



Title Developing an Inter-Organisational Knowledge
Transfer Framework for SMES

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**DEVELOPING AN INTER-ORGANISATIONAL
KNOWLEDGE
TRANSFER FRAMEWORK FOR SMES**

by

SHIZHONG CHEN

**A thesis submitted for the degree of Doctor of Philosophy
of the University of Luton**

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In memory of my dad, grandmother and grandfather

Developing an Inter-organisational Knowledge Transfer Framework for SMEs

Shizhong Chen

Abstract

This thesis aims to develop an inter-organisational knowledge transfer (KT) framework for SMEs, to help them have better understanding of the process of the KT between a SME and its customer (or supplier). The motivation is that knowledge management issues in SMEs is very neglected, which is not in line with the importance of SMEs in the UK national economy; moreover, compared to KT within an organisation, between organisations is more complicated, harder to understand, and has received much less attention.

Firstly, external knowledge is generally believed to be of prime importance for SMEs. However, there is little empirical evidence to confirm this hypothesis. In order to empirically evaluate the hypothesis, and also specifically to identify SMEs' needs for external knowledge, a mail questionnaire survey is carried out. Then, based on the key findings of the survey, some SME managers are interviewed. The conclusions triangulated from both the key findings and the interview results strongly support the hypothesis, and demonstrate that SMEs have very strong needs for inter-organisational KT, and thus provide very strong empirical underpinning for the necessity of the development of the framework.

Secondly, drawing support from a process view, a four-stage process model was proposed for inter-organisational KT. Then a co-ordinating mechanism underpinned by social networks and organisational learning is developed. The process model, co-ordinating mechanism together with cultural difference between organisations constitute an initial framework. Through interviews with SME managers, the initial framework is revised a final framework. The framework validation exercise shows that the final framework could help SMEs have better understanding of the KT.

In order to remind and help SMEs to address the 'boundary paradox' embedded in inter-organisational KT, and further reflect its complexities and difficulties, the important factors related to each stage of the framework are identified from a strategic perspective, with the help of the co-ordinating mechanism and relevant literature. The factors are also verified by interviews in SMEs. As a result, the initial factors are revised by removing the factors that are perceived as unimportant. The interview results demonstrate that the important factors, as a checklist, can remind and help SMEs to address the 'paradox', and are thus very useful for them.

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Publications from This Research

The following publications are based, in part, on the research reported in this thesis.

- Shizhong Chen, Y. Duan, J. S. Edwards and B. Lehaney, Toward Understanding Inter-organisational Knowledge Transfer Needs in SMEs: Insight from a UK Investigation (forthcoming). *Journal of Knowledge Management*, Vol.10, No.3, 2006
- Shizhong Chen, Y. Duan and J. S. Edwards, An Inter-organisational Knowledge Transfer Process Model. A Chapter in the Book “*Encyclopaedia of Communities of Practice in Information and Knowledge Management* (Forthcoming)” (Edited by E. Coakes and S. Clarke)
- Shizhong Chen, Y. Duan, J. S. Edwards and B. Lehaney, An Investigation on SMEs’ Inter-organisational Knowledge Transfer Needs. *The Proceedings of the Fourth European Conference on Knowledge Management (ECKM2003)*, 18 – 19 September, 2003, Oxford University, pp.171-179
- Shizhong Chen, Y. Duan, J. S. Edwards and R. Kinman, Inter-organisational Knowledge Transfer Strategies for SMEs. *The Proceedings of Knowledge Management Aston Conference 2003*, 14 – 15 July, 2003, Birmingham, pp.191-204
- Shizhong Chen, Y. Duan and J. S. Edwards, Towards An Inter-organisational Knowledge Transfer Framework for SMEs. *The Proceedings of the Third European Conference on Knowledge Management (ECKM2002)*, 24 – 25 September, 2002, Dublin, pp.160-171

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Chapter 1 Introduction

1.1 Overview

The subject of this thesis is to consider how an inter-organisational knowledge transfer (KT) framework for SMEs might be developed, so that it can be used to improve SMEs' understanding of the process of KT between a SME and its customer (or supplier). Why is this so important to be studied? This overview aims to answer the question by discussing three related aspects. Firstly, the history and current research of the knowledge management (KM) discipline, as well as SMEs' features, will be reviewed to highlight the necessity of an empirical investigation on SMEs' perceptions of the importance of, and their needs for, external knowledge. Secondly, if SMEs' perceptions on the importance of, and their needs for, external knowledge are identified by the investigation, obviously, SMEs will involve specific inter-organisational KT process to acquire their needed external knowledge. It is natural to consider whether the KT process is simple and easy to understand by SMEs. If not, could a framework be developed to help SMEs have better understanding of their transfer processes so that their KT performance could be improved? Thirdly and finally, if the framework is developed, what important factors should be presented within it?

1.1.1 The Necessity of an Empirical Investigation on SMEs' KT Needs

The Origin and Definition of KM

In the mid-1980s, international competition was changing to increasingly emphasise product and service quality, responsiveness, diversity and customisation (Wiig, 1997). Organisations were beginning to recognise that technology-based competitive advantages were transient and that the only sustainable competitive advantages they had were their employees (Black and Synan, 1997). To remain at the forefront and maintain a competitive edge, organisations must have a good capacity to retain, develop, organise, and utilise their employee competencies (Martensson, 2000).

Some large organisations, such as US-based Chaparral Steel, had been pursuing a knowledge focus for some years, but during this period, it started to become a more wide-spread business concern (Wiig, 1997; Carrillo, 2004).

Meanwhile, the academic community also began to pay more attention to the increasingly important role of knowledge in the emerging competitive environment. In 1986, the concept of ‘Management of Knowledge: Perspectives of a New Opportunity’ was introduced in a keynote address at a European management conference (Wiig, 1997). Scholars and observers from disciplines as disparate as sociology, economics, and management science agree that a transformation has occurred – ‘knowledge’ is at centre stage (Davenport *et al.*, 1998). Drucker (1993, p.42) argues that “knowledge is the only meaningful resource today. The traditional factors of production ... have become secondary. They can be obtained ... easily, provided there is knowledge”. In other words, none of these factors of production can be utilised in any sensible way without the application of knowledge. Thus, it is knowledge that is key to success. To be competitive and successful, experience shows that enterprises must create and sustain a balanced intellectual capital portfolio. They need to set broad priorities and integrate the goals of managing intellectual capital with the corresponding effective knowledge processes. This requires systematic KM (Wiig, 1997).

Although “... there’s no universal definition of KM, just as there’s no agreement as to what constitutes knowledge in the first place” (Santokus and Surmacz, 2005, p.1; Ives *et al.*, 1997), this thesis would like to present the definition of KM suggested by the American Productivity and Quality Centre (APQC) as follows:

... the strategies and processes of identifying, capturing and leveraging knowledge to enhance competitiveness (McCampbell *et al.*, 1999, p.172).

This definition shows that the processes play a crucial role in KM. At least seven KM lifecycle models (Alavi and Leidner, 2001; Nissen *et al.*, 2000; Beijerse, 2000;

Despres and Chauvel, 1999; Nissen, 1999; Davenport and Prusak, 1998; Gartner Group, 1998), composed of various processes, are proposed. Although the models are different from each other, the transfer process is commonly contained in each of them. Therefore, KT is an essential part of KM.

SMEs and KM

The working definition of SMEs that this research uses will be the EU definition, i.e., enterprises that employ more than 9 and less than 250 employees (OJEC, 2001). SMEs can be further divided into two sorts: small enterprises that employ more than 9 and less than 50 employees, and medium ones that employ more than 49 and less than 250 employees. Moreover, out of the range of SMEs are micro enterprises that employ less than 10 employees, and large ones that employ more than 249 employees (OJEC, 2001).

SMEs appear increasingly crucial to the success of the UK economy (Johnston and Loader, 2003). For example, at the beginning of 2000, it was estimated that there were 3.7 million businesses which could be regarded as active, of these, small businesses accounted for over 99% and a further 25,000 were of medium size (Bradford, 2004). Obviously, SMEs' effectiveness in leveraging knowledge will play a key role in the success of a national economy. Effort devoted to study or exploration of KM issues related to SMEs is considered to be worthwhile. However, according to the foregoing introduction, it is known that KM, as an emerging discipline (Ives *et al.*, 1997), is mainly derived from large businesses (Sparrow, 2001; Carrillo, 2004; Matlay, 2000; Deakins, 1999). As a result, only a small proportion of the literature (Deakins and Freel, 1998; Skandalakis and Nelder, 1999; Dalley and Hamilton, 2000; Beijerse, 2000; Matlay, 2000; Sparrow, 2001; Chen *et al.*, 2002; Chen *et al.*, 2003a; Chen *et al.*, 2003b; Levy *et al.*, 2003; Handzic, 2004; Chesebrough, 2004) has attempted to address KM issues in SMEs, which is not in line with the importance of SMEs in the national economy (Deakins, 1999; Sparrow, 2001; Beijerse, 2000; Matlay, 2000; Chen *et al.*, 2002).

SMEs' Features and the Necessity for an Empirical Investigation

Experience and lessons learned from large businesses can not be directly applied to SMEs, as Sparrow (2001, p.3) argues, "... like so many aspects of business and management, the (KM) issues that SMEs will face will not be simply a scaled-down replica of large-company experiences." The specific reasons are listed as follows.

SMEs may be distinguished from large companies by some or all of the following features:

- **Flexibility** The SME is smaller in size and thus it is easy to change its business direction. As the pace of technological change has increased in society, so the ability of the SME to respond quickly to change has given it an advantage over the large firm. This characteristic is called 'flexibility' (Deakins, 1999).
- **Volatility** The high business start-up rates of SMEs, particularly small firms, may look impressive, but they hide the fact that many of the new starts will not survive beyond the first year of operation and most will not survive the first three years (Stokes, 2002; Deakins, 1999). This characteristic of both high start-up rates and high death rates of SMEs is referred to as volatility (Stokes, 2002; Deakins, 1999).
- **Skill (or expertise) shortages** The SME lacks skills, knowledge or expertise in management and technology (Duan *et al.*, 2001; Duan and Kinman, 2000), and thus has disadvantages in comparison with the large firm (Duan *et al.*, 2001; Duan and Kinman, 2000; Deakins, 1999).
- **Very limited market power, market behaviours mainly affected by partners or competitors** Compared to the large firm, the SME generally has a small share of the market, thus its market power is very limited and has limited ability to influence its business partners. Conversely, its market behaviours will mainly be affected by its partners or competitors (Deakins, 1999; Duan *et al.*, 2001).
- **The central and integrative role of the owner-manager** The SME is managed by its owner, part-owners or managing director in a personalised way; the centrality of the owner(s) is evident (Penn *et al.*, 1998; Deakins, 1999; Sparrow,

2001). Furthermore, from a hierarchy structure perspective, the SME, particularly smaller firms, don't have so many employees, thus its hierarchy structure is very flat. There is often no clear cut between the strategic and operational levels (Rodriguez *et al.*, 2003). The owner or managing director often has to integrate operational, strategic and uncertainty considerations. So, the owner or managing director often plays an integrative role in the SME as well (Penn *et al.*, 1998; Deakins, 1999; Sparrow, 2001). In other words, the smaller the SME is, the more central and integrative a role the owner or managing director plays in the business.

The limited market power of SMEs may often make them feel pressures from external influences. The flexibility provides SMEs with a certain ability to adapt, and they are thus encouraged to cope with the pressures. However, the volatility makes SMEs have to face the cruel reality and realise their skill shortages. They therefore eagerly need to get external knowledge to fill their skill or knowledge gaps so that their ability to adapt can be enhanced. Sparrow (2001, p.7) thus argues, "In considering knowledge projects, large businesses place the primary emphasis upon their internal knowledge flows. Significantly lower consideration is given to the negotiation of external boundaries and core capability. In comparison, SMEs place relatively lower emphasis upon the internal aspects of knowledge and greater emphasis upon external aspects." In other words, external knowledge is of prime importance to SMEs, whereas large businesses may pay more attention to the knowledge of their internal aspects. Since this thesis is mainly concerned with SMEs, and hence focuses on the issues that are of great relevance to the belief that external knowledge is of prime importance to SMEs (Sparrow, 2001). The review of literature shows that very little empirical research has attempted to look at the KM issues at the inter-organisational level in SMEs and to provide empirical evidence to confirm this belief although the analysis and deduction that lead to the belief sound rather reasonable. So, there is a big gap that exists in the empirical identification of SMEs' perceptions on the importance of, and specific needs for, external

knowledge. Therefore, it would be of value if an empirical investigation with UK SMEs could be carried out to address these issues and provide empirical evidence to support the said belief.

1.1.2 The Importance of the Development of a KT Framework for SMEs

Since no single firm has the full range of knowledge and expertise needed for timely and cost-effective product and service innovation (Abou-Zeid, 2002), it is hard to believe that a firm could survive without any knowledge exchange with the outside world in such an open and modern society. Therefore, SMEs certainly have needs for external knowledge, but the point is that it is hard to know, to what extent, SMEs need external knowledge. This is what the empirical investigation targets. Theoretically, the empirical investigation may produce one of the following outcomes:

- external knowledge is really of prime importance for SMEs;
- external knowledge is of, but not prime, importance for SMEs;
- external knowledge is needed by, but not important for, SMEs.

Irrespective of the possible range of outcomes, SMEs need to acquire external knowledge from their customers, suppliers, or other organisations, by means of inter-organisational KT. KT is regarded as a precursor to knowledge creation (Nonaka and Takeuchi, 1995) and an essential part of KM (Alavi and Leidner, 2001; Nissen *et al.*, 2000; Beijerse, 2000; Despres and Chauvel, 1999; Nissen, 1999; Davenport and Prusak, 1998; Gartner Group, 1998). KT has played a central role in the creation of our modern world. It is inconceivable to function in the world today without, for most of us, first spending a significant number of early years being educated (Shariq, 1999). The understanding of how knowledge is transferred is very important for explaining the evolution and change in institutions, organisations, technology and economy. However, KT is often found to be laborious, time consuming, complicated and difficult to understand (Szulanski, 2000; Huber, 2001).

It has received negligible systematic attention (Szulanski, 2000; Huber, 2001), thus we know little about it (Appleyard, 1996; Grant, 1996; Dyer and Nobeoka, 2000; Szulanski, 2000; Huber, 2001). Nonetheless, some literature, such as Davenport and Prusak (1998) and Shariq (1999), have attempted to address KT within an organisation, but studies on inter-organisational KT are still very neglected.

From the foregoing discussions, an emergent view is that it may be beneficial for SMEs if an inter-organisational KT framework can be developed to help them understand and thus to improve their inter-organisational KT process. So even if the result of the empirical investigation is the third outcome (i.e., external knowledge is needed by, but not important for, SMEs), the research on the framework can still theoretically contribute to knowledge. Of course, if the empirical survey results in the second outcome, particularly the first, the contribution would be of not only theoretical but also practical value.

1.1.3 The Usefulness of the Important Factors

The framework to be developed will mainly present the key stages of the inter-organisational KT process, and will describe the relationships between the stages. Following this, the research could come to a conclusion if the framework is empirically evaluated as effective in improving SMEs' understanding of the inter-organisational KT process. Nevertheless, this research will head further with regard to the complexity and difficulty of inter-organisational KT. Although KT within an organisation is known to be complicated and difficult (Szulanski, 2000; Huber, 2001), between organisations is even harder (Mohr and Sengupta, 2002; Chen *et al.*, 2002). The specific reasons are that:

- Within an organisation, the organisation should try to expand the amount of shared knowledge among its employees to an appropriate level (or to the highest level possible), so as to develop (or preserve) its competitive advantage (Lind and Seigerroth, 2003; Chen *et al.*, 2002); however, between organisations, the organisations have to face the 'boundary paradox'. That is, its borders must be

open to flows of information and knowledge from the networks and markets in which it operates, but, at the same time, the SME must protect and nurture its own knowledge base and intellectual capital (Quintas *et al.*, 1997; Beeby and Booth, 2000; Chen *et al.*, 2002; Mohr and Sengupta, 2002). In other words, there is a 'knowledge-sharing' versus 'knowledge-security' trade-off that has to be resolved by appropriate strategies.

- Compared to KT within an organisation, between organisations lacks a formal chain of authority to co-ordinate their transfer activities (Holmqvist, 2003).

So, many more conflicts will arise, many more bargains will be needed (Holmqvist, 2003), many more complicated factors will impinge on the transaction, more strict governance mechanisms will be required to regulate the transfer content, and much higher loyalty requirements will be placed on relevant employees. From a strategic perspective, these factors may be involved in relevant stages of the inter-organisational KT process that are described by the framework to be developed. Obviously, if these factors could be identified, empirically evaluated, and then highlighted within the relevant stages of the framework, SME managers would be reminded to pay attention to the 'boundary paradox', and take them into account as companies exchange knowledge with their customers (or suppliers). Therefore, these important factors will be very helpful for SMEs.

Having given a general overview of the research domain, in the following sections, the research objectives will be defined, and the structure of the thesis described.

1.2 Aim and Objectives of the Research

Based on the previous overview, it is known that KM issues in SMEs are very neglected, which is not in line with the importance of SMEs in the UK national economy; moreover, compared to KT within an organisation, between organisations is more complicated, harder to understand, and has received much less attention. This research attempts to address and make a contribution to these two neglected areas, and therefore aims to develop and evaluate an inter-organisational framework

for SMEs, to help them have better understanding of the process of the KT between a SME and its customer (or supplier). The empirical identification of SMEs' perceptions on the importance of, and their needs for external knowledge, may provide practical evidence to underpin the necessity of the development of the framework. The identification of the important factors highlighted in the framework will further strengthen its role in improving SMEs' understanding of inter-organisational KT. Specifically, the objectives of the study are to:

- review the literature on SMEs, KT, organisational learning, and social networks, present relevant models, factors and relationships, and thus lay a basis for the identification of relevant research issues and the development of the framework;
- identify research issues for the empirical investigation¹, and propose an initial inter-organisational KT framework as well as associated important factors;
- investigate the current inter-organisational KT practices of UK SMEs, and identify their perception on the importance of, and needs for, external knowledge;
- evaluate and revise the initial framework;
- test the identified important factors highlighted in the initial framework.

1.3 Structure of the Thesis

This study is divided into eight chapters, which are diagrammatically presented in Figure 1.1. This chapter provides an introduction to the thesis. The main issues are sketched. The research aim and five objectives are then defined. Finally, the structure of the thesis is outlined.

Chapter 2 firstly reviews literature on KT within an organisation, and presents a well-known intra-organisational KT process model. Then the differences between

¹ Ideally, this investigation should cover all sectors, however, it was only carried out in the service sector. The reason is that the investigation was initiated to study SMEs' inter-organisational KT in Internet marketing, which is considered to be easier to implement in the service sector than other sectors. But the following evaluations of the initial framework and associated important factors were carried out in all sectors.

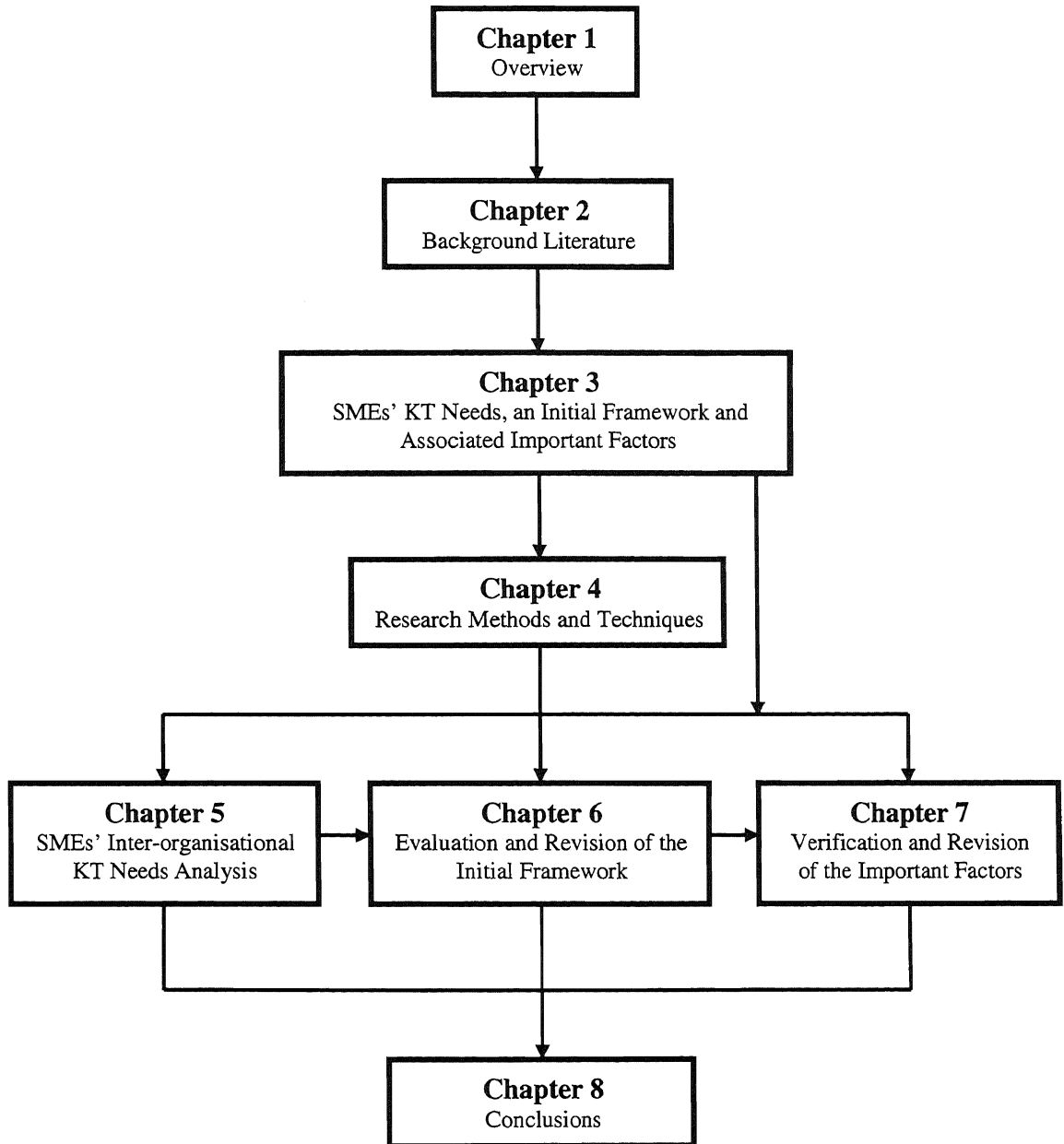


Figure 1.1 Structure of the Thesis

intra- and inter-organisational KT are clarified. Further, the literature on inter-organisational KT, inter-organisational learning and social networks is reviewed. The academic connections among these three areas are also established. All information presented so far will lay a good foundation for the research in the following chapters.

Chapter 3 presents the key issues concerning SMEs' perceptions on the importance and needs for external knowledge, their inter-organisational KT activities, channels and effectiveness by analysing relevant literature, and thus provides a framework for the empirical investigation. Moreover, a co-ordinating mechanism underpinned by the theories of organisational learning and social network is proposed for inter-organisational KT. Then, drawing on the well-known intra-organisational KT process model, a four-stage process model for inter-organisational KT is developed. The developed process model and co-ordinating mechanism, together with cultural difference between organisations, constitute an initial four-stage framework. Furthermore, from a strategic perspective, the important factors involved in each stage of the framework are also identified by reviewing relevant literature.

Chapter 4 begins with the comparison of the advantages and disadvantages between positivist versus interpretivist, and between quantitative versus qualitative approaches, then selects the research method (i.e., the survey method), and determines pertinent research techniques (i.e., mail questionnaire and face-to-face interview) adopted by this study. Firstly, the empirical works of this research mainly focus on gathering data about relevant respondents' or interviewees' subjective perceptions, beliefs and views on the key research issues related to SMEs' KT needs, initial framework and identified important factors. It is the interpretivist approach that is adopted in this study because its epistemology is based on the assumption that reality is constructed by the observer making sense out of the external events and data with which he presents. Moreover, both qualitative and quantitative approaches are used in the research, although the latter is primarily

associated with positivist research. Secondly, through the comparative analysis on the advantages and disadvantages of the four research methods (i.e., explicatory method, case study, survey and experimental method), the survey method is selected as a suitable means for the empirical investigation on SMEs' KT needs, the evaluation of the initial framework and the verification of the identified important factors. Thirdly, in order to gather empirical information about SMEs' perceptions on the importance of, and their needs for, external knowledge, and empirically evaluate the belief that external knowledge is of prime importance for SMEs, a mail questionnaire was chosen as an appropriate technique for this purpose. According to the major issues presented in Chapter 3, the questionnaire was designed for completion by SME managers in the service sector (See the reason at the footnote of Section 1.2). A total of 1,000 questionnaires were sent out to SMEs, with 105 valid responses returned. Fourthly, the face-to-face interview was selected as a suitable research technique to validate and triangulate the key findings of the questionnaire survey; evaluate and revise the initial framework; and verify the identified important factors. The interviews were composed of the pilot and two rounds of formal interviews, and were conducted in 21 SMEs selected from all sectors. Although some modifications were made on the initial framework after the pilot test and first round of formal interviews respectively, they were not so big, and thus have no obvious influences on the questions for verifying the important factors. Furthermore, the questions for collecting empirical evidence to support the questionnaire survey obviously have not changed either. Therefore, in the following chapters, only the analysis on the evaluation of the initial framework will show the division of the interview phases so that the modifications of the framework, in the relevant interview phases, can be traced. For other purposes, all SME interviews will be analysed together.

