution of CoPs is fully realized and widely recognized How to measure the value the CoPs created is a great challenge for knowledge managers. As the result, the research focusing on how to measure the value of CoPs will be further promoting the development of communities of practice.

Given these implications for further research, there is a great need for more empirical studies on the development of communities of practice in organizations, how they work, what do the organization do to facilitate the development of CoPs.

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Appendix One: Pilot Interview Guide

Thank you for giving time for this interview. I hereby would like to assure you that whatever discussed in the interview will be kept confidential and your name will remain anonymous. The aim of this research is to investigate how the Learning Groups facilitate knowledge sharing in your company. The findings of this research may be of benefit in implementing knowledge management strategy in Chinese organization and promote the development of Learning Group in your company.

Part One: Factual and contextual questions

1. Can you tell me some information about knowledge sharing in your company/department/ branch/division/team?

2. How did the Learning Group emerge in your company?

   (Follow up question: How is its development?

3. What are the various roles of people within Learning Group?

3. Do you think what barriers for knowledge-sharing in our company /department/ branch/division/team are?

4. What policies have been adapted to support the development of Learning Group? Why?

Part Two: Direct questions

5. Do you think what the role of Learning Group in facilitating knowledge-sharing in the company? (Why? / Can you explain more about this? /Can you give me example about this?)

6. What do you think the downside of Learning Group in terms of activities that it performs? (Why?)

7. What have measures been used to reduce the negative impact caused by Learning Group?

8. Has the Learning Group contributed to your performance? How?

9. Has the Learning Group contributed to the company's performance? How?

Part Three: Summary Question

10 Is there anything else you would like to tell me about the Learning group and knowledge-sharing in your company/department/ branch/division/team?

Appendix Two Formal Interview Guide

Thank you for giving time for this interview. I hereby would like to assure you that whatever discussed in the interview will be kept confidential. Your personal data as a participant, I shall code your name as two English letters. Only principal investigator (myself) will have the knowledge of the code. The principal investigator as the end of this study will destroy this information. The aim of this research is to investigate the role of the Learning Groups on facilitating knowledge sharing in your company. The findings of this research may be of benefit in implementing knowledge management strategy in Chinese organization and promote the development of Learning Group in your company.

Part One: Factual and contextual questions

1. Can you tell me some information about your job? What do you do in the company?

2. Can you tell me some information about knowledge management and knowledge sharing in your company/department/ division/team?

3. How do you get involved in the Learning group?

4. What are the various roles of people within your Learning Group?

Part Two: Direct questions

5. How do you find the knowledge that you need in the company? Do you have any

difficulties to find the knowledge through this way? (Can you explain "why?")

6. What do you do in terms of learning and sharing knowledge in your Learning Group?

7. Through participating in Learning Group, how does it help you to learn and share knowledge with others?

8. How do the Learning Groups overcome the knowledge sharing barriers in the company?

9. Are there any issues about Learning Group in the company? What kind of issues they are? What is the cause of these issues?

Part Three: Summary Question

10. Is there anything else you would like to tell me about the innovation group and knowledge-sharing in your company/department/ branch/division/team?

Appendix Three: Letter for Gaining Research Access (In Chinese)

调研采访申请函

中铝公司领导，

本人是英国诺桑比亚大学的一名博士研究生，现在攻读工商管理博士学位，从事知识管理方面的课题研究。从 2002 年起中铝公司在全企业范围内推行技术创新活动，特别是在全公司范围内对通过创新学习小组的培育与发展，对企业内部的技术革新与知识交流共享有很大的促进作用。

因此我的研究课题是想通过了解我们企业中的知识共享的情况，重点探讨创新学习小组在促进企业内部知识共享所扮演的角色。同时总结出一些经验，能对中国企业的知识管理发展形成一个很好的借鉴。

目前，由于研究的需要，我希望能在贵公司内部进行一次学术调研活动。我需要对相关的创新学习小组成员进行面对面的访谈，同时也希望能够收取一些关于公司关于创新学习小组发展的文字资料。因此，本人正式向贵公司提出进行学术调研活动申请， 恳请领导批准， 同时感谢您对我的研究工作的支持和帮助。

陈鹏

2008 年 2 月

Appendix Four: Letter for Gaining Research Access (In English)

02/2008

Dear Sir or Madam,

Currently, I am a postgraduate student engaged in research for a DBA degree at the Newcastle Business School in the University of Northumbria. My research is in the area of knowledge management in organization, focusing on how communities of practice facilitate knowledge sharing in organization.