In chapter 5, the data collected from the mail questionnaire survey is analysed by means of SPSS. The key findings demonstrate that the knowledge about customers is the most important, and thus strongly support the argument that external

knowledge is of prime importance to SMEs. The findings also show that nearly all SMEs have need for inter-organisational KT; both social networks and electronic networks are important channels for SMEs to acquire the needed knowledge; nearly half of SMEs have made costly errors or mistakes in the last five years because of inadequate knowledge about customers; and only 56% of SMEs are very effective or effective in leveraging knowledge from other organisations to improve their business performance. The interview results strongly support the key findings, and further present a rich picture about SMEs' practices and needs through some practical examples. The findings and results have been triangulated and strengthened, and thus provide more reliable understanding and knowledge on SMEs' inter-organisational KT needs and practices, as well as very strong underpinning for this study.

Chapter 6 is the heart of this thesis and sets out the main findings from several rounds of interviews for the evaluation and revision of the initial framework. Through the pilot interviews, the *Initiation* stage is divided into two stages: *Identification* and *Negotiation*, the initial four-stage framework thus becomes a five-stage one. Moreover, the feedback loops between the stages are also established. In the first round of formal interviews, the five-stage framework is considered as acceptable by interviewees, but a three-stage framework derived from the five-stage one is also proposed by some interviewees. The reasons are that, small businesses normally don't have so many employees to select, their managers may have to exchange knowledge with their customers (or suppliers) by themselves, not through their employees; moreover, in medium-sized companies, for some reasons (e.g., the knowledge to be exchanged is very important), managers like to exchange knowledge with the customers (or suppliers) by themselves even if they have enough employees to select. So, the two frameworks actually claim that the management of the giving (or receiving) company has two options to decide who should be the giving (or receiving) employee, i.e., himself or his staff. Through the second round of formal interviews, the five-stage and three-stage frameworks are

unified as one framework. The framework clearly reflects the two options, is believed to be applicable for SMEs and thus called as the final framework. The interview outcomes also demonstrate that the bigger the size of a company is, the more likely its management selects his staff as the giving (or receiving) employee; the smaller the size of the company is, the more likely the management selects himself as the employee. In addition, the majority of SME interviewees agree that the framework could help SMEs have better understanding of the inter-organisational KT.

Chapter 7 presents the results of the evaluation on the important factors involved in the relevant stages of the final framework. Of the factors, some are common factors that influence both the giving side (Consisting of the giving organisation and giving employee²) and receiving side (Consisting of the receiving organisation and receiving employee³). If a common factor is considered as important by the giving side, it is vital that the receiving side shows equal consideration because it is the giving side that normally dominates the transfer process. So, the common factors evaluated as important by the giving side, will not be further evaluated by the receiving side. Therefore, the factors associated with the giving side are evaluated first. Most of the identified factors are evaluated as important. Some factors that are evaluated as unimportant for SMEs (e.g., prior experience and theoretical knowledge for the receiving employee), are removed from the list. A new factor list associated with the final framework is thus produced.

² Giving organisation is an organisation that gives knowledge to another organisation; correspondingly, giving employee is an employee of the giving organisation, who gives knowledge to an employee (or employees) from another organisation.

³ Receiving organisation is an organisation that receives knowledge from another organisation; correspondingly, receiving employee is an employee of the receiving organisation, who receives knowledge from an employee (or employees) in another organisation.

Finally, in chapter 8, the conclusions and contributions of this research are presented. The limitations are discussed. Future research is also recommended.

In the following chapter, background literature in the areas of KT, organisational learning and social networks will be reviewed.

Chapter 2 Background Literature

2.1 Introduction

Chapter 1 introduced KT as characterised by complexities and difficulties, and demonstrated that inter-organisational KT is very important for SMEs. However, inter-organisational KT is more complex, but receives much less attention than KT within an organisation. It is suggested that an inter-organisational KT framework should be developed for SMEs. This chapter is aimed at further exploring the characteristics of KT (including knowledge), reviewing KT and relevant literature, and providing a basis for the framework development and other research issues.

This chapter begins with an explanation of the concepts and categories of knowledge and KT. It follows with a review of KT within and between organisations. The connections among inter-organisational KT, organisational learning and social networks are then set up so that the theories of both organisational learning and social network can be used to address the issues of this study. Consequently, a brief review on these two areas is also carried out.

2.2 Review on KT

2.2.1 Knowledge and its Characteristics

The Definition of Knowledge

The literature presents numerous definitions of knowledge, but none seem to be universally appropriate, as the definitions depend on the context in which they are used (Sveiby, 1997; Bender and Fish, 2000). For the purpose of this study, knowledge is defined as follows:

Knowledge is information combined with experience, context, interpretation, reflection, and perspective (Davenport *et al.*, 1998; Kirchner, 1997; Frappaolo, 1997) that is ready to be applied to decisions and actions (Davenport *et al.*, 1998).

Knowledge originates and is applied in the minds of knowers. In organisations, it is often embedded not only in documents or repositories, but also in organisational routines, processes, practices and norms (Davenport and Prusak, 1998; Ford and Chan, 2003). Specifically, knowledge consists of truths and beliefs, perspectives and concepts, judgements and expectations, methodologies and know-how (Quintas *et al.*, 1997). In addition, some scholars separate expertise (Bender and Fish, 2000) and wisdom (CIO Council, 2001) from knowledge, but others (Nonaka and Takeuchi, 1995) put them into knowledge and treat them as subsets of the latter. This research takes on the second viewpoint, and treats expertise and wisdom as high-value knowledge.

The Differences between Data, Information and Knowledge

Although the importance of differentiating between data, information and knowledge is emphasised by several scholars, such as Davenport and Prusak (1998), Wiig (1993), Sveiby (1997) and Bender and Fish (2000), the differences are not always clear (Bender and Fish, 2000). Generally speaking, data are raw facts, figures and events, and hence are discrete and objective (Bender and Fish, 2000). Huseman and Goodman (1999, p.105) also define data as objective facts describing an event without any judgement, perspective or context. Data are essential raw material for the creation of information (Bender and Fish, 2000), and must be processed so that information can be produced. So, information is organised data (Quintas *et al.*, 1997), or the outcome of data analysis (Bender and Fish, 2000). However, information has little value and will not become knowledge until it is processed by the human mind (Martensson, 2000). It must be interpreted by the mind to form meaningful information – knowledge (CIO Council, 2001). Knowledge requires a

higher understanding than information (Thierauf, 1999). The relationship between data, information and knowledge is recursive, just as the knowledge hierarchy in Figure 2.1 shows, knowledge is built up from data to information, then to knowledge. Their differences depend on the degree of 'organisation' and 'interpretation'. Data and information are distinguished by their 'organisation', and information and knowledge are differentiated by 'interpretation' (Bhatt, 2001). The higher the data is organised, or the information is interpreted, the clearer the difference between itself (i.e., data or information) and the result is.

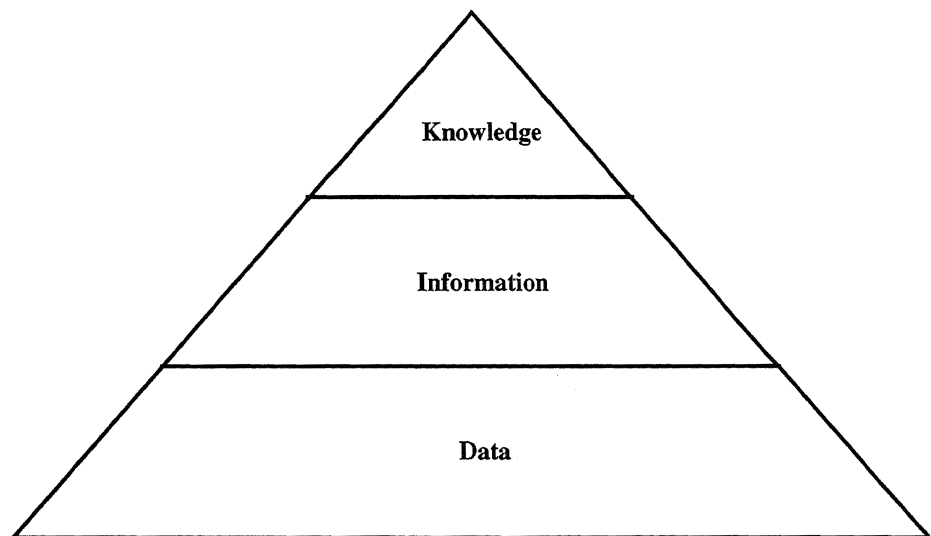


Figure 2.1 The Knowledge Hierarchy (Turban and Aronson, 1998)

The Types of Knowledge: Explicit and Tacit

There are many taxonomies of knowledge (Connell *et al.*, 2003), for example, the distinction between individual and collective knowledge, private and public knowledge, component and architectural knowledge (Connell *et al.*, 2003), situated and generic knowledge, and procedural and declarative knowledge (Hendriks, 2001). But a commonly drawn distinction is that between explicit and tacit knowledge (Polyani, 1966; Nonaka and Takeuchi, 1995; Connell *et al.*, 2003).

Explicit knowledge is documented and public; structured, fixed-content, externalised, and conscious (Nonaka and Takeuchi, 1995). It is what can be captured and shared through information technology (Nonaka and Takeuchi, 1995), manuals, standard operations, courses or books (Hubert, 1996). A recipient may store explicit knowledge that he receives in computer disks, recorder tapes, or books, no matter whether he actually absorbs the knowledge or not; then he may even absorb the knowledge bit by bit in a self-taught way. So, its transfer may not require extensive personal contact and strong inter-personal ties.

Tacit knowledge resides in the human mind, behaviour, experience and perception. It is a kind of 'we know more than we can say' knowledge (Nonaka and Takeuchi, 1995). It is the skills and 'know-how' we have inside each of us that is gained over time and through personal insights (Goh, 2002), and cannot be easily shared (Hubert, 1996). It is much less 'concrete' and more valuable than explicit knowledge because it provides context for people, places, ideas and experiences (Nonaka, 1991). In fact, most people are not aware of the tacit knowledge they themselves possess or of its value to others. It is highly personal, hard to formalise, and thus difficult to communicate to others and has low permeability (Connell *et al.*, 2003; Desouza, 2003). It generally requires extensive personal contact and trust to share effectively. So its transfer requires skills and practices (Nonaka and Takeuchi, 1995), and using processes that are less structured (Goh, 2002).

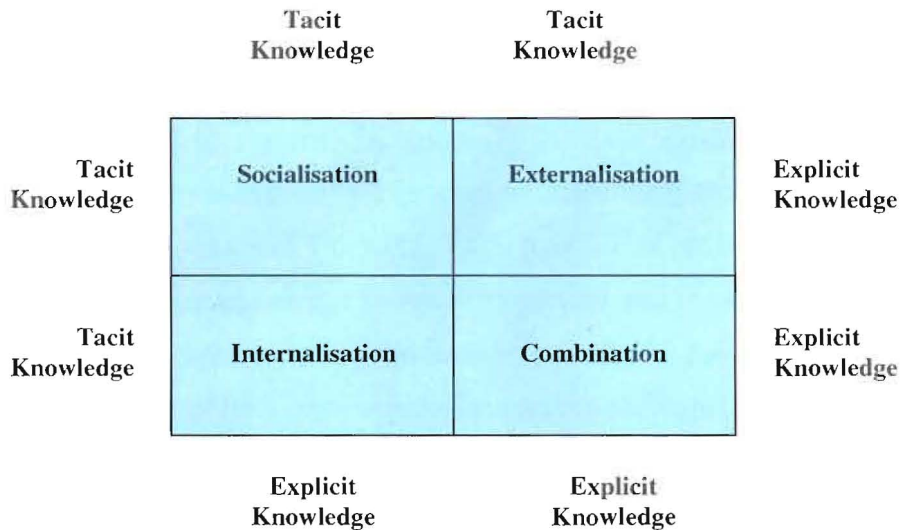


Figure 2.2 SECI Knowledge Creation Model (Nonaka and Takeuchi, 1995)

Tacit and explicit knowledge can be converted into each other. In Nonaka and Takeuchi's (1995) well-known organisational knowledge creation model (See Figure 2.2), the process of creating knowledge is formalised and consists of four modes: socialisation, externalisation, internalisation and combination. It starts from the socialisation, then goes clockwise through the externalisation, combination and internalisation. When viewed as a continuous learning process, the model becomes a clockwise spiral, not a cycle, because as one 'learns' around the cycle, understanding moves to deeper and deeper levels (Rumizen, 1998; Martensson, 2000). Specifically speaking, the four modes have different objectives and functions. Socialisation and combination are the processes for tacit knowledge sharing between individuals, and explicit knowledge sharing between groups. However, the internalisation is described as the process of embodying explicit knowledge into

tacit knowledge (Nonaka and Takeuchi, 1995). The concept of the internalisation is closely related to 'learning by doing', but the amount of doing that is needed for turning explicit knowledge into tacit is of course related to the level of background knowledge of the actor (Lind and Persborn, 2000). The reverse conversion (i.e., from tacit knowledge to explicit) is obviously the externalisation (Nonaka and Takeuchi, 1995). "Externalisation is a process of articulating tacit knowledge into explicit concepts" (Nonaka and Takeuchi, 1995, p.64). This process seems to offer benefits because explicit knowledge is easier to manage and transfer. Nevertheless, tacit knowledge does not easily leak to competitors due to its low permeability, which may be used to protect organisational resources and capabilities (Connell *et al.*, 2003). Therefore, organisations sometimes intentionally maintain the tacitness of their knowledge (Albino *et al.*, 1999; McEvily *et al.*, 2000).

These suggested conversions may facilitate knowledge creation or transfer (Nonaka and Takeuchi, 1995), but not easily. Due to the great importance of tacit knowledge and its difficulties in transfer and expression, technology can never substitute the rich interactivity, communication, and learning that is inherent in face-to-face contacts. Therefore, Davenport and Prusak (1998, p.72) argue, "...providing access to people with tacit knowledge is more efficient than trying to capture and codify that knowledge".

In short, compared to explicit knowledge, tacit knowledge is of higher value to organisations, and more difficult to transfer (Martensson, 2000; Beeby and Booth, 2000), and thus generally requires extensive personal contact and trust to share effectively (Nonaka and Takeuchi, 1995).

The Characteristics of Knowledge

Knowledge is thought to have the following characteristics:

- The structural characteristic: knowledge is a structured set of information associated to a meaning by an individual or organisational interpretation process (Albino *et al.*, 1999).
- The functional characteristic: all the knowledge owned by individuals or organisations defines their skills and core competencies respectively, and enables them to carry out certain tasks (Albino *et al.*, 1999).
- Knowledge cannot easily be kept in and retrieved from people's minds: as we know, knowledge, particularly explicit knowledge, can be stored in a computer and kept forever, provided the computer and hard disk have no problems. However, if the stored explicit knowledge cannot be transferred to and resided in people's minds, it would be useless. Only the knowledge that resides in people's minds can be used to support their decisions and actions. However, knowledge that resides in people's minds, unlike raw material that is coded, audited, inventoried, and stacked in a warehouse for employees to use as needed, is scattered, messy, and easy to lose (Martensson, 2000). So, from this point of view, knowledge cannot easily be kept in, and retrieved from people's minds.
- Knowledge is not easy to transfer to people's minds, and has to be created and developed individually (Davenport and Prusak, 1998; Parker and Vaidya, 2001; Bender and Fish, 2000). Even if the knowledge is explicit, and delivered by an electronic network or presentation to a recipient, the recipient however receives the knowledge in the form of data (Bender and Fish, 2000). The recipient of the data has to add meaning to transpose the data into information, he must possess internal cognition to interpret the information (Shariq, 1999; Albino *et al.*, 1999), filter it and absorb it, then enrich it with his own personal values and beliefs, thus build his individual knowledge by personal application (Bender and Fish, 2000). In this sense, knowledge is obviously not easy to transfer to people's minds.

- Knowledge cannot easily be found. It is something that resides in people's minds. If a kind of knowledge is not expressed by someone, it may be difficult to know who has it (Huber, 2001; Parker and Vaidya, 2001).
- Knowledge is not 'used up', as raw materials are, in the production process. It can be applied again and again (Carter, 1989).
- Knowledge is hard to imitate and cannot be appropriated in the same sense as other resources, and thus forms the basis for gaining a competitive edge (Hendriks, 2001).

2.2.2 The Definition and Characteristics of KT

The Definition of KT

KT means that knowledge is transferred from the giver(s) (person, group (team) or organisation) to the recipient(s) (person, group (team) or organisation) (Alavi and Leidner, 2001; Lind and Seigerroth, 2000; Lind and Persborn, 2000; Bender and Fish, 2000; Albino *et al.*, 1999; Shariq, 1999; Davenport and Prusak, 1998). Some researchers use other terms such as 'knowledge share' (Nonaka and Takeuchi, 1995; Nonaka and Konno, 1998; Despres and Chauvel, 1999; Beijerse, 2000) or 'knowledge distribute' (Nissen *et al.*, 2000; Nissen, 1999). Although the terms are different, all of them address the ability to transfer or share knowledge within or between organisations (Nissen *et al.*, 2000). There are no obvious differences between the three terms. This research will use the term 'knowledge transfer'.

The Characteristics of KT

Compared with the exchanges of goods, knowledge transfer has the following characteristics (Carter, 1989):

- Knowledge that is transferred to the recipient isn't 'given away'. Unless some special arrangement is made to deny further use to the giver, both the giver and recipient can mutually use the knowledge. However, the trader of goods will lose it once he gives it away.

- Knowledge ‘duplicates’ are of no value. Since knowledge isn’t destroyed by use, duplicates are superfluous. For example, a trader may benefit from acquiring more units of wheat that was represented in his initial holdings. However, someone who has already learned how to concentrate orange juice by a particular method has little use for repeated knowledge that is identical to what he already knows.

2.2.3 KT within an Organisation

Although this study targets KT between organisations, this chapter would like to review KT within an organisation first. An important reason for doing so is that, “... those [previous] studies [on KT between organisations] (Mowery *et al.*, 1996) deal only with the transfer of knowledge from one organisation to another. What is lacking is a comprehensive understanding of effective knowledge transfer within an organisation” (Goh, 2002, p.24). Therefore, a good understanding of KT within an organisation would be conducive to this research.

From Section 1.1.2 in Chapter 1, it is known that KTs are often found to be laborious, time consuming, difficult, and hard to understand. This study thus aims to develop an inter-organisational KT framework for SMEs to help them have better understanding of their inter-organisational KT processes. Consequently, the processes should be a focus for this research, and important attention should be paid to the review of the literature in this aspect. Szulanski (2000, p.10) also argues that, “a process view allows a closer examination of how difficulty evolves over stages of the transfer. It can also provide insight into the working of different organisational arrangements to transfer knowledge, inform managerial interventions and help design organisational mechanisms that support knowledge transfer” (Szulanski, 2000, p.10). Therefore, the literature on KT will mainly be reviewed from the process perspective.

KT within an organisation may involve various types of KTs, for example, from individual to individual, individual to group, individual to organisation, group to group, and group to organisation. Knowledge can only be employed through people (Bender and Fish, 2000) and created and developed individually (Davenport and Prusak, 1998; Parker and Vaidya, 2001). Moreover, it is individuals that make up a group or organisation (Argyris and Schon, 1996; Kim, 1993; Beeby and Booth, 2000). KT from individual to group, individual to organisation, group to group, and group to organisation actually begin from individual to individual. So KT from individual to individual is an essential part for any other types of KTs, and hence is introduced first.

KT between Individuals

From a process perspective, KT between individuals is about interaction and communication between two actors: a knowledge recipient and a knowledge giver (Lind and Persborn, 2000). The specific process (See Figure 2.3) may be listed as follows (Lind and Persborn, 2000):

- the recipient identifies his knowledge needs based on his background knowledge, then constitutes a question in terms of the identified needs, and further initiates the transfer process by delivering the question to the giver;
- the giver interprets the question using his background knowledge;
- the giver formulates an answer to the question in accordance with his background knowledge and delivers it to the recipient;
- the recipient interprets the answer by means of his background knowledge, develops a solution for the question, and in turn increases his background knowledge itself; and
- possibly and finally, the recipient might feedback to the giver some knowledge about the applicability of the latter's answer. This knowledge may also in turn help the giver to further develop his background knowledge.

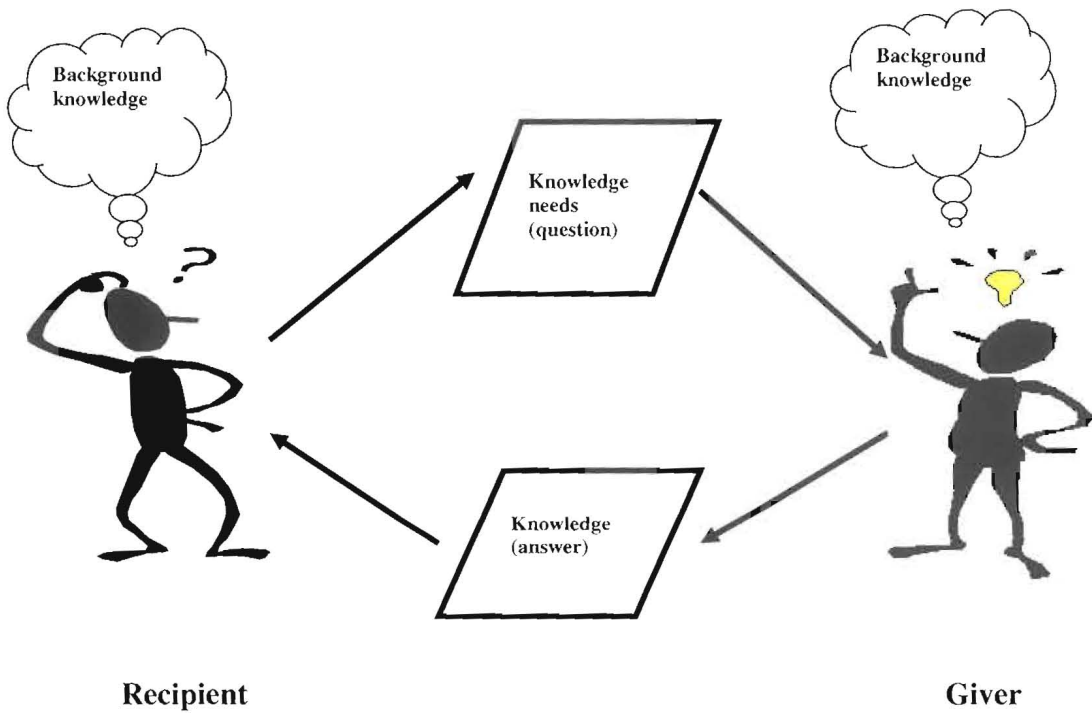


Figure 2.3 KT between Two Individuals (Lind and Persborn, 2000)

There are several important issues that might cause the failure of the transfer (See details in Table 2.1). In addition, the process description of KT between individuals shows that the transfer seems very simple, but actually, it is complicated. The KT from the giver to the recipient is not just a kind of one-way communication, but two-way. As well as the giver passing knowledge on to the recipient, the latter may feedback something to the former, for instance, through body language, facetiousness or cynicism, signals that the recipient has understood or not understood what the giver is saying; or that the knowledge provided by the giver is,

or is not, useful. For in this way, the recipient's behaviours may influence what the giver will next do, give or develop.

Table 2.1 Important Issues that Might Cause the Failure of the Transfer

Issue No.	The Content of the Issue
1	The recipient might have misunderstood the context of his problem and background, and thus cannot formulate a valid question for solving the actual problem (Lind and Persborn, 2000).
2	The giver might not have the accurate background knowledge for interpreting the question or may not understand the question (Lind and Persborn, 2000).
3	The giver might have the accurate background knowledge, but not have ability to articulate it into a valid answer (Lind and Persborn, 2000).
4	The recipient might not understand the answer and/or is not able to internalise the answer into his background knowledge (Lind and Persborn, 2000).
5	The giver might hoard knowledge and be unwilling to transfer the knowledge to the recipient (Senge, 1998; Greengard, 1998). This is especially so amongst employees with special knowledge in a certain field, who might be afraid of losing their individual power and importance when sharing their knowledge (Wiig, 1995), and thus fear that knowledge sharing can impede their ability to get ahead in their career (Greengard, 1998; Bender and Fish, 2000).
6	The recipient does not like to use the giver's ideas for fear it makes him appear less knowledgeable and thus dependent on others. This causes the 'not-invented-here' syndrome, which can be the result of the fear to admit not knowing everything. People may prefer to learn and obtain knowledge for themselves even though another person in the organisation already has the knowledge (Bender and Fish, 2000).
7	An individual's background knowledge contains a lot of tacit knowledge that cannot be immediately expressed (Lind and Persborn, 2000). Obviously, if some tacit knowledge embedded in both actors' background knowledge involves the transfer process, a high level of interaction between them is needed. Its effectiveness depends, to some extent, on the strength of the trust between both actors, which is reflected in the ease of communication and the 'intimacy' of the overall relationship between the actors. An arduous relationship might increase the effort needed to resolve transfer-related problems (Szulanski, 2000; Snowden, 1998; Wiig, 1995; Nonaka and Takeuchi, 1995; Allee, 1997b; Greengard, 1998; Nonaka and Konno, 1998; Davenport and Prusak, 1998; Senge, 1998; Bender and Fish, 2000).

KT between individuals actually means that an individual learns from another individual, i.e., a kind of inter-individual learning. So, from a perspective of organisational learning (See details in Section 2.3), some scholars (Cohen and Levinthal, 1990; Wathne *et al.*, 1996; Albino *et al.*, 1999; Szulanski, 2000; Chen *et al.*, 2002) think that the following factors heavily influence the effectiveness of the KT:

- **Absorptive capacity** reflects the recipient's ability to absorb the knowledge sent by the giver. It is decided not only by the recipient's prior experience but also the recipient's intelligence and comprehension as well (Cohen and Levinthal, 1990; Goh, 2002; Huber, 2001; Connell *et al.*, 2003).
- **Prior experience** owned by both the giver and recipient will influence their abilities to exchange knowledge. It influences the capability of both conveying knowledge through information and internalising new knowledge. It seems possible to claim that the higher the degree of actors' prior experience, the greater the effectiveness of KT (Wathne *et al.*, 1996; Albino *et al.*, 1999).
- **Motivation** means that the recipient is motivated to seek or accept knowledge from the outside. Lack of motivation may result in procrastination, passivity, feigned acceptance, sabotage, or outright rejection in the implementation and use of new knowledge (Sometimes referred to as the 'not-invented-here' syndrome) (Szulanski, 2000; Huber, 2001; Goh, 2002).
- **Openness** has been defined mainly as the giver's willingness to transfer his knowledge in a collaborative interaction, in order to stress the attitude of the giver involved in the KT of not hiding his knowledge, so that potential learning is facilitated. A higher level of the giver's openness allows a more effective KT (Wathne *et al.*, 1996; Albino *et al.*, 1999; Huber, 2001).
- **Trust** between the giver and recipient has a direct and positive influence on the giver's openness (Wathne *et al.*, 1996; Albino *et al.*, 1999; Goh, 2002). If the relationship is distant or communication difficult, the giver may be unwilling to provide his knowledge to the recipient and KT is less likely to occur. The recipient should try to maintain a good inter-personal relationship with the giver,

especially in the process of tacit KT, because tacit knowledge may be best transferred through more inter-personal means and using processes that are less structured (Goh, 2002).

- **Expressiveness** represents the ability of the giver to use oral or facial expression and body language to clearly express what he knows. Even if the giver has high levels of prior experience and openness, the transfer effectiveness may still be quite low if the giver has poor expressiveness (Chen *et al.*, 2002).

Compared to the issues listed in Table 2.1, these factors are found to be very closely relevant to them. The recipient's prior experience, absorptive capacity and motivation are obviously in connection with issues 1, 4 and 6 respectively; and the giver's prior experience, expressiveness, and openness in connection with the issues 2, 3 and 5 respectively; finally, trust between the giver and recipient corresponds to issue 7.

Moreover, it is known that the communication between the giver and recipient is two-way; the giver may also get some knowledge from the recipient's feedback. So, the recipient should have a certain ability to express his question, and the giver should have a certain absorptive capacity to absorb the knowledge that feeds back from the recipient. However, just as a lecturer and a student, the expressiveness is evidently more important for the lecturer than the student, and conversely, the absorptive capacity is more important for the student than the lecturer. Therefore, it is right that the absorptive capacity and expressiveness, as important factors, are assigned to the recipient and giver respectively.

Based on the above discussion, a conclusion can be drawn here. The giver's openness, prior experience and expressiveness, and the recipient's absorptive capacity, motivation and prior experience, as well as the trust between the giver and recipient are important factors influencing the effectiveness of the KT from individual to individual.

The foregoing description of the process of KT between individuals clearly demonstrates the complexities and difficulties of the KT. Which rightly echoes Szulanski's (2000) argument that the process view can help people have better understanding of the complexities and difficulties existed in KT. However, the description has the following limitations:

- it involves an individual level, and cannot provide a rich picture about KT at group or organisational level;
- according to Davenport and Prusak (1998), to be of value to the organisation, the transfer of knowledge should lead to changes in behaviour, changes in practices and policies and the development of new ideas, processes, practices and policies. Szulanski (2000) also argues that a successful KT for an organisation should improve its business performance. From this point of view, the recipient should at least use his acquired knowledge to improve the business that he is in charge of for the organisation. So, it is important for the description to demonstrate how the recipient will apply the knowledge into practice. Unfortunately, this description doesn't cover much of this aspect.

These two drawbacks are addressed by an intra-organisational KT process model proposed by Szulanski (2000). The details about the model will be introduced as follows.

KT between Groups

To reflect the difficulty that characterises KT within an organisation, Szulanski (2000) developed a process model for intra-organisational KT which contains four stages – initiation, implementation, ramp-up and integration (See Figure 2.4). ***Initiation*** means the initiation of a transfer; ***implementation*** represents the initial implementation effort; ***ramp-up*** means that the implementation ramps up to satisfactory performance; ***integration*** represents subsequent follow-through and evaluation efforts to integrate the practice with other practices of the recipient.

Szulanski (2000) then applies the model to theoretically analyse the process of KT between groups within an organisation, and demonstrates some difficulties that may happen at each stage of the process as follows.

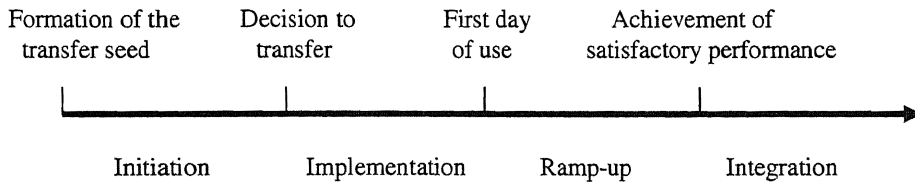


Figure 2.4 The Process for KT within an Organisation (Szulanski, 2000)

At the *initiation* stage, the effort aims to find an opportunity to transfer and to decide whether to pursue it. This becomes more demanding when existing operations are inadequately understood or when relevant and timely measures of performance, as well as internal or external yardsticks, are missing. An opportunity to transfer exists as soon as the seed for that transfer is formed, i.e., as soon as a gap and knowledge to address the gap is found within the organisation. The discovery of a gap may trigger problemistic search for suitable solutions. The search for opportunities and the decision to proceed with a transfer inevitably occurs under some degree of irreducible uncertainty or causal ambiguity. It becomes more difficult to assess the real merit of an opportunity and to act upon it. However, this uncertainty is reduced when there is evidence that the knowledge to be transferred has proven robust in other environment and that the giver is reputable. Furthermore, the opportunity may need further scrutiny in order to understand why or how superior results are obtained by the giver. The initiation of a transfer may consequently require substantial effort to delineate the scope of that transfer, select the timing, assess the costs and establish the mutual obligations of the participants (Szulanski, 2000).

At the *implementation* stage, following the decision to transfer knowledge, attention shifts to the exchange of information and resources between the giver and the recipient. Transfer-specific ties are established between members of the giver and the recipient, and information and resource flows will typically increase and possibly peak at this stage (Szulanski, 2000). The eventfulness of the implementation stage depends on how challenging it is to bridge the communication gap between the giver and the recipient and to fill the recipient's technical gap. Bridging the communication gap may require solving problems caused by incompatibilities of language, coding schemes and cultural conventions (Szulanski, 2000).

At the *ramp-up* stage, the recipient begins using acquired knowledge, for example, starts up a new production facility, rolls over a new process, or cuts over to a new system. The main concern becomes identifying and resolving unexpected problems that keep the recipient from matching or exceeding a priori expectations of post-transfer performance. The ramp-up stage offers a relatively brief window of opportunity to rectify unexpected problems where the recipient is likely to begin using new knowledge ineffectively ramping-up gradually toward a satisfactory level of performance, often with external assistance (Szulanski, 2000). The difficulty that the recipient will experience depends on the number and seriousness of unexpected problems (e.g., a new environment where the transferred knowledge is put to use reacts differently than expected, or trained personnel leave the organisation) and the effort required to solve them.

At the *integration* stage, once satisfactory results are initially obtained, the recipient will take subsequent follow-through and evaluation efforts to integrate the practice with its other practices, so that the use of new knowledge becomes gradually routinised (Szulanski, 2000). This progressive routinisation is incipient in every recurring social pattern. The new practices will blend with the objective, taken-for-

granted reality of the organisation. The difficulty that the recipient may experience depends on the effort required to remove obstacles and to deal with challenges to the routinisation of the new practice.

Szulanski (2000) also points out that, the influence of the attributes of the giver are expected to diminish as the transfer unfolds. The giver's involvement and co-operation is most needed for the initiation and initial implementation of the transfer. However, once the recipient has obtained satisfactory results, it needs progressively fewer interactions with the giver. Conversely, attributes of the recipient are likely to become increasingly important as the transfer unfolds.

An empirical survey of 122 KT practices between groups, carried out by Szulanski (2000), illustrates that the model fully presents the complexities and difficulties that lie at KT from group to group, and also attaches great importance to the application of the transferred knowledge, and is applicable for KT between groups within an organisation. The empirical results further demonstrate that the process view does help organisations gain a better understanding of the complexities and difficulties in KT. From Section 1.1.3, it is known that KT between organisations is much more complicated than within an organisation (Quintas *et al.*, 1997; Beeby and Booth, 2000; Chen *et al.*, 2002; Mohr and Sengupta, 2002), so, this study will use the same view to propose the framework for inter-organisational KT.

In addition, based on Szulanski's (2000) description for the model, it is believed that this model is also suitable for KT between individuals within an organisation although the author only applies it to the KT between groups within an organisation. Of course, the complexities and difficulties experienced at each stage of the KT between individuals are different from between groups. The main difference may be that more efforts are needed for the latter to co-ordinate the behaviours of the group members.

Furthermore, other scholars also study KT between groups from other perspectives. For example, from a knowledge-creation perspective, Nonaka and Takeuchi (1995) suggest that explicit knowledge may be converted into more complex sets of explicit knowledge through KT between groups; Bogenrieder (2003) focuses on knowledge leakage between groups through studying the role of a person's multiple group membership.

KT at Organisational Level

Except for being studied at both individual and group levels, KT within an organisation may also be studied at organisational level, i.e., the organisation is viewed as a whole.

According to the definition of knowledge in Section 2.2.1, it is known that knowledge is context-based. From an organisational perspective, the organisational context consists of three elements – namely, organisational culture, structure, and infrastructure (Pemberton and Stonehouse, 2000). Of them, arguably, the most important one is organisational culture (Pemberton and Stonehouse, 2000; Ford and Chan, 2003; Dalley and Hamilton, 2000). So knowledge and culture are inextricably linked in organisations (De Long and Fahey, 2000; Abou-Zeid, 2002).

Organisational culture is very complicated (Browaeyns and Baets, 2003), and can be interpreted in different ways by different people (Ribiere and Sitar, 2003). So the term 'organisational culture' has been defined in the literature by numerous authors (Ribiere and Sitar, 2003). With the combination of the definitions of several authors (Huber, 2001; Rodriguez *et al.*, 2003; McDermott and O'Dell, 2001), organisational culture used by this thesis is defined as follows:

The set of values, beliefs, attitudes, aptitudes, ideas, aspirations, rationalities (Rodriguez *et al.*, 2003, p.139), norms and expectations (Huber, 2001, p.76), as well as practices (McDermott and O'Dell, 2001, p.77) common to all or to the great majority of the members in an organisation (Rodriguez *et al.*, 2003, p.139).

Culture can be divided into three layers: explicit artifacts and products (the outer layer); norms and values (the middle layer); and implicit assumptions about existence (the core). The different layers are not independent from one another, but are complementary (Trompenaars and Hampden-Turner, 1997). Accordingly, organisational culture is evidently reflected in the visible aspects of the organisation, like its mission, espoused values, structure, stories, spaces, artefacts and products (McDermott and O'Dell, 2001; Trompenaars and Hampden-Turner, 1997). The explicit culture symbolises deeper layers of culture (Trompenaars and Hampden-Turner, 1997). For instance, multi-layered hierarchies or flat structures say something about the core values that direct the organisation's designers, and the expectations of its members; the stories that circulate through the organisation often reflect important aspects of the culture (Sutton, 2001; McDermott and O'Dell, 2001). Organisational norms and values are tightly connected to members of the organisation, embedded in the way they act, what they expect of each other and how they make sense of each other's actions (Ribiere and Sitar, 2003; McDermott and O'Dell, 2001; Trompenaars and Hampden-Turner, 1997). Finally, implicit assumptions are rooted in organisational behaviours. Often they are not only unarticulated, but also taken-for-granted and invisible to members of the organisation (Trompenaars and Hampden-Turner, 1997; McDermott and O'Dell, 2001). Overall, the organisational culture guides the members' day-to-day working relationships, and determines what kind of behaviour is acceptable or not, and how power and status are allocated (Ribiere and Sitar, 2003).

Generally, organisational culture serves three functions: legitimisation, motivation, and integration. Firstly, it provides members of the organisation with socially legitimate patterns of interpretation and behaviour for dealing with the organisation's problems. Secondly, it provides members of the organisation with a hierarchical motivational structure that links their identity to relevant roles and values. Finally, it provides members of the organisation with a symbolically

integrated framework that regulates social interaction and goal attainment through the creation of meanings (Abou-Zeid, 2002).

The review of literature on KM and organisational learning shows that there is a strong emphasis on the importance of culture in organisations (Browaeys and Baets, 2003). For example, De Long and Fahey (2000) have identified four ways in which culture influences the behaviours central to knowledge creation, sharing, and use. The four ways are listed as follows (Abou-Zeid, 2002):

- First, it shapes assumptions about which knowledge is worth managing.
- Second, it defines knowledge structure, that is, how knowledge is distributed and utilised within the firm. Furthermore, it forms the relationships between individual and organisational knowledge, determines who is expected to control specific knowledge, as well as who must share it and who can hoard it.
- Third, it creates, through rules and practices, the context for social interaction that determines how knowledge will be used in particular situations.
- Finally, it shapes the processes by which new knowledge is translated into action.

Therefore, organisational culture can significantly promote or hinder KT in organisations (Ford and Chan, 2003; Edwards and Kidd, 2003; Rodriguez *et al.*, 2003).

Organisational culture that can drive members of the organisation to have high propensity to share knowledge is very important. In an organisation with a knowledge-sharing culture, people would share ideas and insights because they see it as natural, rather than something they are forced to do. They would expect it of each other and assume that sharing ideas is the right thing to do (McDermott and O'Dell, 2001). However, without an appropriate culture, knowledge sharing is, at best, very difficult and very limited (Davenport and Prusak, 1998; Ford and Chan, 2003). A lot of issues, for instance, the giver might hoard knowledge; and the recipient does not like to use the giver's ideas for fear it makes him appear less

knowledgeable (See details in Table 2.1); people like to consider themselves experts and prefer not to collaborate with others (Bender and Fish, 2000); or the recipient lacks motivation to seek or accept knowledge from the outside (Szulanski, 2000; Goh, 2002), would be more likely to happen.

A problem-seeking and problem-solving culture is also very important. It could encourage all employees to identify their knowledge gaps and sources, and adopt an attitude of continuous improvement and learning (Goh, 2002).

Moreover, leadership plays a key role in maintaining and evolving a culture (Ribiere and Sitar, 2003; Goh, 2002). Leadership can be defined as “influencing others to work willingly towards achieving objectives, to implement the company’s plans” (Ribiere and Sitar, 2003, p.43). It means crystallising a direction for employees and making them want to follow the leader in achieving the leader’s goals. So, leadership can significantly promote or hinder KT in organisations. If leadership has strong commitment to sharing knowledge in the organisation, it can establish some key conditions required to facilitate KT, and use a number of powerful mechanisms, including what it pays attention to, measures, controls, how it reacts to a range of crises, and whom it recruits, promotes and rewards. All these conditions and mechanisms send important messages about the kind of organisation the leadership is running, engender trust and respect, instil a cohesive and creative culture, and thus influence the behaviour of employees closer to those of the learning organisation (Ribiere and Sitar, 2003; Desouza, 2003). However, if the leadership lacks the commitment to sharing organisational knowledge, the organisation would be unable to effectively transfer and leverage knowledge (Desouza, 2003).

As well as these key factors, Goh (2002) further argues that the following factors also have significant influences on the ability to transfer knowledge. These factors are:

- **Support structures** This factor can be broken down into four areas – technology, training and skill development, rewards, and organisational design. Of them, an important point is that the organisation should be designed in a way that encourages teamwork or cross-functional work teams as the norm. Another important point is that a reward system should be set up to encourage knowledge sharing between individuals or groups.
- **Absorptive and retentive capacity** When encouraging KT, the organisation has to ensure that both parties to the transfer process have necessary knowledge base to learn, and to understand each other.
- **Types of knowledge** The type of knowledge transferred needs to be considered, and matched to the process used to make the transfer.

Goh (2002) then integrates all these factors to form a conceptual framework (See Figure 2.5) that explains how effective KT can be managed in an organisation. This framework clearly demonstrates the relationships among the key factors, and obviously stresses the importance of the organisational culture that leads individuals or groups to have higher propensity to share knowledge. To create such an organisational culture, Goh (2002) suggests, also coinciding with a lot of researchers and practitioners (Wiig, 1995; Nonaka and Takeuchi, 1995; Allee, 1997b; Greengard, 1998; Nonaka and Konno, 1998; Davenport and Prusak, 1998; Pan and Scarbrough, 1998; Senge, 1998; Snowden, 1998; Bender and Fish, 2000; Martensson, 2000; Lind and Seigerroth, 2000; Connell *et al.*, 2003), the following measures:

- A co-operative and collaborative culture should be created. A fundamental variable in co-operation between groups or individuals is level of trust. Certainly, a climate of low trust will result in poor co-operation, which in turn will reduce the frequency of communication and the degree of willingness to share knowledge. A high level of trust is therefore an essential condition for a willingness to co-operate.

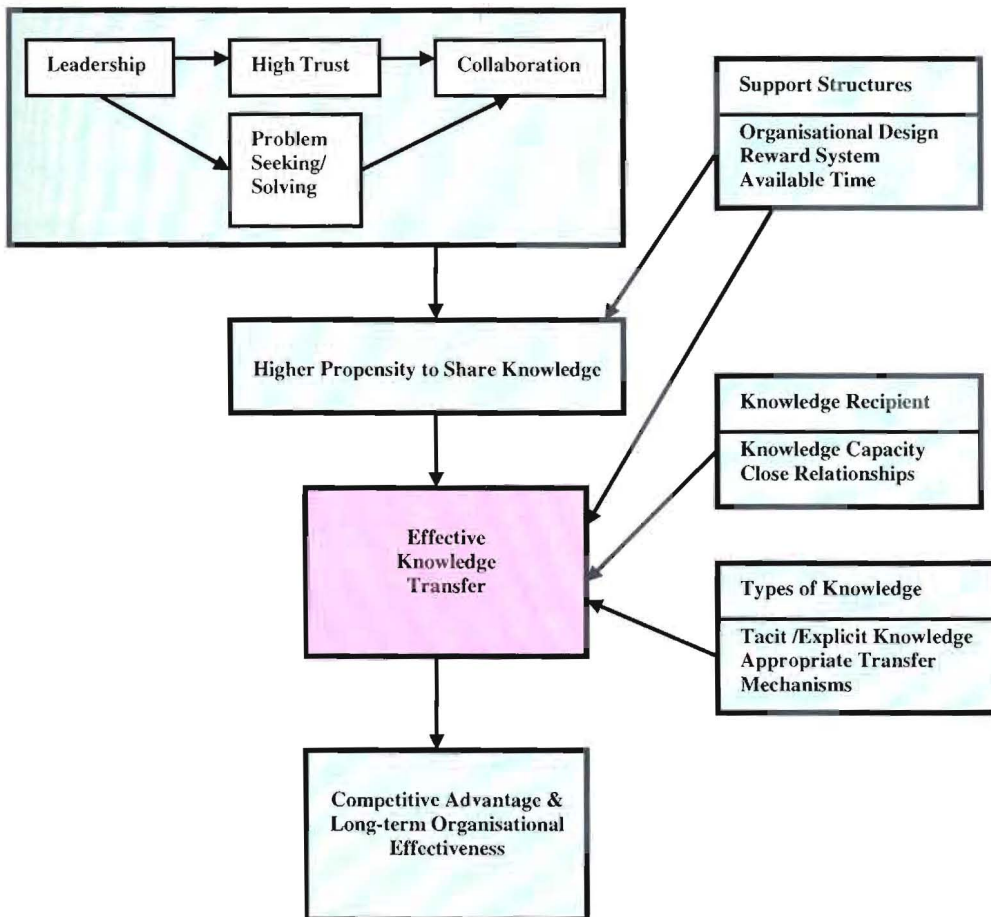


Figure 2.5 An Integrative Framework – Factors Influencing Effective KT (Goh, 2002)

- There is also a need to foster a culture of problem-seeking and problem-solving. An experimenting and innovative culture encourages employees to look for problems as a way to improve the organisation. Failures in experimentation should be expected and tolerated, and treated as learning lessons by employees and the organisation.
- Effective mechanism for encouragement and rewards should be set up, so that employees know that their knowledge and expertise is valued, and hence to communicate and share their knowledge and expertise. The mechanism must not be focused purely on financial results or outcomes that are based on competition between groups in the organisation. It should be broadly based on other criteria, such as successful knowledge sharing, co-operation, and teamwork.

Goh (2002) further contends that leaders play an important role in implementing these measures. Leaders themselves should show a willingness to share knowledge freely, and to seek it from others in the organisation. They have to convey the attitude that knowledge to solve organisational problems and improve the organisation's effectiveness can exist at any level of the organisation and not exclusively in the upper levels of the hierarchy. Through their visible actions, leaders can encourage a willingness in other employees to emulate them (Huber, 2001). Then a strong culture of experimentation together with high trust and a collaborative and co-operative climate may be created. The mechanism for encouragement and rewards also needs to be developed by leaders.

In summary, this framework is developed from an organisational perspective, and can help organisations, particularly their leaders, have a good understanding of how effective KT can be managed in an organisation. However, this framework, together with the foregoing frameworks (i.e., Szulanski's (2000) model, and Lind and Persborn's (2000) model), have a common drawback that the connections between different levels (i.e., individual, group and organisational levels) have not been

clearly demonstrated, although Szulanski (2000) and Goh (2002) also mention the impacts from individuals or groups to the whole organisation. Both Szulanski's (2000) and Lind and Persborn's (2000) models are good at describing the processes of KT between the same levels (i.e., individual or group levels), but not so strong at between different levels. This drawback is much concerned. The reason is that a successful KT for an organisation should improve its business performance (Davenport and Prusak, 1998; Szulanski, 2000). From the organisational perspective, the top management of an organisation should set up the connection between an individual's (or group's) knowledge contribution and the organisational business improvement. The drawback demonstrates that KM, as an emerging discipline (Ives *et al.*, 1997), is not so helpful in building up such connections. Therefore, a lot of scholars (e.g., Nonaka and Takeuchi, 1995; Wathne *et al.*, 1996; Albino *et al.*, 1999; Bender and Fish, 2000; Chen *et al.*, 2002; Mohr and Sengupta, 2002; Bogenrieder, 2003) try to fill this gap by means of organisational learning (See details in Section 2.3) which is very strong at building up the connections between different levels of KT.

2.2.4 Inter-organisational KT

From Section 1.1.3, it is known that inter-organisational KT poses a double-edged sword to the organisations (Mohr and Sengupta, 2002), they have to face the 'boundary paradox' (Quintas *et al.*, 1997; Beeby and Booth, 2000; Chen *et al.*, 2002; Mohr and Sengupta, 2002). This makes KT between organisations more complicated and harder than within an organisation, and more difficult to understand. It is thus beneficial if an inter-organisational KT framework can be developed and the appropriate strategies to address the 'paradox' can be explored so that the organisations could have better understanding of the KT process. To realise these objectives, it is necessary to review the current literature about the types, frameworks and strategic issues of inter-organisational KT.