Since the Learning Groups have been playing significant role in the company's knowledge management strategy, I am trying to explore how the Learning Groups facilitate knowledge sharing in the company. I hope that the result of this research may be of benefit in implementing knowledge management in Chinese organization.

In the current phase of my research, I am seeking to undertake fieldwork within your company and hope to conduct some interviews with the members of Learning Groups. I also would like to require access to appropriate company document about the development of Learning Groups. I therefore require your permission to get access into company to carry out my research.

I should be grateful if you can grant me access into your company.

Yours Sincerely,

Peng Chen

Node Summary Report

Project: peng

Generated: 30/06/2009 16:18

Build and maintain group knowledge repository   **Tree Node**

Created On	30/06/2009 14:44	By	Peng
Modified On	30/06/2009 14:48	By	Peng
Users	1		
Cases	0		

Type	Sources	References	Words	Paragraphs	Region	Duration	Rows
Total	4	4	438	4			0

Competitiveness in the organization culture   **Tree Node**

Created On	30/06/2009 13:36	By	Peng
Modified On	30/06/2009 14:08	By	Peng
Users	1		
Cases	0		

Type	Sources	References	Words	Paragraphs	Region	Duration	Rows
Total	3	3	286	3			0

Develop a Dynamic Dialogue Environment   **Tree Node**

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Modified On	30/06/2009 14:44	By	Peng
Users	1		
Cases	0		

Type	Sources	References	Words	Paragraphs	Region	Duration	Rows
Total	15	16	1512	19			0

Develop Informal Learning Partnership among the Group Members   **Tree Node**

Created On	30/06/2009 14:00	By	Peng
Modified On	30/06/2009 14:32	By	Peng
Users	1		
Cases	0		

Type	Sources	References	Words	Paragraphs	Region	Duration	Rows
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Develop like-mindedness

Tree Node

Created On	30/06/2009 14:14	**By**	Peng	
Modified On	30/06/2009 14:27	**By**	Peng	
Users	1			
Cases	0			

Type	Sources	References	Words	Paragraphs	Region	Duration	Rows
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Hierarchical organizational structure

Tree Node

Created On	30/06/2009 13:28	**By**	Peng	
Modified On	30/06/2009 14:30	**By**	Peng	
Users	1			
Cases	0			

Type	Sources	References	Words	Paragraphs	Region	Duration	Rows
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Hierarchy consciousness

Tree Node

Created On	30/06/2009 13:30	**By**	Peng	
Modified On	30/06/2009 13:32	**By**	Peng	
Users	1			
Cases	0			

Type	Sources	References	Words	Paragraphs	Region	Duration	Rows
Total	2	2	157	2			0

How learning groups facilitate knowledge sharing in Chalco

Tree Node

Created On	30/06/2009 13:40	**By**	Peng	
Modified On	30/06/2009 14:48	**By**	Peng	
Users	1			
Cases	0			

Type	Sources	References	Words	Paragraphs	Region	Duration	Rows
Total	20	31	4540	61			0

Knowledge Sharing Barriers in Chalco   **Tree Node**

Created On	30/06/2009 13:27	**By**	Peng
Modified On	30/06/2009 14:30	**By**	Peng
Users	1		
Cases	0		

Type	Sources	References	Words	Paragraphs	Region	Duration	Rows
Total	**10**	**10**	**1047**	**13**			**0**

Low orgnizational commitment   **Tree Node**

Created On	30/06/2009 13:38	**By**	Peng
Modified On	30/06/2009 13:39	**By**	Peng
Users	1		
Cases	0		

Type	Sources	References	Words	Paragraphs	Region	Duration	Rows
Total	**2**	**2**	**128**	**2**			**0**

Modesty   **Tree Node**

Created On	30/06/2009 13:35	**By**	Peng
Modified On	30/06/2009 13:46	**By**	Peng
Users	1		
Cases	0		

Type	Sources	References	Words	Paragraphs	Region	Duration	Rows
Total	**2**	**3**	**108**	**3**			**0**

Overcome barrier of hierarchy and providing platform for KS   **Tree Node**

Created On	30/06/2009 13:41	**By**	Peng
Modified On	30/06/2009 14:13	**By**	Peng
Users	1		
Cases	0		

Type	Sources	References	Words	Paragraphs	Region	Duration	Rows
Total	**9**	**12**	**1019**	**14**			**0**

Created On	30/06/2009 13:32	**By**	Peng
Modified On	30/06/2009 13:34	**By**	Peng
Users	1		
Cases	0		

Type	**Sources**	**References**	**Words**	**Paragraphs**	**Region**	**Duration**	**Rows**
Total	**3**	**3**	**240**	**3**			**0**