Types of Inter-organisational KT

There are many types of inter-organisational KT, but there is no widely-accepted classification of them. Researchers normally decide their own classifications according to their aims and objectives. For example, Appleyard (1996) classifies knowledge exchange between firms in terms of *access to* and *use of* the shared knowledge. He argues that *access to* knowledge can occur either through *public* channels: patents, newsletters, popular press, trade journals and conference presentations; or through *private* channels: e-mail, telephone, face-to-face meetings, visits to other companies, and benchmarking studies. Even if access to knowledge is public, its use may be *restricted* by legal constructs, such as patents or nondisclosure agreements. He therefore classifies knowledge exchange between firms into four types: *public but restricted*, *public and unrestricted*, *private and restricted*, *private but unrestricted*. Similarly, this research will set its own classification that is derived from the following classification.

Through observing the know-how trading among US steel minimill firms, von Hippel (1987) found out an interesting phenomenon – individual employees encounter some technical problems that could not be sorted out by themselves, might frequently get the needed technical knowledge or advice from colleagues or friends working in other firms (including direct competitors) through their private relationships. Similar exchange relationships are also frequently found in other industries, such as semiconductor (Schrader, 1991). von Hippel (1987) defines this phenomenon as *informal know-how trading*.

von Hippel (1987) treats agreements to license or sell proprietary technical knowledge as formal know-how trading. He further distinguishes informal know-how trading from the formal as follows:

- transaction costs in informal know-how trading system are low because decisions to trade or not trade proprietary know-how are made by individuals; but in the formal, the decisions are made by management.

- the value of a particular traded module in the informal is too small to justify an explicit negotiated agreement to sell, license or exchange; but the traded module in the formal is generally of considerable value relative to its transaction costs.

Three important points can be induced from this classification and distinction:

- It is known that know-how trading belongs to inter-organisational KT. von Hippel's (1987) classification on know-how trading actually implies that inter-organisational KT may be classified into two types: *informal* and *formal*. According to common sense, as well as informal know-how trading, informal inter-organisational KT may also include informal meetings, oral commitments and telephone conversations, and so on. The difference between informal know-how trading and informal meetings or conversations is that the former involves explicit inquiries and answers, but the latter may not. People may join informal meetings or conversations just for the purpose of developing or maintaining social relationships, don't have specific problems to be sorted out, but can still get knowledge from these activities (Desouza, 2003). Similarly, as well as formal know-how trading, formal inter-organisational KT also contains other activities such as agreements to perform R&D co-operatively, formal meetings, conferences and seminars, and so on.
- Formal know-how trading is authorised by the management of both giving and receiving organisations. In contrast, the informal know-how trading need not be authorised by the management of either organisation (von Hippel, 1987). In fact, between these two extremes, there is another type: KT only needs to be authorised by the management of one organisation, but not by the management of another one. So, from the management's authorisation perspective, inter-organisational KT activities may be distinguished by three types: *management-authorised* (i.e., the KT is authorised by the management of both giving and receiving organisations); *one-side-management-authorised* (i.e., the KT is only authorised by the management of one organisation, but not by the management

of another one); *non-management-authorised* (i.e., the KT is not authorised by the management of either of the two organisations).

- In addition, an inspiration arisen from the informal know-how trading is that the management of a SME may also involve a lot of informal activities, such as informal meetings, oral commitments and telephone chats, and so on. This case can be treated as the management authorises himself to join the KT activities. Conversely, the employees of the SME may join some formal meetings, conferences and seminars by themselves, without being authorised by their management.

According to these three points, the dimension of *management-authorised* is known to intersect the dimension of *formal-informal*, which is illustrated in Figure 2.6.

There are six zones (I, II, III, IV, V and VI) in Figure 2.6. Formal and informal know-how trading belong to zones I and VI respectively. Because informal know-how trading is relatively the subject of considerable attention in the literature (von Hippel, 1987; Schrader, 1991; Carter, 1989), this research tries to address the issues related to formal know-how trading. However, compared to informal know-how trading, the formal know-how trading in large businesses is known to be inactive (von Hippel, 1987), and thus even less so in SMEs. The coverage of the research is very narrow if it just focuses on the formal know-how trading, or even the whole of zone I. So, this study will extend its coverage to zone II; it will focus on zones I and II (See yellow boxes in Figure 2.6). In other words, no matter whether it is formal or informal, the inter-organisational KT will be studied as long as it is authorised by the management of both giving and receiving organisations, i.e., *management-authorised*.

	Formal	Informal
Management- authorised	I Formal know-how trading; agreements to perform R&D co-operatively; formal meetings, conferences and seminars; etc.	II Informal meetings; oral commitments; telephone chats; etc.
One-side- management- authorised	III Formal meetings, conferences and seminars; etc.	IV Informal meetings, chats; etc.
Non-management- authorised	V Formal meetings, conferences and seminars; etc.	VI Informal know-how trading; informal meetings, chats; etc.

Figure 2.6 The Types of Inter-organisational KT

Frameworks for Inter-organisational KT

The evidence from the literature demonstrates that there are several articles (Mohr and Sengupta, 2002; Abou-Zeid, 2002; Preece, 2000; Dalley and Hamilton, 2000; Albino *et al.*, 1999; Khanna *et al.*, 1998) that involve inter-organisational KT frameworks.

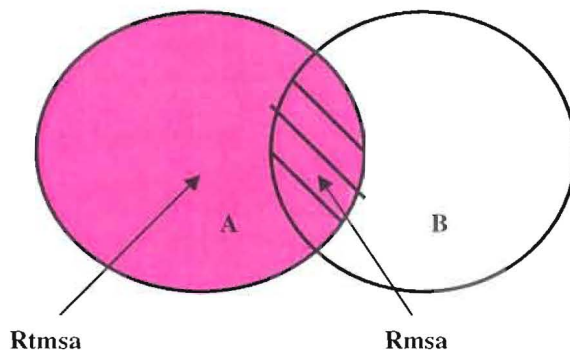
Preece (2000) proposes an inter-organisational KT framework for the development and evaluation of online communities. The framework is composed of two concepts: usability and sociability. Usability is concerned with developing computer systems to support rapid learning, high skill retention, low error rates, and high productivity.

They are consistent, controllable, and predictable, which makes them pleasant and effective to use (Preece, 2000). Sociability is concerned with planning and developing social policies which are understandable and acceptable to members, to support the community's purpose (Preece, 2000). Obviously, sociability focuses on social interaction, and usability focuses on human-computer interaction, they work for online communities, but cannot be used for other inter-organisational KT activities.

Khanna *et al.* (1998) use '*private benefits*', '*common benefits*' and '*relative scope*' as a framework to show how the tension between co-operation and competition affects the dynamics of learning alliances. A firm's relative scope refers to the ratio of the market scope of the alliance to the total set of markets in which the firm is active. The relative scope lies between 0 and 1 (Khanna *et al.*, 1998). For example, two firms, A and B, form a learning alliance (See Figure 2.7). The relative scope of the firm A is equal to R_{msa}/R_{tmsa} . Apparently, the relative scope is closer to 0 the smaller the market scope of the alliance, which means that the firm A has less common benefits with the firm B; the relative scope is 1 if the firm A has no interests in markets not covered by the alliance. Therefore, the greater the relative scope, the higher the common benefits and the lower the private benefits (Khanna *et al.*, 1998). 'Private benefits' and 'common benefits' differ in the incentives that they create for investment in learning. This framework targets learning alliances that is a long-term inter-organisational KT activity, and may not be suitable for short-term KT activities.

Albino *et al.* (1999) suggest a framework that contains four factors (i.e., actors, context, content and media) to analyse KT among firms in an industrial district that contains some SMEs. Although this framework seems to be generally applicable for a lot of inter-organisational KT activities, it still has some drawbacks. For example, the framework does not take in the process view advocated by Szulanski (2000); does not target the 'boundary paradox'; and does not establish the connections

between different levels of KT (i.e., individual, organisational and inter-organisational levels).



Rtmsa = the total market scope of the firm A (i.e., the whole shaded area)

Rmsa = the market scope of the alliance (i.e., the area containing oblique lines)

Figure 2.7 An Example of the Learning Alliance

To manage the 'boundary paradox', Mohr and Sengupta (2002) develop a framework that has three components: *ex ante* relationship conditions, governance mechanisms and effective KT. The underlying conditions include factors such as *partner's learning intent, type of knowledge sought and anticipated duration of the partnerships*. They argue that effective KT takes place if there is a fit between the underlying conditions and the governance mechanisms. However, this framework fails to address the strategic issues related to the 'paradox' at two levels (i.e., inter-organisational level and inter-employee level) and from the two perspectives suggested by Mohr and Sengupta (2002) (i.e., how to learn from a partner, and teaching a partner how to learn – see details under the sub-heading '*Strategic Issues*

of Inter-organisational KT” in Section 2.2.4) although it explicitly claims that the ‘paradox’ is its target. Furthermore, the coverage of this framework is definitely narrow, it just focuses on the ‘paradox’ and cannot be used to describe the whole process of inter-organisational KT.

From a cross-context perspective, Dalley and Hamilton (2000) use culture, communication and learning as a framework to analyse KT from an advisor to a SME. They argue that before knowledge can impact the core beliefs of the small business, the precursor information must survive the screening provided by the three layers of context. They further point out that contextual compatibility is necessary for the successful transfer of knowledge from the advisor to the small business.

To target KT between subsidiaries in a multi-national corporation, Abou-Zeid (2002) suggests an inter-organisational KT framework that has three components: knowledge-outflow from source subsidiary, knowledge-transfer mechanisms, and knowledge-inflow target subsidiary. He further discusses the factors that affect the components from a cross-culture perspective. For instance, Abou-Zeid (2002) submits that the choice of knowledge-transfer mechanism should depend upon the three factors, meaning the type of knowledge to be transferred; the intended business uses of the knowledge to be transferred; and the target subsidiary organisational context, such as the breadth of knowledge dissemination.

Based on the analysis on these frameworks, a comparison table can be made as the following Table 2.2.

According to Table 2.2, there are several important points worthy of being noted:

- These frameworks do not take in the process view advocated by Szulanski (2000), although their authors (e.g., Mohr and Sengupta (2002), Albino *et al.* (1999)) agree that KT has a process characteristic. Therefore, the complexities and difficulties embedded in the KT cannot be fully reflected.

- The connections between different levels of KT (i.e., individual, organisational and inter-organisational levels) haven't been set up although some authors (e.g., Mohr and Sengupta (2002) and Albino *et al.* (1999)) analyse inter-organisational KT by means of the theory of organisational learning.

Table 2.2 The Comparisons between the Frameworks

Frameworks	Taking in the process view advocated by Szulanski (2000)	Establishing connections between different levels of KT	Targeting the 'boundary paradox'	Being concerned with SMEs	Involving the theory of social network	Involving the cross-context or cross-culture issue
Preece's (2000) framework	No	No	No	No	Yes	No
Khanna <i>et al.</i> 's (1998) framework	No	No	No	No	Yes	No
Albino <i>et al.</i> 's (1999) framework	No	No	No	Yes	Yes	No
Mohr and Sengupta's (2002) framework	No	No	Yes	No	No	No
Dalley and Hamilton's (2000) framework	No	No	No	Yes	No	Yes
Abou-Zeid's (2002) framework	No	No	No	No	No	Yes

- Of the six frameworks, only one targets the 'boundary paradox', but fails to address it at the two levels (i.e., inter-organisational level and inter-employee level) and from the two perspectives suggested by Mohr and Sengupta (2002) (i.e., how to learn from a partner, and teaching a partner how to learn). In other words, all frameworks are not helpful for the organisations to strategically address the 'paradox' at the two levels and from the two perspectives.

- Of the six frameworks, only two are concerned with SMEs (Albino *et al.*, 1999).
- Of the six frameworks, three clearly involve the theory of social network (See details in Section 2.4), which demonstrates a phenomenon that the theory of social network is attractive to some researchers when studying inter-organisational KT issues. The reasons can be seen in Section 2.2.5.
- Cross-context or cross-culture becomes an issue (Details will be introduced later) for inter-organisational KT.

Based on this review, a conclusion can be drawn that the current frameworks cannot fully reflect the complexities and difficulties embedded in KT between organisations, and are not helpful for the organisations to strategically address the ‘paradox’ at the two levels and from the two perspectives, particularly for SMEs.

Strategic Issues of Inter-organisational KT

Increasing attention (von Hippel, 1987; Carter, 1989; Albino *et al.*, 1999; Dyer and Nobeoka, 2000; Parker and Vaidya, 2001; Grundmann, 2001; Chen *et al.*, 2002) is paid to the strategic issues related to the ‘boundary paradox’, however, most of them have “not explicitly addressed the paradox” (Mohr and Sengupta, 2002, p.297). Only a few studies (Schrader, 1991; McEvily *et al.*, 2000; Mohr and Sengupta, 2002; Appleyard, 1996) explicitly discuss the strategies.

McEvily *et al.* (2000) propose some KT strategies that suggest firms use their marketing powers or superior business performances through strategies, such as continuous improvement, lock-in, and market deterrence to prevent their competitive advantages from being substituted by other firms. On the basis of their framework, which highlights the role of firms’ governance mechanisms in dealing with the ‘paradox’ of inter-firm learning, Mohr and Sengupta (2002) identify several important factors, such as *the partner’s learning intent*, *the type of knowledge sought*, and *the designed duration for the collaboration* for the inter-firm learning from a strategic perspective. They further contend that the combination of the three

factors may produce eight different situations that have different risks for the focal firm, and thus propose appropriate governance strategies to match the different situations. Assuming that employees trade know-how (or information) in accordance with the economic interests of their firms, Schrader (1991) identifies *availability of alternative information sources, degree of competition, impact of information on domains of competitive importance, and value of transferred information to information receiver* as important factors that should be taken into account by the employees when they decide whether to transfer information (or know-how) to counterparts from other firms. Appleyard (1996) argues that the decision whether or not to share knowledge with another company depends on whether the expected benefits from relinquishing the monopoly over the knowledge outweigh the expected costs. If yes, even rivals may share knowledge.

Obviously, McEvily *et al.*'s (2000) strategies may not be suitable for SMEs because of their limited market power and expertise. The strategies proposed by Mohr and Sengupta (2002) seem to be more suitable for large businesses. The works of both Schrader (1991) and Appleyard (1996) are also derived from or on the basis of large firms. The literature on informal knowledge trading (Schrader, 1991; von Hippel, 1987; Carter, 1989) focuses on studying KT through employees' private relationship networks, without company management's authorisation, and "the authors tend to assume that only direct solutions to specific problems are sought through these channels" (McEvily *et al.*, 2000, p.307). So, very little literature exclusively addresses the 'paradox' for SMEs, fewer for the management-authorised type, the relevant strategic issues have been largely neglected.

Nonetheless, this study may still draw lessons from the works of Schrader (1991), Mohr and Sengupta (2002) and Appleyard (1996), not only from their strengths, but also from their weaknesses. Their strengths are the identified factors that can provide clues or inspirations for the strategic analysis for SMEs. Their weaknesses are that they failed to reflect or address the issues raised by von Hippel (1987), and

Mohr and Sengupta (2002). von Hippel (1987) contends that inter-firm KT strategies are “more complex than those envisioned in a simple, two-party Prisoner’s Dilemma” (p.301) and have “multiple layers of trading incentives and strategies active in a single trading entity as well” (p.301). Mohr and Sengupta (2002, p.298) also argue that, “there may be subtle but important differences in learning from a partner compared to teaching a partner. Similarly, there may be value in exploring issues – about how to learn from a partner as well as teaching a partner how to learn.” Accordingly, this paper will try to explore the strategic issues for SMEs at two levels (i.e., inter-organisational level and inter-employee level) and from the two perspectives suggested by Mohr and Sengupta (2002) (i.e., how to learn from a partner, and teaching a partner how to learn – see details in Section 3.4).

Influences of Cross-Cultural Differences on Inter-organisational KT

Knowledge is context-based, therefore, the transfer of knowledge is constrained by the cultural context in which it is embedded. Moreover, in many cases, explicit knowledge may not be meaningful without the creation or generation of relevant contexts, and its transfer may again be limited. Therefore, the effect of the culture context on the inter-organisational KT process cannot be overlooked (Abou-Zeid, 2002). Rodriguez *et al.* (2003) also argue that, “Learning between organisations will require attention to processes of how divergences of perspective and organisational and national cultures impact on the learning processes and on content issues” (p.138). Ford and Chan (2003) further contend that, “knowledge sharing may ... be the most susceptible to effects of cross-cultural differences within a company” (p.12). However, how cross-cultural differences influence KT has indeed received too limited research attention (Edwards and Kidd, 2003; Ford and Chan, 2003; Zhu, 2004).

According to the definition of organisational culture in Section 2.2.3, it is impossible to find two organisations that have the same set of values, beliefs, attitudes, aptitudes, ideas, aspirations, rationalities, norms, expectations and practices. So,

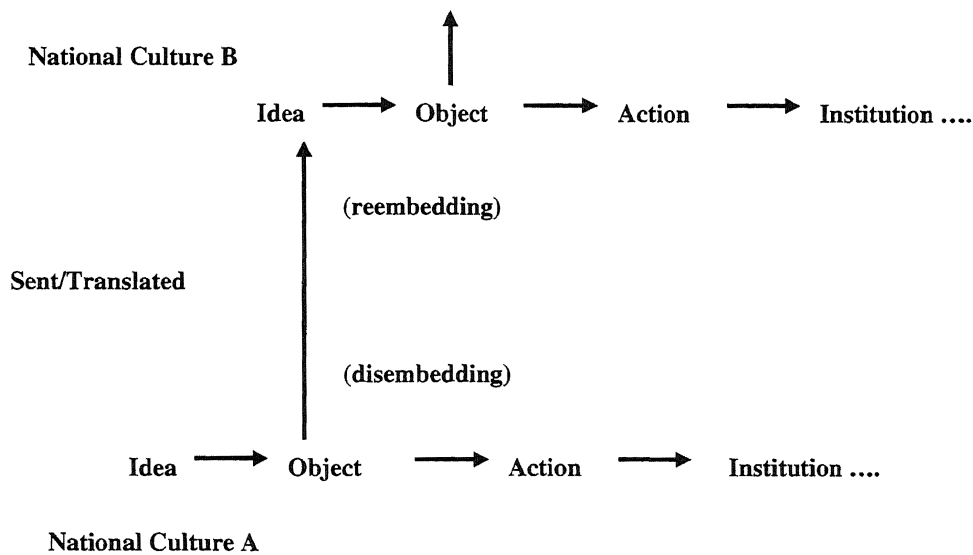
cultural diversity between organisations is logical (Rodriguez *et al.*, 2003). Moreover, a national culture is definitely different from another one. Therefore, inter-organisational KT partners tend to suffer from their organisational culture differences, and national culture differences if they are from different countries.

“Research on cultural-institutional effects upon KM, already limited, has predominantly focused on the level and the domain of business joint ventures and international headquarters-subsidiaries relations” (Zhu, 2004, p.75). Which means that cross-national cultural differences have received relatively more attention. The following is such an example.

Czarniawska and Joerges (1996) developed a translation model (See Figure 2.8) that is orientated towards cross-national cultural differences. According to the model, within a single cultural context, for example, the national culture A, an idea may experience the following translation process: it first arises in the local time/space; then is translated (or objectified) into an object such as a text, or picture, or prototype. The object is further translated into an action; the action is then translated, repeated, and finally stabilised into an institution. But, as the idea travels into another national cultural context, such as national culture B, it is first objectified at a given place and moment and then disembedded from the cultural context A. It experiences different moments and places, and has finally arrived at a new place (i.e., the national culture B). It must be filtered by the context screening (e.g., different language, different communication system and unequal attitudes regarding work) and re-embedded into this new context; then it is translated into an action, and then followed into an institution. This model reflects the influences of the cross-cultural difference on KT.

Compared to the cross-national cultural differences, the cross-company cultural differences are much more neglected (Zhu, 2004). However, most UK SMEs are mainly involved in the businesses with their domestic partners, and suffer from their

organisational cultural differences. So, this research will focus on cultural differences between organisations.



**Figure 2.8 Czarniawska – Joerges Translation Model
(Czarniawska and Joerges, 1996)**

As well as the ‘boundary paradox’ (Quintas *et al.*, 1997), there is also a ‘cultural paradox’ for inter-organisational KT. That is, the cultural distance between organisations increases the difficulties in their interactions since, the greater it is, the bigger the differences in their organisational and administrative practices, in the employees’ expectations and in the interpretation and answer to the strategic problems (Rodriguez *et al.*, 2003). It therefore increases the difficulty of performing KT processes successfully (Davenport and Prusak, 1998; Ford and Chan, 2003; Connell *et al.*, 2003; Edwards and Kidd, 2003; Rodriguez *et al.*, 2003). However, the cultural distance can stimulate high-level (inter-organisational) learning (Rodriguez *et al.*, 2003). Ample similarities in the organisational cultures of the

partners make their KT easy (Dalley and Hamilton, 2000; Connell *et al.*, 2003; Rodriguez *et al.*, 2003; Ford and Chan, 2003), but limit learning possibilities (Rodriguez *et al.*, 2003; Zhu, 2004). Zhu (2004) thus submits that, “cultural differences and diversity are important sources for KM competence rather than obstacles to be overcome” (p.67).

Trust is supposed to mitigate the negative effects of cultural differences between organisations, since what can have a negative effect, can be turned later into an invigorating factor of learning of a higher level, whenever it is accompanied by trust between partners (Rodriguez *et al.*, 2003). So, trust, again, is a key element and cannot be completely separated from culture (Edwards and Kidd, 2003).

Inspirations from Other Relevant Literature

Skandalakis and Nelder (1999) suggest that SMEs apply a benchmarking process that consists of three steps – performance measurement (i.e., measuring internal performance), performance positioning (i.e., positioning the company against external practices) and KT (i.e., acquiring knowledge from the better practice) to improve their knowledge deficiency. The specific benchmarking activities may include consultancy visits, training and visits to exemplar enterprises (Skandalakis and Nelder, 1999). The suggestion provides this study with a clue that SMEs’ inter-organisational KT needs may be partly confirmed through the identification of whether they involve these benchmarking practices.

2.2.5 The Connections among Inter-organisational KT, Organisational Learning and Social networks

Inter-organisational KT and Organisational Learning

According to its definition, KT means that knowledge is transferred from the giver(s) (person, group (team) or organisation) to the recipient(s) (person, group (team) or organisation) (Alavi and Leidner, 2001; Lind and Seigerroth, 2000; Lind

and Persborn, 2000; Bender and Fish, 2000; Albino *et al.*, 1999; Shariq, 1999; Davenport and Prusak, 1998). In fact, KT is a process that the recipient learns from the giver. So, inter-organisational KT is actually the process of organisations learning from each other, i.e., inter-organisational learning (Rodriguez *et al.*, 2003; Chen *et al.*, 2002). Both of them are directly connected with each other.

Furthermore, the evidence from Section 2.2.3 shows that KM, as an emerging discipline (Ives *et al.*, 1997), is not so helpful in building up the connections between different levels (i.e., individual, group and organisational levels) that are very useful for an organisation to measure an individual's (or group's) contribution to its KT success. This gap is believed to be filled by drawing support from the theory of organisational learning that is very strong at setting up the connections between different levels of KT.

The previous two points make both (inter-)organisational KT and organisational learning tightly intertwined so that it is difficult to separate them in certain literature.

Underpinned by Social Networks

Evidence from Section 2.2.4 and other literature (e.g., Tidd, 1993; Appleyard, 1996; Mowery *et al.*, 1996; Liebeskind, 1996; Senker and Sharp, 1997; Khanna *et al.*, 1998; Beeby and Booth, 2000; Dyer and Nobeoka, 2000; Parker and Vaidya, 2001; Jones *et al.*, 2001; Chen *et al.*, 2002; Chen *et al.*, 2003a) demonstrates that there is a recent trend in which a rather part of the literature related to inter-organisational KT or inter-organisational learning (See details in Section 2.3) involves social networks. The reason is that relationships, particularly trust, between individuals, or organisations, etc. play an important role in inter-organisational KT or inter-organisational learning. Good understanding of the relationships is very important for the study on inter-organisational KT or inter-organisational learning. Fortunately, the relationship is a major area of social network theory, and has been

well studied. It is thus not strange that relevant studies on inter-organisational KT or inter-organisational learning draw support from the social network theory.

Drawing Support from Knowledge, Inter-organisational KT and Inter-organisational Learning

Conversely, in what is becoming known as the 'knowledge-based-view of the firm', knowledge is seen as the resource on which firms base their competitive strategies. The key role of the firm is in creating, storing, and applying knowledge (Kogut and Zander, 1992; Conner and Prahalad, 1996; Grant, 1996) rather than simply reducing transaction costs (Dyer and Nobeoka, 2000). KT thus becomes very important for the firm as it is regarded as a precursor to knowledge creation (Nonaka and Takeuchi, 1995) and an essential part of KM (Alavi and Leidner, 2001; Nissen *et al.*, 2000; Beijerse, 2000; Despres and Chauvel, 1999; Nissen, 1999; Davenport and Prusak, 1998; Gartner Group, 1998). This view provides a strong basis for the theory of organisational learning. In such an open society, firms have to actively involve knowledge exchange with the outside world to develop and maintain their competitive advantage. Inter-organisational learning is thus recognised as critical to competitive success, and enhances the formation of social networks (Dyer and Nobeoka, 2000; Grundmann, 2001). Norms, values, tacit knowledge, trust and face-to-face interaction are seen to play a key role in the formation of networks (Parker and Vaidya, 2001; Grundmann, 2001). Therefore, knowledge, KT and organisational learning have been the subject of an increasing amount of attention in the field of social networks since the early 1990s.

The previous discussion claims that inter-organisational KT, inter-organisational learning and social networks draw mutually from each other. This trend shows that the theories of organisational learning and social networks can be helpful for this research. The former can be used to establish the connections between different levels (e.g., individual, organisational and inter-organisational levels), and the latter used to study the relationships embedded in the connections.

2.2.6 The Summary for the Review on KT

Based on this review on KT, several important points can be summarised as follows:

- The literature mainly focuses on KT within an organisation. Thus far, only a small proportion of the literature examines KT between organisations. Further, from this body of knowledge, little consideration is given to SMEs.
- Compared to KT between organisations, KT within an organisation has received relatively systematic study. Within this area, the issues related to each level (i.e., individual, group and organisation) are positively explored and addressed by corresponding frameworks. However, the connections between different levels have not been clearly established. This weakness is of much concern because, from the organisational perspective, the top management of a company would like to know the connection between an individual's (or group's) knowledge contribution and the organisational business improvement. The weakness is thought to be solved, to a certain extent, by means of organisational learning which is very good at building up the connections between different levels of KT.
- Szulanski's (2000) framework is believed to be applicable for KT from individual to individual, although it is only empirically evaluated for between groups. The empirical results demonstrate that the process view advocated by Szulanski (2000) does help organisations gain a better understanding of the complexities and difficulties in KT.
- Inter-organisational KT activities may be distinguished by three types: *management-authorized*; *one-side-management-authorized* and *non-management-authorized*. Informal know-how trading that belongs to the type of non-management-authorized is relatively the subject of considerable attention in the literature, however, formal know-how trading has received negligible research. This study thus tries to address the issues related to management-authorized inter-organisational KT that cover formal know-how trading.
- The evidence from the literature shows that the current inter-organisational KT frameworks do not take the process view, thus cannot fully reflect the

complexities and difficulties embedded in KT between organisations, and few of them involve SMEs.

- The current frameworks and other literature involving the strategic issues of inter-organisational KT have not been helpful for the organisations to address, or have not addressed the ‘boundary paradox’ at two levels (i.e., inter-organisational level and inter-individual level) and from the two perspectives suggested by Mohr and Sengupta (2002) (i.e., how to learn from a partner, and teaching a partner how to learn).
- The cultural distance between organisations increases the difficulties in their interactions, and thus increases the difficulty of performing their KT processes successfully. Therefore, the influences of the organisational cultural differences on knowledge exchange between organisations cannot be overlooked.
- Inter-organisational KT, inter-organisational learning and social networks draw mutually from each other. Therefore, the theories of organisational learning and social network are helpful for this research. The former can be used to establish the connections between different levels (e.g., individual, organisational and inter-organisational levels), and the latter used to study the relationships embedded in the connections.
- In summary, inter-organisational KT is much more complicated than within an organisation, but much neglected, particularly for SMEs. Previous writing on this topic has dealt with this issue only in a fragmented way (Goh, 2002, p.30). Therefore, this research will systematically study management-authorised inter-organisational KT through the following ways: the framework will be developed by means of the process view, organisational learning and social networks so that the complexities and difficulties embedded in the KT, and relationships between different levels, can be demonstrated; the framework to be developed should be helpful for the organisations to strategically address the ‘boundary paradox’ at the two levels (i.e., inter-organisational level and inter-employee level) and from the two perspectives suggested by Mohr and Sengupta (2002) (i.e., how to learn from a partner, and teaching a partner how to learn); the

influences of cross-cultural differences on the inter-organisational KT process will be taken into account in the framework.

From this summary, it is known that the connections between different levels for inter-organisational KT will draw support from the theory of organisational learning, and the relationships between these levels will be studied in terms of social networks. Therefore the literature on organisational learning will be reviewed in the next section (Section 2.3), and the review on social networks will be discussed in Section 2.4.

2.3 Review on Organisational Learning

Holmqvist (2003) argues that, “The two levels [i.e., intra- and inter-organisational] of aggregations are closely tied together in mutual learning loops: thus, one cannot understand intra-organisational learning without understanding inter-organisational learning, and vice versa” (p.96). So, in order to have a better understanding of inter-organisational learning that is the main target of this study, the literature on intra-organisational learning will be reviewed as well.

2.3.1 Definition of Organisational Learning

Organisational learning has existed in our lexicon at least since Cangelosi and Dill (1965) discussed the topic over 30 years ago (Crossan *et al.*, 1999, p.522). Lately, particularly during the first half of the 1990s, an upsurge in the number of publications about organisational learning and an exponential growth in interest in this topic by practitioners and academics alike was seen (Beeby and Booth, 2000). Organisational learning is today widely touted as one of the crucial elements of competitiveness (Schein, 1999). Although its popularity has grown dramatically, little convergence or consensus on what is meant by the term, or its basic nature, has emerged (Crossan *et al.*, 1999; Kim, 1993), because different researchers have applied the concept of organisational learning to different domains by different

approaches (Crossan *et al.*, 1999; Hong, 1999; Rodriguez *et al.*, 2003). Therefore, there are almost as many definitions as authors who have studied this subject (Argyris and Schon, 1996; Rodriguez *et al.*, 2003; Wang and Ahmed, 2003). However, for the purpose of this research, the definition of organisational learning will be taken from the account of Argyris and Schon (1996):

Organisational learning occurs when individuals within an organisation experience a problematic situation and inquire into it on the organisational behalf (Argyris and Schon, 1996, p.16).

A primary reason why companies learn is to deal with uncertainty in their markets and technologies; the greater the uncertainties, the greater the need for learning (Dodgson, 1993). Obviously, in such a fast change and turbulent society, companies have to face the uncertainties, and would not exist without organisational learning (Kim, 1993; Ortenblad, 2001).

According to this definition, organisations learn through individuals acting as agents for them (Cavaleri, 2004; Ortenblad, 2001; Hong, 1999; Argyris and Schon, 1996). Individual members experience a surprising mismatch between expected and actual results of action and respond to that mismatch through a process of thought and further action that leads them to modify their images of organisation or their understandings of organisational phenomena. They restructure their activities so as to bring outcomes and expectations into line, thereby changing organisational theory-in-use (Wang and Ahmed, 2003). The new insights or theory-in-use are embedded in the shared mental models of other organisational members or in the organisational artefacts to make the learning become organisational (Hong, 1999). Therefore, a central problem in the field of organisational learning refers to the relationship between individual and organisational learning (Beeby and Booth, 2000), i.e., how individual learning is transferred to the organisation (Kim, 1993).

Moreover, there is an inherent assumption from the definition that learning will improve future performance through the new insights or theory-in-use (Hong, 1999).

Argyris and Schon (1996) submit that the new insights or theory-in-use arise from single loop or double loop learning. However, they treat double loop learning as a way of creating more robust knowledge (Blackman *et al.*, 2004). Their concern is that most organisations only undertake single loop learning which leaves the values and norms underpinning a strategy or action unchanged. This lack of change may prevent organisations from learning from their errors and potentially leads to failure (Blackman *et al.*, 2004). As a result, Argyris and Schon (1996) advocate double loop learning which promotes inquiry, challenging current assumptions and actions (Blackman *et al.*, 2004). To help organisations to pursue double loop learning, its differences from single loop learning should be clarified. So, another central problem is the distinction between the two types of learning (Beeby and Booth, 2000).

The following sections will review the two central problems first, and then other issues related to (inter-)organisational learning.

2.3.2 Individual and Organisational Learning

Learning is the acquiring of knowledge or skill (Kim, 1993). Thus learning encompasses two meanings: the acquisition of *know-how* or skill, which implies the physical ability to produce some action; and the acquisition of *know-why*, which implies the ability to articulate a conceptual understanding of an experience (Kim, 1993). Learning is the process of linking, expanding, and improving data, information, knowledge and wisdom (Wang and Ahmed, 2003).

Individual learning means that an individual detects the discrepancy between actual and expected results, and takes actions to correct the errors or challenge the underlying assumptions (i.e., the acquisition of know-how or skill), and then, in turn, improves his knowledge and understanding (i.e., the acquisition of know-why) (Hong, 1999). Again, the important factors identified for the KT between individuals (See details in Section 2.2.3), such as individual's absorptive capacity, prior

experience and expressiveness, will heavily influence the effectiveness of the individual learning. It is worth noting that individual learning is not necessarily positive or contributive to the organisation, because employees may learn something negative to the organisation, or may learn to improve themselves, rather than benefit the organisation (Wang and Ahmed, 2003; Argyris and Schon, 1996). Therefore, individual learning is not sufficient. It is generally accepted that the acquisition of knowledge by individuals does not represent organisational learning (Nonaka and Takeuchi, 1995; Beeby and Booth, 2000; Wang and Ahmed, 2003). To achieve the necessary cross-level effects, for example, successful organisational learning, individual learning should be on the organisation's behalf (Argyris and Schon, 1996; Holmqvist, 2003), and must be shared through communication which is supported by institutional processes for transferring what is learned by individuals to the organisation as well as for storing and accessing that which is learned (Beeby and Booth, 2000).

It is individuals that make up an organisation (Argyris and Schon, 1996; Kim, 1993; Beeby and Booth, 2000). Each organisational learning activity actually begins from individual learning (Wang and Ahmed, 2003), so, individual learning is a necessary condition for organisational learning that is institutionally embedded (Beeby and Booth, 2000; Kim, 1993; Hong, 1999; Wang and Ahmed, 2003). However, organisational learning does not mean that an organisation cannot learn independent of any specific individual (Kim, 1993; Crossan *et al.*, 1999; Wang and Ahmed, 2003), and also does not mean that all people in an organisation study the same thing at the same time and same pace, but does mean that the organisation cannot learn independent of all individuals (Kim, 1993; Crossan *et al.*, 1999; Wang and Ahmed, 2003). Further, organisational learning is not the simple sum of the learning of its members (Dodgson, 1993; Crossan *et al.*, 1999; Wang and Ahmed, 2003). Shared norms and values are agreed to be indicative of organisational rather than individual learning (Dodgson, 1993). Organisations do not have brains, but they have cognitive systems and memories (Dodgson, 1993). Although individuals may

come and go, and leadership may change, what they have learned as individuals or in groups does not necessarily leave with them. Some learning is embedded in the systems, structures, strategy, routines, rules/norms, procedures, documents, values, culture and prescribed practices of the organisation, and investments in information systems and infrastructure (Crossan *et al.*, 1999; Dodgson, 1993; Ortenblad, 2001). There is a common perspective that managing knowledge and learning requires the realisation of synergies – a firm's knowledge should be more than the sum of its individuals' knowledge (Beeby and Booth, 2000).

Organisational learning is multilevel (Crossan *et al.*, 1999). Different researchers may divide it into different levels, for instance, two levels (i.e., individual and organisational levels) by Kim (1993), three levels (i.e., individual, group and organisational levels) by Crossan *et al.* (1999), and four levels (i.e., individual, team, interdepartmental group and organisational levels) by Coghlan (1997). No matter how many levels are divided, the ultimate aim is to convert individual learning into organisational learning. So it is crucial to know how to bridge these levels so that the connection between individual and organisational learning can be set up. Once we have a clear understanding of this transfer process (from individual learning to organisational learning), we can actively manage the learning process to make it consistent with an organisation's goals, visions, and values (Kim, 1993). The evidence from the literature demonstrates that there are several papers (Kim, 1993; Coghlan, 1997; Crossan *et al.*, 1999) that address this issue. Of them, the 4Is' framework proposed by Crossan *et al.* (1999) is very impressive and is an important contribution (Sun and Scott, 2003, p.207).

Crossan *et al.* (1999) submit that the process of organisational learning within an organisation should be divided into four related sub-processes: intuiting, interpreting, integrating and institutionalising – the so-called 4Is' processes (See Table 2.3). Intuiting is the preconscious recognition of the pattern and/or possibilities inherent in a personal stream of experience. This process can affect the intuitive individual's actions, but it only affects others when they attempt to

(inter)act with that individual. Interpreting is the explaining, through words and/or actions, of an insight or idea to one's self and to others. This process goes from the preverbal to the verbal, resulting in the development of language. Integrating is the process of developing shared understanding among individuals and of taking co-ordinated action through mutual adjustment. Dialogue and joint action are crucial to the development of shared understanding. This process will initially be ad hoc and informal, but if the co-ordinated action taking place is recurring and significant, it will be institutionalised. Institutionalising is the process of ensuring that routinised actions occur. Tasks are defined, actions specified, and organisational mechanisms put in place to ensure that certain actions occur. Institutionalising is the process of embedding learning that has occurred by individuals and groups into the organisation, and it includes systems, structures, procedures, and strategy (Crossan *et al.*, 1999).

Table 2.3 Learning/Renewal in Organisations: Four Processes Through Three Levels (Crossan *et al.*, 1999)

Level	Process	Inputs/Outcomes
Individual	Intuiting	Experiences
		Images
Group	Interpreting	Metaphors
		Language
		Cognitive map
Organisation	Integrating	Conversation/dialogue
		Shared understandings
		Mutual adjustment
Organisation	Institutionalising	Interactive systems
		Routines
		Diagnostic systems
		Rules and procedures

Crossan *et al.* (1999) stress the necessity to consider both the process and level of learning occurring within organisations (Hong, 1999). They argue that the 4Is' processes occur over three levels: individual, group and organisation (See Table 2.3). The three learning levels define the structure through which organisational learning takes place. The processes form the glue that binds the structure together, and are therefore a key facet of the framework. Because the processes naturally flow from one to another, it is difficult to define precisely where one ends and the next begins. Quite clearly, intuiting occurs at the individual level and institutionalising at the organisational level; however, interpreting bridges the individual and group levels, while integrating links the group and organisational levels, while integrating links the group and organisational levels (See Table 2.3).

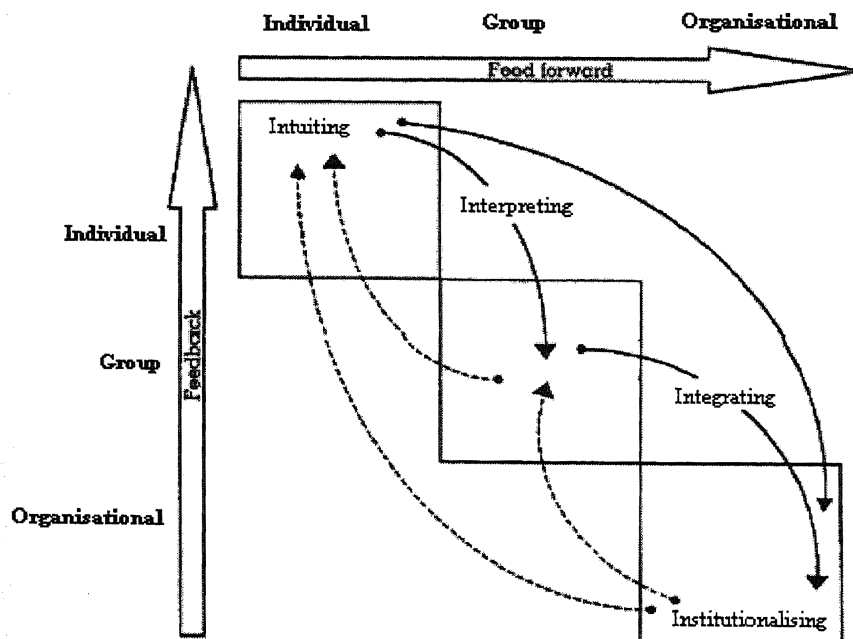


Figure 2.9 Organisational Learning as a Dynamic Process
(Crossan *et al.*, 1999)

Organisational learning is a dynamic process (Crossan *et al.*, 1999; Coghlan, 1997). Not only does learning occur over time and across levels, but it also creates a tension between assimilating new learning (Feed forward) and exploiting or using what has already been learned (Feedback) (See Figure 2.9). Through feed forward processes, new ideas and actions flow from the individual to the group to the organisation levels. At the same time, what has already been learned feeds back from the organisation to group and individual levels, affecting how people act and think. Therefore, although the framework is depicted in a hierarchical fashion, there are necessarily many feedback loops among the levels, given the recursive nature of the phenomenon (Crossan *et al.*, 1999; Hong, 1999).

The 4Is' framework links the individual, group and organisational levels through four processes – intuiting, interpreting, integrating and institutionalising. It also presents the multi-level dynamics and recursive nature of organisational learning through the feedback loops, and further reflects the tension between exploration and exploitation embedded in organisational learning by means of both feed forward and feed back processes. The framework apparently provides an effective means of understanding the relationship between individual and organisational learning, and the dynamic nature, complexities and difficulties that exist in organisational learning.

2.3.3 Single-loop and Double-loop Learning

The theory of organisational learning owes much to the work of Argyris and Schon (Pemberton and Stonehouse, 2000, p.187). They (Argyris and Schon, 1978) developed a generic notion of organisational learning as 'single-loop' or 'double-loop' learning, which cuts across the organisational definitions (Barlow and Jashapara, 1998, p.87). In Argyris and Schon's (1978) account, organisational learning focuses on both single-loop and double-loop learning (Beeby and Booth, 2000).

Single-loop learning (See Figure 2.10) occurs when a change in the behaviour routines happens (Rodriguez *et al.*, 2003). It is a form of instrumental learning and concerned with the detection and correction of errors through a feedback loop (Argyris and Schon, 1996; Pemberton and Stonehouse, 2000; Beeby and Booth, 2000; Grundmann, 2001), in pursuit of existing goals within existing structures in a manner akin to the routine operation of a thermostat (Grundmann, 2001; Beeby and Booth, 2000; Argyris and Schon, 1996; Dodgson, 1993). The thermostat reacts to the condition 'too hot' or 'too cold' by turning heat on or off as appropriate to maintain a fixed temperature (i.e., the existing goal). The thermostat does not question why either state is unsatisfactory (Blackman *et al.*, 2004; Argyris and Schon, 1996). Single-loop learning leaves the values and norms underpinning a strategy or action unchanged (Blackman *et al.*, 2004; Argyris and Schon, 1996). It is corrective, incremental and adaptive, and does not involve high cost and time, and is hence suitable for organisations operating in an environment of slow change (Rodriguez *et al.*, 2003; Sun and Scott, 2003).

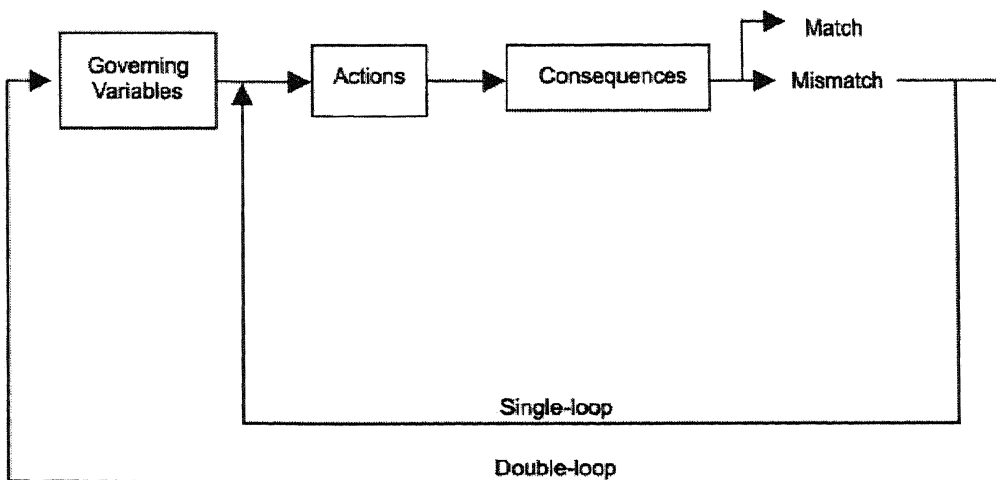


Figure 2.10 Single-loop and Double-loop Learning (Argyris and Schon, 1996)

In contrast to the routine, repetitive characteristics of single-loop learning, double-loop learning (See Figure 2.10) is non-routine in character and based on cognitive processes. The double-loop refers to the two feedback loops that connect the observed effects of action with strategies and values served by strategies (Argyris and Schon, 1996). Double-loop learning promotes inquiry, challenging current norms, assumptions, objectives and basic policies (Blackman *et al.*, 2004; Dodgson, 1993). It results in changes to underlying mental frameworks, such as theories in use; assumptions; organisational strategies and norms; and the ways in which competencies and environments are construed (Argyris and Schon, 1996; Beeby and Booth, 2000; Grundmann, 2001). Therefore, double-loop learning may cause much greater changes than single-loop learning in organisations, but, of course, is more difficult to achieve (The reasons can be found in the following section) (Argyris and Schon, 1996; Dodgson, 1993).

2.3.4 Factors Impeding Organisational Learning

Organisational learning is very complicated, and may experience the following problems.

First, organisations commonly fail to learn at the double-loop level. One reason for this is because of inhibitory loops identified by Argyris and Schon (1978). Primary inhibitory learning loops are a self-reinforcing cycle in which errors in action provoke individuals to behave in a manner that reinforces those errors. Secondary inhibitory loops are group and inter-group dynamics which enforce conditions for error (Ambiguity, vagueness, and so on) (Dodgson, 1993). Another reason is because organisational learning is thought to be radical and may make all knowledge and data within the existing system unusable. This requires the learner to discard obsolete knowledge intentionally, and is referred to as unlearning (Sun and Scott, 2003; Hedberg, 1981; Barlow and Jashapara, 1998). However, as organisations evolve over time, successful events will lead to repetitive behaviour and reinforce

the 'theory of action' (Argyris and Schon, 1978). It will be difficult for the organisations to unlearn their obsolete knowledge (Hedberg, 1981; Hong, 1999).

Second, organisations may also fail to convert individual learning into organisational learning. For instance, March and Olsen (1975), Kim (1993) and Sparrow (2001) identify eight kinds of incomplete learning cycles (See Figure 2.11), where learning in the face of changing environmental conditions is impaired because one or more of the links is either weak or broken, and leads to dysfunctional learning. These incomplete learning cycles are listed as follows:

- ***Role-constrained learning*** can occur when the action of an individual to act in a way consistent with his knowledge is restricted (March and Olsen, 1975).
- ***Audience learning*** occurs when the individual misreads others' actions, or others learn from him by observing, but not fully sharing the interpretation of an experience (March and Olsen, 1975).
- ***Superstitious learning*** occurs when an organisation takes action on the basis of 'faith' and does not subject actions to a monitoring of impact upon its environment (March and Olsen, 1975).
- ***Learning under ambiguity*** occurs where the impact of changes upon an organisation's environment cannot readily be attributed to specific actions (March and Olsen, 1975).
- ***Situated learning*** occurs when an individual's actions are not reflected upon and the potential for learning beyond the specific situation is lost (Kim, 1993).
- ***Fragmented learning*** occurs when the understanding that an individual derives from experience is not shared within the organisation (Kim, 1993).
- ***Opportunistic learning*** is held to occur when an organisation takes action that is known not to fit with the shared understanding in the organisation (Kim, 1993).
- ***Unco-ordinated learning*** actions by 'sections' of an organisation that are inconsistent with the actions of other sections can result in 'unco-ordinated action' (Sparrow, 2001).

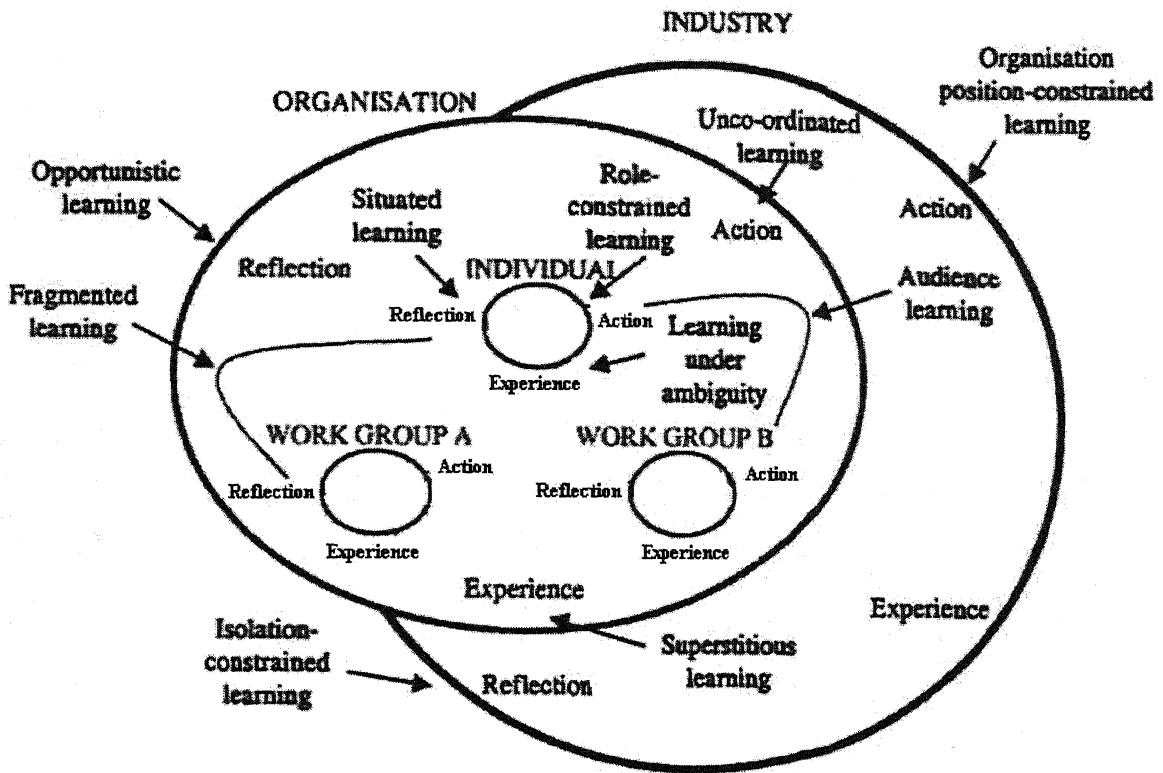


Figure 2.11 Learning Loops and Potential 'Disconnects' (Sparrow, 2001)

Some of these incomplete cycles may be in virtue of organisational policies and procedures, and the lack of a critical mass of people with new skills and knowledge and the ability to work together for change (Beeby and Booth, 2000).

Third, from the whole organisational perspective, Sparrow (2001) extends the notion of organisational learning loops to a business's position within its business environment and highlights two further loops (See Figure 2.11):

- **Organisation position-constrained learning** an organisation's inability to manoeuvre (act) in its industry/network/cluster can restrict its learning opportunities.
- **Isolation-constrained learning** the opportunities for a business to reflect upon the experiences of others in its industry/network/cluster can be affected by 'isolation-constrained learning'.

To overcome these barriers, the following measures are suggested:

- A trust based knowledge-sharing culture, again, is very important, and should be created. It can steer the actions and behaviour of the individuals making up the organisation, encourage dialogue and effectively deal with the incomplete learning cycles, such as the role-constrained learning, audience learning and fragmented learning (Beeby and Booth, 2000; Wang and Ahmed, 2003; Dodgson, 1993; Argyris and Schon, 1996).
- Organisational structure, as an important component of the organisational context, also plays an important role in facilitating or preventing organisational learning (Hong, 1999; Pemberton and Stonehouse, 2000). So internal mechanisms, such as co-ordinating and rewarding systems should be set up to ensure that the structure could shape the organisational learning process (Dodgson, 1993); promote co-ordination of the sections within the organisation; encourage knowledge sharing, continuous experimentation and problem-solving; and effectively cope with the incomplete cycles, such as superstitious learning, learning under ambiguity, opportunistic learning and unco-ordinated learning, and so on.
- The organisation should have a sufficient number of knowledgeable people and a value-driven leadership to deal with the incomplete cycles, such as organisation position-constrained learning and isolation-constrained learning, as

well as other problems, by means of their visions, insights, knowledge and experiences (Beeby and Booth, 2000).

2.3.5 Inter-organisational Learning

Most of the organisational learning literature focuses on learning within organisations, inter-organisational learning is very neglected, although increased attention has been paid to it during recent years (Holmqvist, 2003, p.101; Beeby and Booth, 2000, p.84). So there is very little literature (Tempest and Starkey, 2004; Holmqvist, 2003; Mohr and Sengupta, 2002; Ciborra and Andreu, 2001; Beeby and Booth, 2000) to clearly address the inter-organisational learning issues. The following will mainly focus on introducing and analysing three inter-organisational learning frameworks (Holmqvist, 2003; Ciborra and Andreu, 2001; Beeby and Booth, 2000).

Three Inter-organisational Learning Frameworks

According to the tenets of the resource-based view of strategy, Ciborra and Andreu (2001) propose inter-organisational learning ladders as a framework to describe the learning process for a successful two-firm alliance. They contend that the learning process of the partners, in such an alliance, likes a DNA double helix: knowledge (and resources) from both sides is intertwined, becomes shared across their boundaries and their learning from each other progresses like climbing ladders, i.e., from resources to work practices; then to capabilities; then to core capabilities; and may finally become their own formative contexts.

Beeby and Booth (2000) argue that inter-organisational learning process may be divided into five levels: individual (level one), team (level two), interdepartmental group (level three), organisational (level four), and inter-organisational (level five) (See Figure 2.12). Each level has four stages: experiencing, processing, interpreting and taking actions. For instance, in the level one, the individual experiences a problem first; then processes relevant data or information; interprets the processed

outcomes; and takes further actions to deal with the problem; then the individual may experience another problem, and will repeat these stages. There is not a clear-cut division between the stages; the individual working in one stage may go back to the previous stage, and then return again. So two close stages are connected by feedforward and feedback loops. The four stages thus form a circle. Each level is also connected with other four levels by feedforward and feedback loops. This means that the individual level may directly make contributions to the organisational or inter-organisational level. Therefore, this framework may be named as the five-level model, and is actually a kind of network.

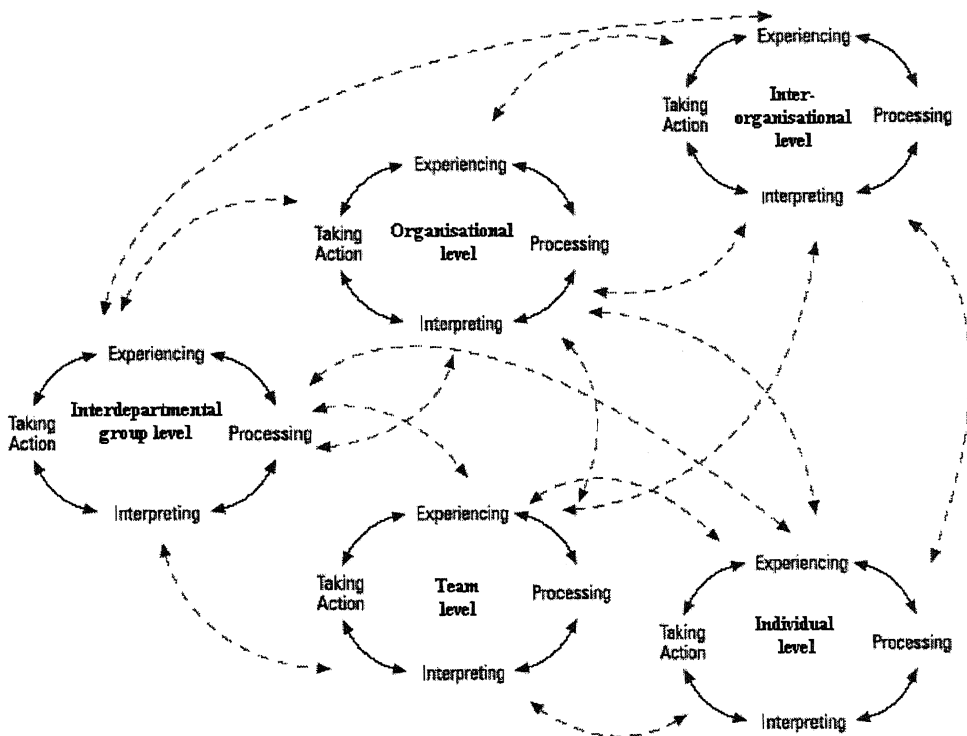


Figure 2.12 The Five-level Model (Beeby and Booth, 2000)

It is further proposed that intra- and inter-organisational learning processes are integrated through four transformations of exploration and exploitation: *exploitative extension*, *exploitative internalisation*, *explorative extension* and *explorative internalisation* (Holmqvist, 2003).

In addition, it must also take into account the possibility of diagonal inter-level learning dynamics involving four different learning patterns: *opening-up extension*, *focusing internalisation*, *opening-up internalisation*, and *focusing extension* (Holmqvist, 2003).

All the transformation processes are then combined together to constitute a dynamic learning model in Figure 2.13. In this figure, there is a horizontal dynamism both within and between organisations. Within organisations (i.e., intra-organisation), the state of *acting* may be horizontally transformed to the state of *experimenting* through the transition of *opening-up*; the latter may also be horizontally transformed to the former through *focusing*. Similarly, between organisations (i.e., inter-organisation), both *joint acting* and *joint experimenting* may be horizontally transformed to each other through *joint opening-up* and *joint focusing* respectively. There is also a vertical learning dimension that takes into account a dynamic approach to exploitation and exploration, and to intra- and inter-organisational interaction. Both *acting* and *joint acting* may be vertically transformed to each other through *exploitative extension* and *exploitative internalisation* respectively. Similarly, both *experimenting* and *joint experimenting* are transformed to each other through *explorative extension* and *explorative internalisation* respectively. Moreover, the possibility of diagonal inter-level learning dynamics involves the transition between *acting* and *joint experimenting* through *opening-up extension* or *focusing internalisation*, and the transition between *experimenting* and *joint acting* through *focusing extension* or *opening-up internalisation*.




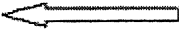












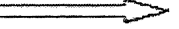
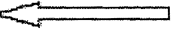


	Exploitation	Dynamics	Exploration
Intra-organisation	 Acting 	 Opening-up Focusing 	 Experimenting 
Dynamics	 Exploitative extension Exploitative internalisation 	 Opening-up extension Opening-up internalisation   Focusing extension Focusing internalisation 	 Explorative extension Explorative internalisation 
Inter-organisation	 Joint acting 	 Joint opening-up Joint focusing 	 Joint experimenting 

Figure 2.13 A Dynamic Model of Intra- and Inter-organisational Learning (Holmqvist, 2003)

The inter-organisational learning ladders (Ciborra and Andreu, 2001) vividly demonstrate the learning process, going from the lower value knowledge to the higher value, from the shallower to the deeper, but fail to reflect the impacts of both individual and organisational levels on the process, and connections between different levels. These drawbacks are obviously addressed by the five-level model (Beeby and Booth, 2000). However, the model is not suitable for SMEs that have much flatter organisational structures than large businesses, and is also not empirically evaluated. The dynamic learning model proposed by Holmqvist (2003) provides a fuller understanding of how intra- and inter-organisational learning relate to each other, but limits the focus on the interface between organisational and inter-

organisational levels. The learning model ignores the individual level that plays an important role in the (inter-)organisational learning, and is not empirically evaluated either. Furthermore, all three frameworks cannot help the organisations to effectively address the 'boundary paradox'. Therefore, the evidence from the organisational learning literature further confirms that a suitable framework for SMEs is needed to ensure that their inter-organisational KT processes could be better understood.

Trust, Cultural Difference, the 'Boundary Paradox' and 'Boundary Spanners'

Trust (Dodgson, 1993; Barlow and Jashapara, 1998; Beeby and Booth, 2000), cultural difference (Beeby and Booth, 2000), the 'boundary paradox' (Mohr and Sengupta, 2002) and 'boundary spanners' or 'technological gatekeepers' (Dodgson, 1993) between organisations are also considered as important factors that will heavily influence the effectiveness of the learning between organisations. These issues have already been, or will be, explored in Sections 2.2.4 and 2.4.5.

2.4 Review on Social Networks

Social networks are very complicated (Wasserman and Faust, 1994). There has been little headway in terms of unifying network theory, although many studies have appeared since the term 'social network' was first used in 1954 (Wasserman and Faust, 1994; Grundmann, 2001). This research hopes to draw a little from the theory to further clarify the social relationship and its important factors. Thus the review doesn't aim to provide a full picture of the theory. It will simply focus on the definition and research approaches of social networks, mechanisms of the relationship, gatekeeper, and so on.

2.4.1 Definition of Social Network

A social network refers to the set of actors (i.e., social entities or persons) and the ties (i.e., social relationships) among them (Wasserman and Faust, 1994, p.9). Social

networks have many forms, for example, joint-ventures, franchising, consortia, commercial agreements, sub-contracting, interlocking directorates and personal networks (Grandori and Soda, 1995).

Social relationships play an important role in social networks. Michelli and McWilliams (1996, p.2) argue that "... the principles upon which [social] networks are built are not complex. They are nothing more than a series of relationships, connected by mutual interest or a common goal." Granovetter (1985) further points out that all activities are embedded in complex networks of social relations which include family, state, educational and professional background, religion, gender and ethnicity.

2.4.2 Research Approach and Level for this Study

Social networks are interesting but difficult to study since real-world networks lack convenient natural boundaries (Conway *et al.*, 2001). In actual research, it is always necessary to select particular aspects of the total network for attention, and these aspects may be conceptualised as 'partial networks'. There are two bases on which such abstraction can proceed. First, there is abstraction which is 'anchored' around a particular individual so as to generate 'ego-centred' networks of social relations of all kinds. Second is abstraction of the overall 'global' features of networks in relation to a particular aspect of social activity: political ties, kinship obligations, friendship or work relations and so on (Scott, 1991). Therefore, from an academic research perspective, the social networks can be divided into two types: ego-centric and socio-centric networks, which are generated by the first and second abstraction respectively. The two abstractions can thus be called ego-centric approach and socio-centric approach correspondingly (Scott, 1991).

As well as the different research approaches in social network analysis, there are also different research levels, for instance, the whole network level and the dyad level (Scott, 1991; Conway *et al.*, 2001). Dyad generally means a pair of units

treated as one (Chambers, 2001, p.504). In the social network context, a dyad consists of a pair of actors and the (possible) tie(s) between them (Wasserman and Faust, 1994, p.18). The tie is inherently a property of the pair and therefore is not thought of as pertaining simply to an individual actor. The dyad is frequently the basic unit for social network analysis (Wasserman and Faust, 1994).

No matter what research approaches are used, some common contents will be involved. In the whole network level, size, diversity, stability and density will be involved. In the dyad level, network components (Actors, links and flows) and activities (mechanisms) will be studied. Conway *et al.* (2001) deconstruct the network and its components in Figure 2.14.

Because this research aims to develop an inter-organisational KT framework to describe the process that a SME acquires the needed knowledge from its customers (or suppliers), the SME is apparently a particular focus. The study should anchor on the SME to track its connections with the customers (or suppliers) which may be SMEs either or large businesses. Therefore, this research will use the 'ego-centric' approach to produce an ego-centric network that anchors on the SME. Specifically, the SME is treated as a hub, and the customers (or suppliers) are linked to it through business relationships to constitute the network (See an example in Figure 2.15).

However, this study will not focus on the network level that involves the size, density and diversity of the network, but on the dyad level that involves actors, links and flows. The reasons are as follows:

- Knowledge, as a special resource, is transferred through the links between actors. To describe the inter-organisational KT process, the three factors (i.e., actors, links and knowledge flows) have to be involved. According to Figure 2.14 (Conway *et al.*, 2001), the three factors belong to the dyad level.

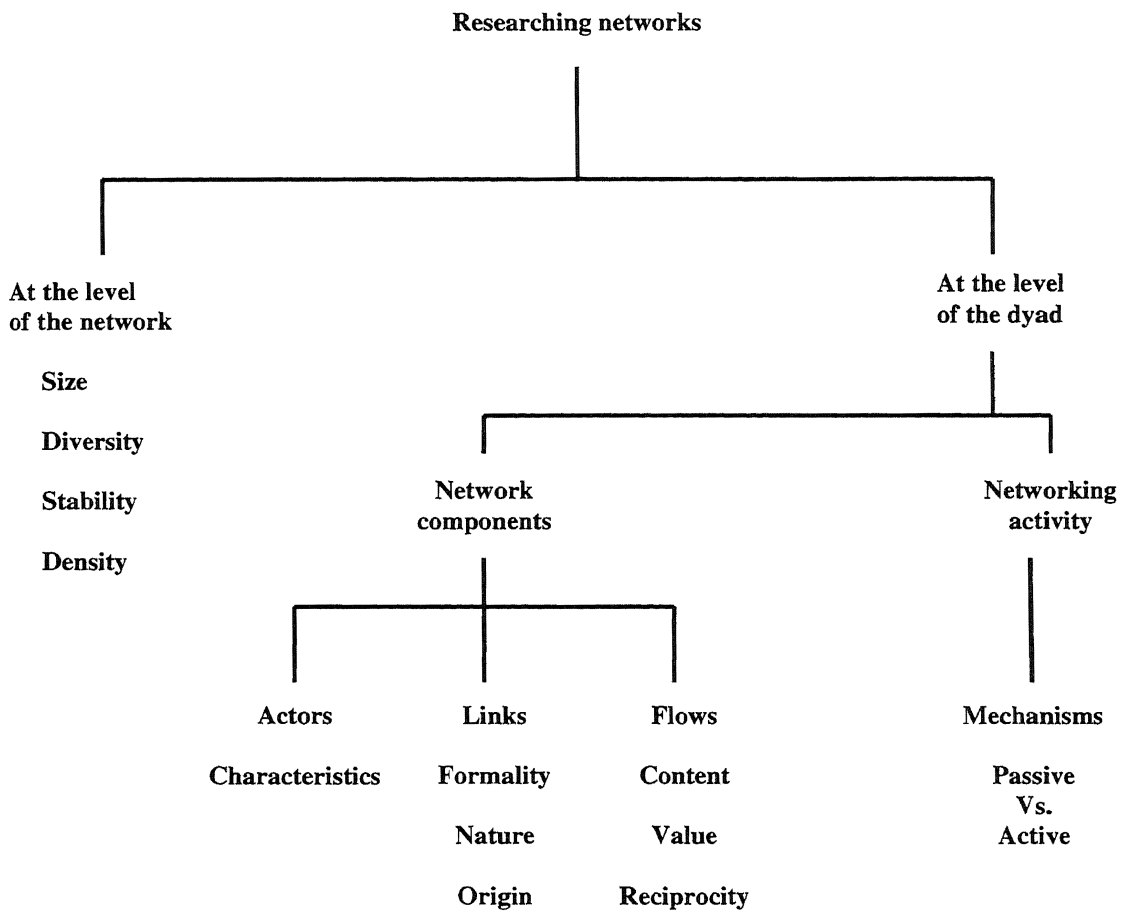


Figure 2.14 Deconstructing the Network and its Components (Conway *et al.*, 2001)

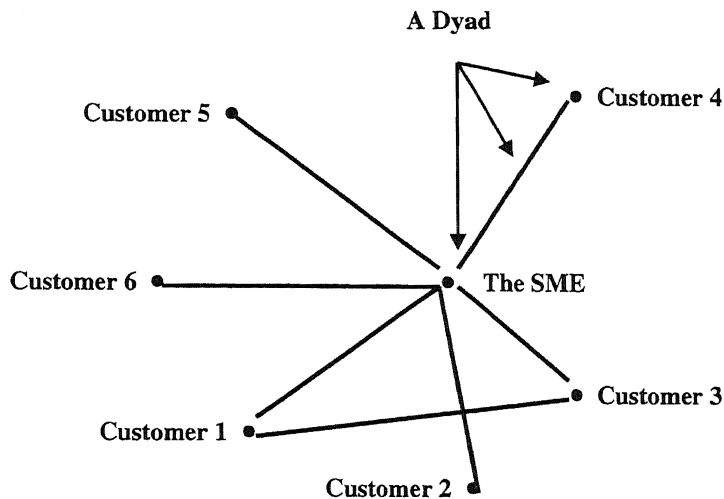


Figure 2.15 An Example of the Network Anchored on the SME

- This study focuses on the process that a SME acquires the needed knowledge from its customers (or suppliers). Therefore, in the ego-centric network that anchors on the SME, only the KT's that the SME involves (i.e., the KT's happened within the dyads containing the SME) are considered. As to the KT's that the SME does not involve (e.g., the KT between customer 1 and customer 3 (See Figure 2.15)), they are obviously not interesting points for this research unless they have influences on the KT's that the SME involves. Moreover, this study is interested in the process of the KT, not in the size, diversity, or density

of the network that will be studied in the network level (See Figure 2.14). Therefore, the network level is not suitable as a focus for the research.

- Bessant *et al.* (2003) used six UK supply chains as cases to study inter-firm learning, and found that learning did not cascade throughout the supply chain. Most cases reported some learning by the first-tier supplier from the lead firm, and even a case of the co-ordinating firm learning from a first-tier supplier. However, further along the supply chain, learning activities among suppliers and customers are more limited. The control of the co-ordinating firm is not so strong at the second and third tiers although the firm is a large business. This point further confirms that, in the ego-centric network that anchors on the SME, only the KTs between the SME and its first-tier suppliers (or customers) should be considered because the SME has much less business power than the co-ordinating firm of either of the six supply chains and cannot effectively influence its second and third tiers.

The SME normally has a lot of customers (or suppliers), so there are a lot of dyads containing the SME in the ego-centric network that anchors on the SME (See Figure 2.15). This study tries to use any one of the dyads as an example to develop the inter-organisational KT framework, but the framework should be applicable for other dyads. According to the relevant literature (Dyer and Nobeoka, 2000; Albino *et al.*, 1999), in the social network context, when two actors exchange knowledge, a third actor, based on its own economic benefits, may use its relationship with one of the two actors to influence the KT process. For example, in Figure 2.15, when customer 1 exchanges knowledge with the SME, customer 6, as customer 1's competitor, may influence the KT process by means of its relationship with the SME. Therefore, as a dyad containing the SME and a customer (or supplier) is selected as the research focus, other customers (or suppliers) that may influence the KT within the dyad will be treated as third parties (See details in Section 3.4.3).

2.4.3 Mechanisms – Trust and Power

Trust is one of the most frequently mentioned concepts and has been recognised by many scholars (Parker and Vaidya, 2001; Jones and Beckinsale, 2001; Jones *et al.*, 2001; Bachmann, 1999; Grandori and Soda, 1995) as a key issue in relationships within, and particularly between organisations. Trust is a complex term, different scholars may have different explanations for it (Edwards and Kidd, 2003; Bachmann, 1999; Grandori and Soda, 1995). This study will follow Luhmann's (1979) explanation.

Trust is a risky engagement. It is inevitable that a social actor who decides to trust another actor extrapolates on limited available information about the future behaviour of this actor. Trustors constantly try to find 'good reasons' to believe that the risk they are about to accept is low. If they cannot find sufficient reasons for this assumption, they might refrain from trusting, and either avoid social interaction altogether or seek an alternative basis for it (Luhmann, 1979; Bachmann, 1999).

Power experiences a situation similar to trust, and may have different explanations by different researchers as well (Lukes, 1974; Foucault, 1994; Zand, 1997). For the purpose of this research, the explanation will follow Zand's (1997) view: "Power is the ability to influence people. It is the ability to get someone to do or not to do something, to persuade or dissuade" (p.137). Social power may be divided into four types: ideological, economic, military, and political power (Mann, 1986). This research will just involve economic power, which is embedded in economic production, distribution, exchange and consumption relations (Mann, 1986). An organisation's power primarily anchors on its legitimate power, which is the right people give the organisation to make choices and resolve conflicts (Zand, 1997). Legitimate power is defined as the lawful right to make a decision and to expect compliance. 'Lawful' simply means that, by social convention, people have agreed that the occupant of a position shall have the right to make certain decisions. Within

itself, an organisation's legitimate power mainly comes from its internal mechanisms or regulations, which include decision process power, agenda power, staffing power and review power (Zand, 1997). The legitimate power is also interrelated with other powers, such as reward, coercive, referent and expert (Mullins, 2002). For instance, the staffing power exerts influences on the employees through selection, motivation and punishment that may involve reward and coercive powers. In the external environment, an organisation's legitimate power mainly comes from commercial law (e.g., contract), powerful trade associations and technical standardisation, and so on. Organisations always seek power, i.e., the ability to influence other organisations, and use it to attain what they want to satisfy their subsistence needs. Knowledge is a kind of special resource which plays a key role in maintaining or developing organisations' competitive advantages in various activities. Organisations thus would like to acquire or attain it even through using their power.

Trust and power are considered as two mechanisms that maintain and co-ordinate social relationships (Bachmann, 1999). The differences (Bachmann, 1999; Michelli and McWilliams, 1996) and similarities (Bachmann, 1999; Luhmann, 1979) between the two mechanisms are shown in Table 2.4.

The relationship between trust and power is complex. On the one hand, they can be seen as alternative and compatible means – which do not exclude each other but occur in combination in many cases – to fulfil the same social function. On the other hand, power often appears as a precondition rather than an alternative to trust, and can foster the constitution of trust and minimise the risk of trust (Bachmann, 1999). Since both of them are limited in their capacity, a combination often seems to be the only way to ensure that the co-ordination of expectations and interactions is achieved satisfactorily. In fact, most relationships are usually based on a mixture of both trust and power (Bachmann, 1999).

Table 2.4 The Differences and Similarities between Power and Trust

	Power	Trust
Differences	1) Based on a negative selection of a hypothetical possibility which is presented by the powerful actor and believed by the subordinate actor not to be in the interest of either side.	1) Based on positive assumption.
	2) Easier to build up.	2) Takes tremendous amounts of time and effort to establish.
	3) More robust and much less in danger of an unforeseen breakdown.	3) Less robust and more in danger of such a breakdown.
	4) In the case of breakdown, damage is not severe, a relationship may be continued.	4) If breakdown, the damage is severe, the emotion is hard to recover.
Similarities	1) Both are mechanisms to co-ordinate social interactions efficiently and to allow for relatively stable relationships between co-operating social actors. 2) Both of them influence the selection of actions in the face of other possibilities. 3) Both mechanisms allow social actors to link their mutual expectations into each other and to co-ordinate (re-)actions between them. 4) Both have risks and may break down if they are massively challenged. The usability of power depends greatly on whether or not the threat of sanctions which is implied is realistic and has a good chance of being acknowledged by the subordinate actor. The more the latter starts to doubt that the threat of sanctions would ultimately be used against him the weaker is the position of the powerful actor.	

2.4.4 Social Networks as a Channel to Transfer Knowledge

Social networks may provide opportunities for face-to-face communication, produce strong ties between member organisations through the appropriate application of the two mechanisms – trust and power, and thus work as a channel to transfer both tacit and explicit knowledge between member organisations (Dyer and Nobeoka, 2000).

2.4.5 Gatekeeper and Loyalty

According to Burt (1992), autonomous actors who are able to bridge a 'structural hole' occupy a favourable position in the social structure by connecting other actors who are themselves not connected. This brokerage or gatekeeping location in the social structure is a position of competitive advantage because it offers the opportunity to access diverse information, to control the transfer of information between disconnected parties, and to identify and broker transaction between otherwise disconnected parties. In contrast, actors who are tied to a few densely connected actors are constrained because they lack the information benefits of accessing diverse social and economic worlds and have few, if any, brokerage opportunities (Grundmann, 2001; Dodgson, 1993).

Because gatekeeping is an individual rather than an organisational role, this raises the problem of personal allegiance, because if a gatekeeper switches to another firm, the original employer loses not only the employee but also the skills and knowledge which might be difficult to replace. Even so, firms always have to face the risk of informal arrangements in which representatives are not controllable at each and every step (Grundmann, 2001; Dodgson, 1993).

2.5 Chapter Summary

The purpose of this chapter was to review the literature on KT, organisational learning and social networks, to demonstrate the connections among these three areas, reflect upon their strengths and/or weaknesses, and surface key issues to be further addressed. Several conclusions can be drawn from this review as follows.

Firstly, regardless of KT or organisational learning, most literature mainly focuses on within an organisation, few efforts have been made to study between organisations, even fewer attempts have been made to look at between organisations

in SMEs. Furthermore, no literature has examined KT for SMEs in the context of inter-organisational learning and social networks.

Secondly, Szulanski's (2000) framework is believed to be applicable for KT from individual to individual, although it is only empirically evaluated for between groups. The empirical results demonstrate that the process view advocated by Szulanski (2000) does help organisations gain a better understanding of the complexities and difficulties in KT.

Thirdly, inter-organisational KT activities may be distinguished by three types: *management-authorised*; *one-side-management-authorised* and *non-management-authorised*. Informal know-how trading that belongs to the type of non-management-authorised, is relatively the subject of considerable attention in the literature. However formal know-how trading has received negligible research. This study thus tries to address the issues related to management-authorised inter-organisational KT that covers formal know-how trading.

Fourthly, KT within an organisation is thought of as being complicated and difficult, but between organisations is even more complicated and difficult because of their 'boundary paradox'. To have better understanding of the complexities, difficulties and 'paradox', a framework should not only adopt the process view advocated by Szulanski (2000), and clearly set up the connections between different levels (i.e., individual, group, organisational and inter-organisational), but also benefit the organisations to address the 'paradox' from the two perspectives (i.e., how to learn from a partner, and teaching a partner how to learn) and at the two levels (i.e., inter-organisational level and inter-individual level) suggested by Mohr and Sengupta (2002). However, such a framework cannot be found in the current literature, and has to be developed in this research.

Fifthly, the cultural distance between organisations increases the difficulties in their interactions, and thus increases the difficulty of performing their KT processes successfully. Therefore, the influences of the organisational cultural differences on knowledge exchange between organisations will be taken into account in the framework to be developed.

Sixthly, inter-organisational KT is actually a kind of inter-organisational learning. However, the current (inter-)organisational learning frameworks can effectively demonstrate the connections between different levels (i.e., individual, group, organisational and inter-organisational), but fail to help the organisations to strategically address the ‘boundary paradox’, therefore cannot be directly used as the frameworks for KT between organisations.

Seventhly, from the social network perspective, this study will be carried out on the dyad level, not the network level, and by means of the ‘ego-centric’ approach. In addition, the relationship between individuals, or organisations, is considered as being maintained and co-ordinated by two mechanisms – trust and power.

Finally, there is a trend that inter-organisational KT, inter-organisational learning and social networks draw mutually from each other. This trend inspires this study that the theories of both organisational learning and social network may be helpful for it. Specifically, the former’s strength at building up the connections between different levels, and the latter’s informative contribution on the study of relationship will be used for references for this research.

This literature review on KT, organisational learning and social networks, as well as the overview on SMEs in Chapter 1, form the basis for the development of research issues for the empirical investigation, the framework and its important factors which will be dealt with in the next chapter.

Chapter 3 SMEs' KT Needs, an Initial Framework and Associated Important Factors

3.1 Introduction

Chapter 1 argued that there appears to be no empirical evidence to support the belief that external knowledge is of prime importance for SMEs, and suggested that an empirical investigation on UK SMEs' inter-organisational KT needs should be carried out to address this issue. Chapter 2 contended that the current inter-organisational KT (or organisational learning) frameworks do not adopt the process view advocated by Szulanski (2000), and do not clearly set up the connections between different levels (i.e., individual, group, organisational and inter-organisational), and thus cannot effectively reflect upon the complexities and difficulties of the inter-organisational KT process. These frameworks, therefore, cannot benefit the organisations to strategically address the 'paradox' from the two perspectives (i.e., how to learn from a partner, and teaching a partner how to learn) and at the two levels (i.e., inter-organisational level and inter-individual level) suggested by Mohr and Sengupta (2002). To address these drawbacks, a new framework is suggested with the help of the process view advocated by Szulanski (2000), and the theories of organisational learning and social network that are good at building up the connections between different levels (i.e., individual, group, organisational and inter-organisational) and studying the relationships embedded in these connections respectively. Based on the background knowledge provided in chapters 1 and 2, this chapter aims to address the issues related to SMEs' KT needs for the suggested empirical investigation, the development of the new framework and the treatment of the 'boundary paradox'.

This chapter will firstly identify the key issues related to SMEs' inter-organisational KT needs for the empirical investigation so that its empirical outcomes can soundly support or negate the belief that external knowledge is of prime importance for SMEs. Then it will develop a new framework for KT between organisations by means of organisational learning, social networks and the process view advocated by Szulanski (2000). Finally, on the basis of the initial framework, from a strategic

perspective, the important factors associated with the inter-organisational KT process will be explored, to help SMEs address and have better understanding of the 'boundary paradox'.

3.2 Key Research Issues Related to SMEs' KT Needs

The investigation aims to identify inter-organisational KT needs in UK SMEs, clarify their current practices and effectiveness, and provide convincing evidence to soundly support or negate the belief that external knowledge is of prime importance for SMEs (Sparrow, 2001). The following will discuss the issues that should be examined in the investigation.

Firstly, it is a natural concern whether there is practical evidence to support this belief. Further, in which areas may this conclusion be specifically reflected? The external knowledge for a company actually exists in its business environment, which is defined as "the relevant physical and social factors outside the boundary of an organisation that are taken into consideration during organisational decision-making" (Xu *et al.*, 2003, p.381). The environment has two layers. The one closest to the organisation is the task environment, with sectors that have direct transactions with the organisation, such as competitors, suppliers, and customers (Holmqvist, 2003). The outer layer represents the general environment and refers to sectors that affect organisations indirectly, such as the economic, legal, social and demographic ones (Xu *et al.*, 2003). Daft *et al.* (1988) found that sectors in the task environment generate greater strategic uncertainty than those in the general environment, and thus are perceived as more important than the latter. So, this research will focus on the task environment. Xu *et al.* (2003), through a questionnaire survey, reveal that customers, competitors and market sectors are perceived as most strategically important by UK executives from five industries: computer, food, chemical, electronics and transport. This partially confirms the finding of Daft *et al.* (1988). However, "the sample selected is medium to larger sized companies, the results may not be applicable to very large or small and entrepreneurship enterprises" (Xu *et al.*,

2003, p.388). Furthermore, "... earlier studies treat the business environment as a single entity" (Xu *et al.*, 2003, p.381). Therefore, it seems worthwhile to attempt to divide the task environment into sectors and identify SMEs' perception of the importance of knowledge in these sectors.

Secondly, the knowledge in identified sectors of the task environment will be finally related to particular organisations, for example, the market sector identified by Xu *et al.* (2003) is related to customers, suppliers or competitors. So, once the importance of external knowledge in the relevant sectors of the task environment for SMEs is identified, it may be considered whether SMEs have sufficient knowledge about the organisations related to the identified sectors. Obviously, if SMEs have been aware of their insufficiencies in knowledge about the organisations, i.e., knowledge gaps about the organisations exist in SMEs, they will need to acquire the external knowledge through learning from the organisations, i.e., through inter-organisational KT (Szulanski, 2000; Beijerse, 2000; Chen *et al.*, 2003b). Therefore, SMEs' needs for inter-organisational KT can be identified by means of the identification of their knowledge insufficiencies about the relevant organisations.

Thirdly, to acquire external knowledge, SMEs need to engage in some activities to interact with external organisations, i.e., inter-organisational KT activities. For instance, some benchmarking activities may include consultancy visits, training and visits to exemplar enterprises (Skandalakis and Nelder, 1999). Obviously, if SMEs have no need for inter-organisational KT, they will have no motivation to take part in KT activities. So, the identification of these activities may reflect SMEs' needs for inter-organisational KT from another perspective, and also demonstrate their current practices in the area. Beijerse (2000) identifies 79 instruments with which knowledge is organised in SMEs, of which five reflect inter-organisational KT activities. KT is thought of as an important part of KM (Davenport and Prusak, 1998; Nissen *et al.*, 2000; Beijerse, 2000), the theory of which is mainly derived from large businesses (Deakins, 1999). As a result of this, only a small proportion of

literature has attempted to address KM issues in SMEs (Deakins, 1999; Sparrow, 2001). A review (Chauvel and Despres, 2002) of various KM surveys conducted between 1997 and 2001 shows that these surveys were designed to investigate KM issues from six dichotomous dimensions, i.e. phenomena, action, level, knowledge, technology and outcomes. In the level dimension, the surveys have typically focused on KM at the individual, divisional and organisational levels. Very few surveys have been designed to look at KM issues at the inter-organisational level in SMEs. KM issues related to SMEs have tended to be ignored, especially at the inter-organisational level. The identification of SMEs' current practices and needs for inter-organisational KT will contribute knowledge to this area.

Fourthly, organisations need channels to facilitate their knowledge exchange in the inter-organisational KT activities. Social and electronic networks are thought of as being two such channels (Preece, 2000; Dyer and Nobeoka, 2000). A social network may provide opportunities for face-to-face communication, produce strong ties between member organisations through the appropriate application of the two mechanisms – trust and power, and thus work as a channel to transfer both tacit and explicit knowledge between member organisations (Dyer and Nobeoka, 2000; Chen *et al.*, 2002). An electronic network may work as another channel to transfer knowledge between organisations (Preece, 2000). Although there is some difficulty for an electronic network to transfer tacit knowledge, it has advantages over social networks in rapidly transferring explicit knowledge, rapidly developing weak ties and greatly reducing communication cost (Grandori and Soda, 1995; Preece, 2000; Jones and Beckinsale, 2001; Warkentin *et al.*, 2001). So, the member organisations of a social network may build up their own electronic network to facilitate explicit KT between them. Even if this case has not happened in a social network, its member organisations may still use network technology, such as the Internet, to market products or acquire knowledge from external sources. Therefore, the current situation and effectiveness of SMEs' use of both social and electronic networks to facilitate knowledge exchange between organisations is worthy of study.

Finally, inter-organisational KT is actually the process of organisations learning from each other. According to the definition of organisational learning (Argyris and Schon, 1996), the process is thus some individuals who learn on their organisation's behalf from other individuals on another organisation's behalf. From the organisational learning perspective, a criterion for success is that knowledge which is received by individuals from external sources should be communicated and utilised effectively throughout the organisation so that its business is improved (Argyris and Schon, 1996; Dodgson, 1993; Beeby and Booth, 2000). Szulanski (2000) also argues that a successful KT for an organisation should improve its business performance. So, the effectiveness of SMEs' inter-organisational KT is also a matter of concern and will be measured on whether the acquired external knowledge is effectively used by SMEs to improve their businesses.

Obviously, the empirical investigation should be carried out to examine these issues for SMEs. Specifically, it may be designed to identify (or clarify):

- The importance of external knowledge to SMEs.
- SMEs' needs for inter-organisational KT.
- SMEs' actual situation in the involvement of the relevant KT activities.
- SMEs' perception of the importance of social and electronic networks in helping them to acquire the necessary external knowledge, and their actual effectiveness in using social and electronic networks to do so.
- SMEs' effectiveness in using the acquired external knowledge to improve their business performance.

3.3 An Initial Framework

Chapter 2 concluded that a new framework should be developed by means of organisational learning, social networks and the process view (Szulanski, 2000). The following will demonstrate the development process of the new framework.

3.3.1 The Development of the Framework – Drawing Support from Organisational Learning and Social Networks

According to the review of social networks in Section 2.4.2, this research will use the 'ego-centric' approach (Scott, 1991), and focus on the dyad level. Specifically, a SME will be treated as a hub, and KT between the SME and one of its customers (or suppliers), i.e., between two organisations, will be the focus. Furthermore, SMEs have much flatter hierarchy structure than large businesses (Deakins, 1999; Sparrow, 2001), so only individual and organisational levels will be discussed, and the intermediate level (e.g., group level) will be ignored although the customer (or supplier) of the SME is probably a large business. In a word, the following analysis will focus on two organisations (i.e., the SME and one of its customers (or suppliers)) and two levels (i.e., organisational level and employee level).

According to the background literature on organisational learning, KT between two organisations is actually the process that both of them learn from each other, i.e., a kind of inter-organisational learning. In Argyris and Schon's (1996) account, when the two organisations learn from each other, it is normally some individuals who learn on their organisation's behalf from other individuals on another organisation's behalf. Then the individual learning will be further converted into organisational learning. Therefore, the inter-organisational learning process can be considered to be composed of two sub-processes: 1) inter-employee learning between two organisations; 2) organisational learning within the receiving organisation by converting the individual learning to organisational learning through the organisation's internal mechanisms.

This research targets management-authorized inter-organisational KT, which means that, not only employees, but also management from both sides, will involve the transfer process. Granovetter (1985) points out that all activities are embedded in complex networks of social relations which include family, state, educational and professional background, religion, gender and ethnicity. Therefore, from the social

network perspective, the management-authorized KT between two organisations may be thought of as being a kind of social network. Assuming that the influences from third parties are ignored, the network may have four actors: receiving organisation and receiving employee, giving organisation and giving employee. The actors' behaviours will be influenced by the following relationships.

According to the review in Section 2.2.4, it is known that, in the process of non-management-authorized KT between two organisations, the transfer negotiation and decision are made by the employees themselves of both sides (e.g., informal know-how trading). However, for the management-authorized type, KT negotiation and decision are made by the management from both sides. So, in the first sub-process (i.e., inter-employee learning between employees from the two organisations), there are two levels: strategic and operational levels. The management from both sides is in the strategic level, employees are in the operational level. When the receiving organisation requests knowledge from the giving organisation, the management from both sides will represent his own organisation to negotiate with each other, and decide whether the KT should be carried out. Once the deal is reached, each side will arrange for some employees, as giving or receiving employees, to do the specific transfer jobs. Each of the two organisations (actually, its management) will establish its own KT strategies based on their relationship. It will set (and maybe later change) goals, and provide guidance for its employee according to its transfer strategies (Jankowicz, 2000). Then the organisations may use their relationships with their own employees to influence the employees' learning behaviours so that the goals can be realised. The personal relationship between the receiving and giving employees will also influence their individual learning effectiveness. Therefore, in the first sub-process, there are four relationships that lie between the four actors: relationship between giving and receiving organisations; between giving organisation and its giving employee; between receiving organisation and its receiving employee; between giving and receiving employees. These relationships

constitute a relationship mechanism that influences the first sub-process (i.e., the inter-employee learning process) and its effectiveness (See Figure 3.1).

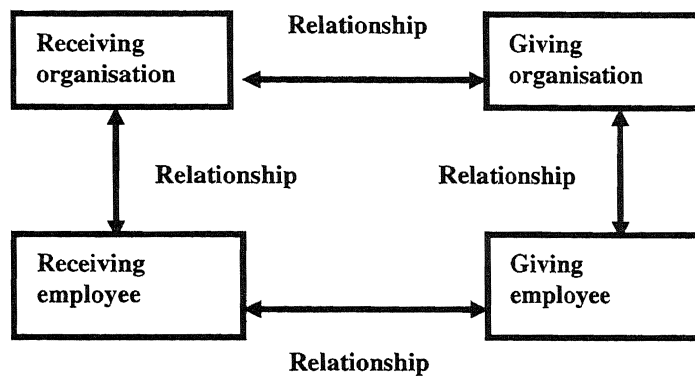


Figure 3.1 The Relationship Mechanism for the First Sub-process

The second sub-process actually involves learning within an organisation, which is well studied by the literature. The relevant actors for this sub-process will be the receiving organisation and receiving employee. The key point for an organisation at this sub-process is to establish its internal mechanisms to prevent the inhibitory learning loops and incomplete learning circles from happening, promote single-loop learning and especially double-loop learning, and also promote the conversion from individual learning into organisational learning (See the key components in Figure 3.2).

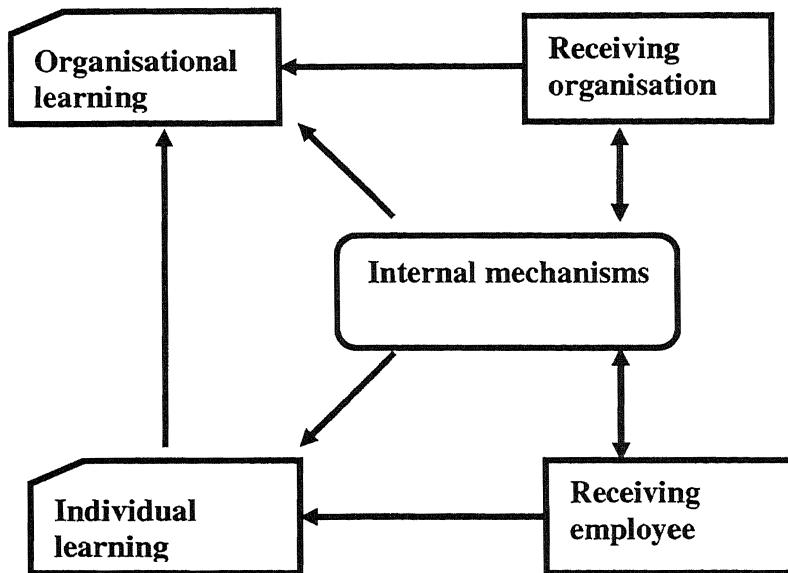


Figure 3.2 The Key Components in the Second Sub-process

Furthermore, the internal mechanisms in the second sub-process (See Figure 3.2) may be considered as being embedded in the relationship between the receiving organisation and receiving employee (See Figure 3.1). So, Figures 3.1 and 3.2 may be combined together to constitute Figure 3.3, which demonstrates the key components for the whole process of inter-organisational learning.

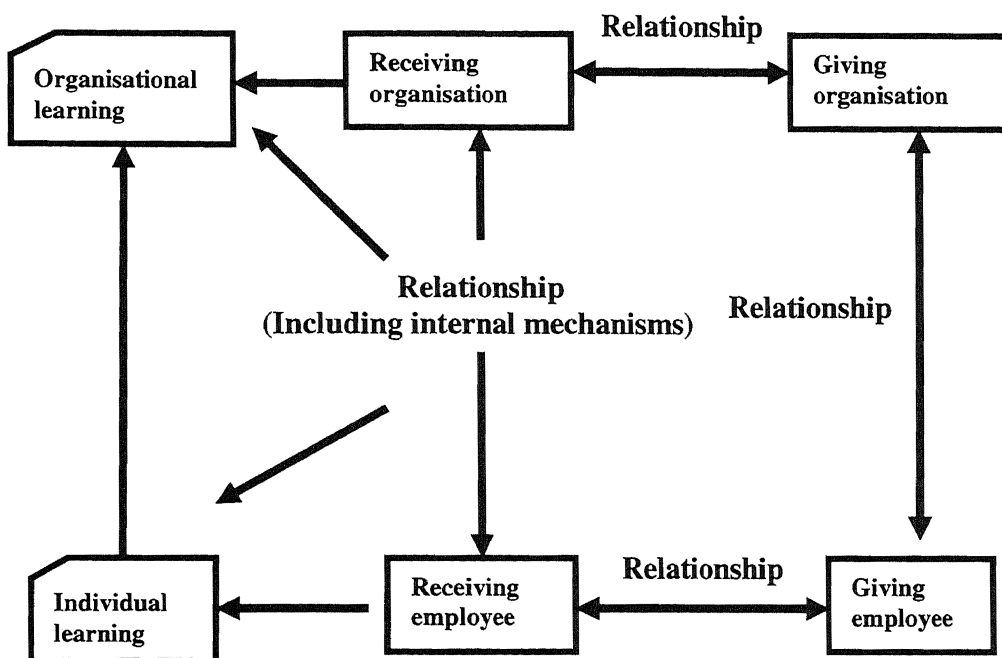


Figure 3.3 The Key Components for Inter-organisational Learning

Figure 3.3 shows that, as well as the organisation-individual relationship, the inter-organisational relationship and inter-individual relationship may also exert influence on actors' learning behaviours. So inter-organisational learning (See Figure 3.3) is more complicated than intra-organisational learning (See preceding Figure 3.2).

Figure 3.3 also shows that the relationship mechanism for the first sub-process may be extended as a mechanism for the whole process of inter-organisational learning. The relationship mechanism may be described as a 'co-ordinating mechanism for

inter-organisational learning (or KT)', because it may be used by organisations to co-ordinate and influence relevant actors' behaviours. So, Figure 3.1 is copied here as Figure 3.4. In this figure, there are two levels: strategic and operational. The organisations are at the strategic level, and they set goals and provide guidance for their own employees; the employees do operational jobs according to the goals and guidance (Jankowicz, 2000).

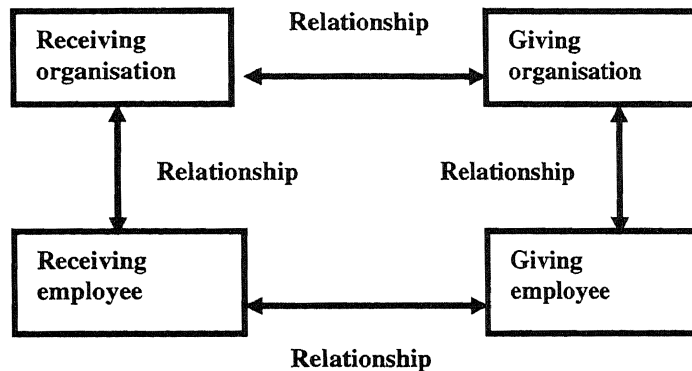


Figure 3.4 The Co-ordinating Mechanism for Inter-organisational KT

3.3.2 The Development of the Framework – Drawing Support from the Process View

In Section 2.2.3, the empirical survey illustrates that Szulanski's (2000) process model fully presents the complexities and difficulties that lie at KT within an organisation (See details under the sub-heading '*KT between Groups*' in Section 2.2.3). The empirical results further demonstrate that the process view advocated by Szulanski (2000) does help organisations gain a better understanding of the complexities and difficulties in KT.

From Section 1.1.3, it is known that KT between organisations is much more complicated than within an organisation (Quintas *et al.*, 1997; Beeby and Booth, 2000; Chen *et al.*, 2002; Mohr and Sengupta, 2002). However, the current frameworks cannot fully reflect upon the complexities and difficulties embedded in the KT. An important reason is that the frameworks do not take in the process view advocated by Szulanski (2000) (See Table 2.2 in Section 2.2.4). This point further confirms that the development of inter-organisational KT framework should draw support from the process view.

From Section 2.2.5, it is known that inter-organisational KT is actually the process of inter-organisational learning (Rodriguez *et al.*, 2003; Chen *et al.*, 2002), and both of them are directly connected with each other. However, whether from the perspectives of KT or organisational learning, one cannot understand inter-organisational level without understanding intra-organisational level, the two levels of aggregations are closely tied together (See details in Sections 2.2.3 and 2.3). This claims that, to help SMEs understand inter-organisational KT process, the framework to be developed needs to improve SMEs' understanding of intra-organisational KT process as well. Because Szulanski's (2000) process model has been proved to be very successful at presenting the complexities and difficulties of intra-organisational KT, the development of inter-organisational KT framework could directly draw support from the process model to explain the process of KT within an organisation.

Through the analysis in Section 3.3.1, it is known that the inter-organisational KT process can be divided into two sub-processes. Furthermore, in the first sub-process, the KT decision is made by the management of both sides, then both sides will arrange for employees to interact with each other to transfer the agreed knowledge. So drawing on Szulanski's (2000) process model in Figure 3.5 (Copied from Figure 2.4 in Section 2.2.3), the first sub-process can be further divided into three stages: initiation, selection and interaction; the second sub-process may be called

conversion, i.e., within the receiving organisation, the receiving employee's individual learning is converted to organisational learning. Therefore, a similar four-stage model for inter-organisational KT is offered in Figure 3.6.

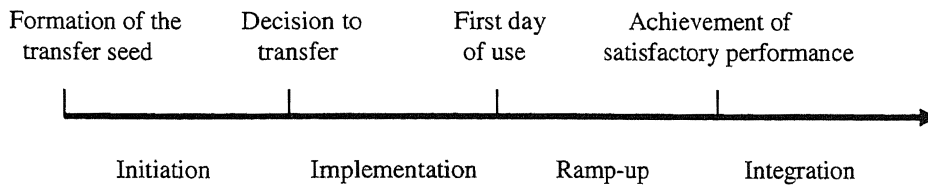


Figure 3.5 The Process for KT within an Organisation (Szulanski, 2000)

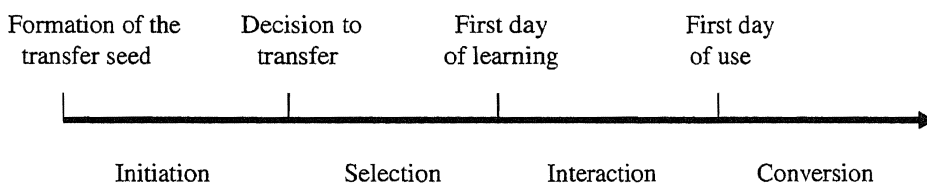


Figure 3.6 The Inter-organisational KT Process

At the *initiation* stage, two organisations try to find an opportunity to transfer and to decide whether to pursue it through negotiation. At the *selection* stage, the receiving and giving organisations select an employee as a receiving and giving employee respectively (more than one employee may be involved, of course, in either organisation). At the *interaction* stage, the giving employee transfers his knowledge to the receiving employee. At the *conversion* stage, the receiving employee's individual learning is converted to the receiving organisation's organisational learning. In other words, the receiving employee transfers his acquired knowledge to

his employer – the receiving organisation. The conversion stage is only related to the receiving organisation and receiving employee.

The relationship between the process model in Figure 3.6 and Szulanski's (2000) process model (i.e., Figure 3.5) may be seen as follows: 1) The initiation and interaction stages of the former are similar to the initiation and implementation stages of the latter. 2) At the conversion stage of the former, the receiving employee plays two roles: firstly, he, as a recipient, will apply his acquired knowledge to his work, and have to experience the ramp-up and integration stages; secondly, he is also a source for his organisation as his colleagues may learn from him. So, the conversion stage contains the ramp-up and integration stages, as well as the whole transfer process within an organisation.

3.3.3 The Constitution of an Initial Framework

With the help of organisational learning and social networks, a co-ordinating mechanism (See Figure 3.4) for inter-organisational KT is developed. By means of the process view (Szulanski, 2000), a process model (See Figure 3.6) is proposed. In addition, the review in Section 2.2.4 suggests that the effect of the organisational cultural difference on inter-organisational KT process cannot be overlooked (Abou-Zeid, 2002; Rodriguez *et al.*, 2003; Ford and Chan, 2003). Therefore, underpinned by the studies from above mentioned three perspectives, an initial framework (See Figure 3.7) can be developed for the management-authorised inter-organisational KT.

According to Figure 3.7, it is known that the co-ordinating mechanism (See Figure 3.4) is embedded in the initial framework. The framework sets up the connections between individual, organisational and inter-organisational levels, and demonstrates the relationship between intra- (i.e., the conversion stage) and inter-organisational learning. It also clearly reflects that KT between organisations is much more complicated and difficult than within an organisation although the latter is

Receiving Organisation

Giving Organisation

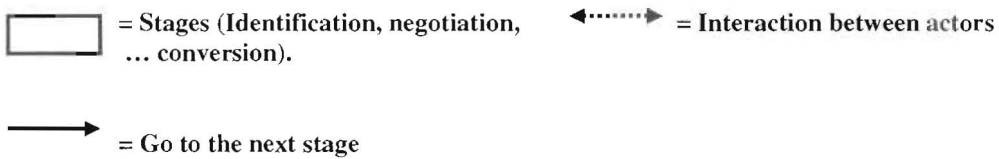
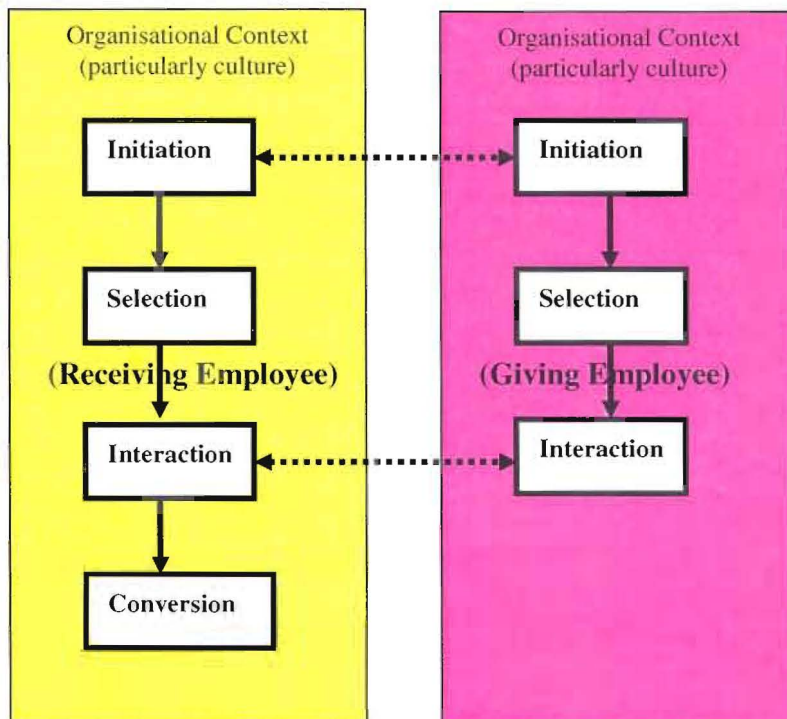


Figure 3.7 An Initial Framework for Management-authorized Inter-organisational KT

reasonably believed to be very complicated and difficult as well based on the review of KT (See Section 2.2.3) or organisation learning (See Sections 2.3.1 – 2.3.4). In the initial framework, KT within an organisation just lies at the conversion stage, however, KT between organisations has to progress stage by stage, and experience the first three stages (i.e., initiation, selection and interaction) first, then the conversion stage. Each of the first three stages is also complicated and difficult. For example, the interaction stage is actually a process of KT between individuals, and the transfer seems very simple, but actually it is complicated. The KT from the giver to the recipient is not just a kind of one-way communication, but two-way. As well as the giver passing knowledge on to the recipient, the latter may feedback something to the former, for example, signals that he has understood or not understood what the giver is saying; or that the knowledge provided by the giver is or is not useful for him. For in this way, the recipient's behaviours may influence what the giver will next do, give or develop. The KT is also easy to fail if some problems happen (e.g., the giver might hoard knowledge and be unwilling to transfer the knowledge to the recipient (Senge, 1998; Greengard, 1998) – see details under the sub-heading *KT between Individuals* in Section 2.2.3). Therefore, KT between organisations may be aborted at any one of the first three stages before it experiences the conversion stage. Moreover, the different background colours represent the fact that the two organisations have different organisational contexts, particularly different organisational cultures, and can thus remind SMEs to be aware of the impacts of their cultural differences when they exchange knowledge with their customers (or suppliers). Of course, it needs to be evaluated whether the proposed framework could help SMEs have better understanding of the inter-organisational KT process.

3.4 The Important Factors Involved in the KT Process

Based on Section 3.3.3, it is known that KT between organisations is very complicated and may be aborted at any stage, and thus it is very difficult to successfully achieve. So, it is very difficult to come up with key factors for the KT success. This section doesn't intend to identify such key factors.

According to Section 1.1.3, the specific reasons that KT between organisations has more stages, and is more complicated and difficult than within an organisation are that, compared to the latter, the former has to face the 'boundary paradox', and lacks a formal chain of authority to co-ordinate their transfer activities (Holmqvist, 2003). So, many more conflicts and instability will arise, many more bargains are needed (Holmqvist, 2003), many more complicated factors will impinge on the transaction, more strict governance mechanisms are required to regulate the transfer content, and much higher loyalty requirements will be placed on relevant employees. From a strategic perspective, these factors may be involved at relevant stages of the inter-organisational KT process that are described by the initial framework. Obviously, if these factors could be identified, and then highlighted within the relevant stages of the framework, SMEs would be reminded by them to pay attention to the 'boundary paradox', and take them into account as the companies exchange knowledge with their customers (or suppliers). Therefore, these important factors will be very helpful for SMEs.

The evidence from the review in Section 2.2.4 demonstrates that very little literature exclusively addresses the 'paradox' for SMEs, and even less for the management-authorized type, the relevant strategic issues have been largely neglected. The review further suggests that the strategic issues related to the 'boundary paradox' should be explored from two perspectives (i.e., how to learn from a partner, and teaching a partner how to learn) and at two levels (i.e., inter-organisational level and inter-employee level) (Mohr and Sengupta, 2002). The following will try to fill the

gap and identify the important factors for SMEs from the two perspectives and at the two levels. This identification can further reflect the complexities and difficulties of inter-organisational KT.

3.4.1 The Two Levels

From Section 3.3.1, it is known that, for KT between organisations, inter-organisational level and inter-employee level are connected by relationships, and thus constitute a relationship co-ordinating mechanism (See Figure 3.4) embedded in the initial framework (See Figure 3.7). To develop an effective strategy, the (receiving or giving) organisation should know how to make use of the co-ordinating mechanism to influence other actors' behaviours (e.g., the giving employee's openness), to pursue good effectiveness for itself, i.e., to acquire what it wants when it is a receiving organisation, or to protect what it wants when it is a giving organisation. So, the co-ordinating mechanism provides clues and a basis for the identification of the important factors involved at each stage of the initial framework.

According to social network theory, social relationship has two mechanisms: trust and power. So, the co-ordinating mechanism (See Figure 3.4) can be further transformed as Figure 3.8.

Power may be divided into four types: ideological, economic, military, and political power (Mann, 1986). However, this research will just involve economic power. So only the main sources of economic power exerted by the relevant actor(s) will be listed here. In the giving – receiving organisations' relationship, the power is mainly from contract (or patent) and market power. In the relationships of receiving organisation – receiving employee, and giving organisation – giving employee, the power mainly comes from their internal mechanism or regulations such as legitimate power (Zand, 1997), and also involves reward, coercive, referent and expert powers (Mullins, 2002). In the receiving employee – giving employee relationship, they

normally have little reward and legitimate powers to influence each other because they are not only just ordinary employees but also from different organisations. However, the power may be from the specific operational norms in their specific common tasks, or the employees' coercive, referent and expert (Mullins, 2002).

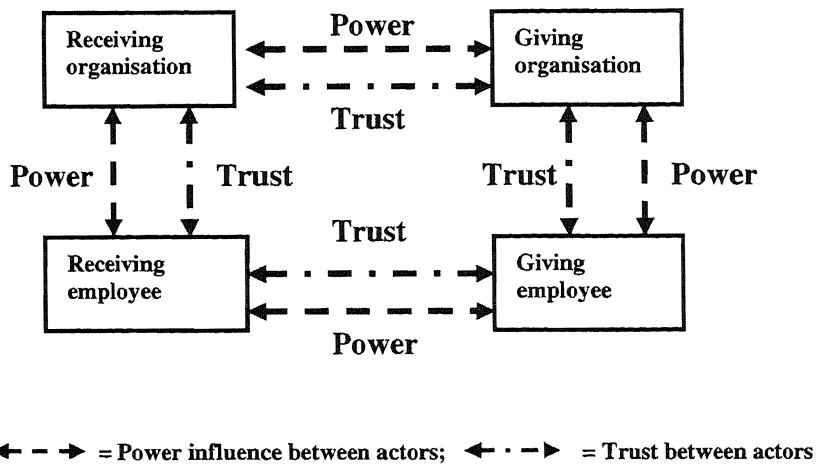


Figure 3.8 The Co-ordinating Mechanism Containing Factors for Inter-organisational KT

The mechanism not only demonstrates that trust and power are important factors at both inter-organisational and inter-employee levels, but also can be used to track other important factors.

3.4.2 The Two Perspectives

When a SME exchanges knowledge with one of its customers (or suppliers), it may be a giving or receiving organisation. If the SME is a giving organisation, it will be at the position of a knowledge giver, then the important factors related with teaching a partner how to learn can be identified (Mohr and Sengupta, 2002). If the SME is a

receiving organisation, it will be at the position of a knowledge recipient, then the important factors related to how to learn from a partner can be discussed (Mohr and Sengupta, 2002).

Assume that the KT is initiated by the receiving organisation, i.e., the receiving side requests its needed knowledge from the giving side first, then the giving side will decide whether the knowledge should be given. According to Huber (2001, p.75), "... in a great many situations, only the possessors of knowledge know what they know. Thus, it is at their discretion whether they identify what they know or share what they know. And certainly the amount of effort they put forth to make complete and clear what they share is under their control. Thus, even when knowledge sharing is a formal responsibility, full sharing is an extra-role behaviour." So, generally speaking, it is the giving side that dominates the KT. The following thus would like to identify the important factors on the basis of the co-ordinating mechanism (See Figure 3.8) and relevant literature, from the giving side's perspective (i.e., the perspective of teaching a partner how to learn (Mohr and Sengupta, 2002)) first.

3.4.3 Important Factors when a SME is a Giving Organisation

According to the initial framework, if a SME holds some knowledge to be a giving organisation in the context of a supply chain, it may give the knowledge to its customers or suppliers. Using a customer as the example, the SME may experience three stages: initiation, selection and interaction. The following will discuss the important factors involved in these three stages.

At the Initiation Stage

The SME is identified by its customer as an external knowledge source. Both sides will negotiate to decide whether to pursue the KT. The relevant actors are the SME and customer. So, the co-ordinating mechanism may be simplified as the following Figure 3.9.

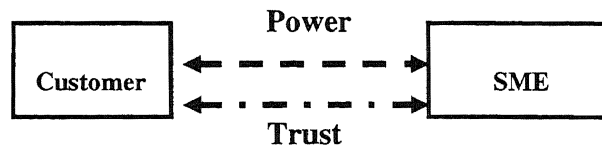


Figure 3.9 The Relevant Actors and their Relationships at the Initiation Stage

From Figure 3.9, it may be suggested that the SME and customer are connected through the extent of power and trust between them. Trust and power are obviously important factors for the SME. Power is the ability to influence people (Zand, 1997). At this stage, the power mainly comes from market power. If the SME's business, to a great extent, depends on the customer, the latter will have great power, i.e., great ability to influence the former and *vice versa*. Power, as an important factor, will be empirically evaluated by the interviewees from SMEs (See details in Chapter 7). However, it may be difficult to understand by the interviewees. So, for the sake of benefiting their understanding, this research would like to use the term 'business dependence' to replace the term 'power' for this stage, but not for other stages (The reasons may be found out at the relevant stages).

Generally, before it decides whether to transfer the knowledge requested by the customer, the SME will analyse various factors that affect its costs and benefits according to their relationship.

The costs may be influenced by the following factors:

The SME's business dependence on the customer If the SME's business is highly dependent upon the customer, the former will attach much importance to meeting the latter's requirements. Otherwise, its business will be heavily damaged.

The importance of the knowledge for the SME Although the customer is a non-competitor for the SME, and the transaction will not directly damage the SME's competitive advantages, the SME may still face a risk that the customer may give the knowledge to other companies (especially the SME's competitors). The SME will therefore refuse to give the knowledge to other companies no matter who they are if the knowledge is vital to its own business (Schrader, 1991; Barlow and Jashapara, 1998).

The relevant influences from a third party (e.g., availability of alternative knowledge sources) The relevant literature (Dyer and Nobeoka, 2000; Albino *et al.*, 1999) shows that a third party, based on its own economic benefits, may use its relationship with the giving (or receiving) organisation to influence the KT process. For example, if the customer could acquire the knowledge from other external sources or develop the knowledge by itself without great effort and difficulty (Schrader, 1991), the SME, as a knowledge source, has not many advantages over other companies, may not treat the knowledge as important, and may feel that it does not lose much if the knowledge is transferred. Conversely, the relationship may be adversely influenced if the SME doesn't agree to the transaction.

The benefits may be influenced by the following factors:

Schrader (1991, p.157) points out that: "transferring information is part of exchange relationships grounded in reciprocity. In exchange relationships, providing another party with a favour obliges that party to reciprocate in order to maintain the balance of benefits and contributions, even without an explicit agreement." Based on this concept of reciprocity, the SME may expect some important benefits from the customer if the former offers some important knowledge to the latter. In order to make sure the reciprocity occurs, the SME may consider the following risks:

The ability of the customer to provide reciprocal benefit When a receiving firm acquires the needed knowledge from the giving firm, the former may provide other knowledge or payment to compensate the giving firm at that time or in the future. However, if the receiving firm has no or limited ability to reciprocate, the latter may face some risk of losing the expected benefits (Schrader, 1991; von Hippel, 1987). Thus, the SME may assess the customer's ability to reciprocate before it agrees on the transaction; if the ability is poor, it may abandon the transaction.

The trust between the SME and customer The SME may face risks of losing some benefits because some of the expected benefits of the KT have to be received in the future (Schrader, 1991). In order to minimise these risks, the SME will prefer to deal only with a trustworthy customer. This judgement may be based on previous co-operation and the customer's previous behaviour. If they trust each other, the SME may feel confident in receiving the expected benefits from the customer, otherwise, the SME may prefer to avoid the transaction.

The SME will negotiate with the customer, then consider the latter's responses and select one of the possible solutions to acquire maximum anticipated benefits or minimum anticipated costs. Appleyard (1996) argues that KT is undertaken by firms which process knowledge on the basis of anticipated costs and benefits, so that even rivals would share their knowledge if the benefits are larger than the costs. If the argument is extended to a third party, the SME will check whether the knowledge transaction is acceptable on the basis of the following points:

- Anticipated benefits from the knowledge transaction;
- Anticipated costs from the transaction;
- Anticipated benefits from a third party;
- Anticipated costs from the third party;
- The total benefits are larger than the total costs.

These points are only a necessary condition for the SME to reach the deal. There are two kinds of uncertainty: 1) the values of the anticipated costs and benefits are estimated, so it is unknown to what extent the estimated values are close to their true values; 2) it is also unknown if the anticipated costs and benefits may actually appear at all. There are, therefore, risks. The SME must find good reasons to convince itself that the relevant partners will behave as it expects. In other words, it must trust the partners' future behaviour.

The receiving firm (i.e. the customer) will make a similar cost and benefit analysis. If either party of the two feels that the transaction is unacceptable, the transaction will fail.

Based on this analysis, a conclusion can be drawn: *the importance of the knowledge for the SME; the SME's business dependence on the receiving company; trust between the SME and receiving company; the receiving company's ability to reciprocate; and the relevant influences from a third party (e.g., the receiving company's availability of alternative knowledge sources)* are thought of as being important factors that the SME, as the giving company, should take into account as it makes the KT decision.

At the Selection Stage

Once the SME and customer reach a deal, the SME will select one (or more) employee(s) to do the specific work related to the transfer. It is known that an organisation's power includes staffing power (Zand, 1997). Therefore, the selection stage is actually a process that the SME uses its staffing power. From the SME's perspective, the actors are just the SME and its giving employee. The co-ordinating mechanism can be simplified as in Figure 3.10.

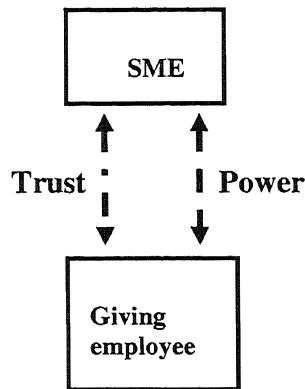


Figure 3.10 The SME and its Giving Employee at the Selection Stage

The giving employee is a key person in the KT between the SME and the customer. Figure 3.10 clearly demonstrates that trust between the SME and giving employee is an important factor. Before the knowledge is actually transferred, the SME normally has its own transfer strategies that are believed to be able to bring benefits for itself, and therefore hopes that the selected employee could behave as the strategies instruct, and be reliable and trustworthy. Moreover, from Section 2.2.3, it is known that the giving employee's prior experience in the area of the transferred knowledge (Wathne *et al.*, 1996; Albino *et al.*, 1999) and expressiveness will heavily influence the KT effectiveness. Further, the giving employee may be required to have certain theoretical knowledge background if the transferred knowledge is abstract or theoretical (e.g., knowledge involved in consultancy, electronic or software engineering). He may also be required to have certain social interaction skills that makes the receiving employee feel comfortable, enjoy their co-operations, and thus would like to do further businesses with the giving side. However, this does not mean that the SME should use the most skilled negotiator as a giving employee for every knowledge transaction with the customer, no matter what the transferred

knowledge is. Some knowledge is easily transferred, or not high in value for the customer, and the SME will not receive highly valuable reciprocation. But if the knowledge is difficult to transfer, or of high value for the customer, the SME may arrange a well-qualified employee to transfer the knowledge to ensure successful transfer and appropriate reciprocity.

According to this analysis, the following factors are therefore suggested to be important ones that the SME may take into account at this selection stage: *trust between the SME and its giving employee; the giving employee's expressiveness; social interaction skills; prior experience and theoretical knowledge in the subject of the transferred knowledge.*

At the Interaction Stage

The giving employee will transfer the knowledge to the receiving employee from the customer and mainly interact with his employer (i.e., the SME) and the receiving employee. The co-ordinating mechanism can be simplified as Figure 3.11.

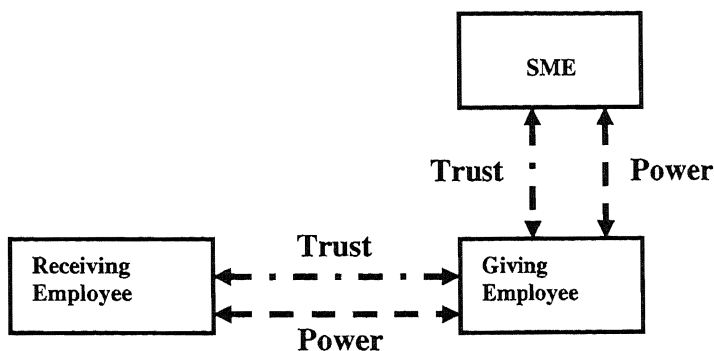


Figure 3.11 The Relevant Actors and their Interactions at the Interaction Stage

The giving employee's openness Literature in Section 2.2.3 demonstrates that the giving employee's openness represents his willingness to transfer his knowledge in a collaborative interaction. A higher level of the giving employee's openness allows a more effective KT (Wathne *et al.*, 1996; Albino *et al.*, 1999; Huber, 2001; Holmqvist, 2003).

Trust with the receiving employee Figure 3.11 shows that the giving employee's behaviours are influenced by both power and trust from the receiving employee. However, the latter actually has little personal power to influence the former because both of them are from different companies, and the receiving employee is a recipient and at a passive position. So, the giving employee will mainly be influenced by the trust with the receiving employee.

Trust between the giving and receiving employees has a direct and positive influence on the giving employee's openness (Wathne *et al.*, 1996; Albino *et al.*, 1999; Goh, 2002). If the giving employee has a close inter-personal relationship with the receiving employee, the former may lift his openness, and transfer knowledge as the latter wants, not as his employer (i.e., the SME) wants. According to social network theory (Burt, 1992), the giving employee is a gatekeeper or boundary spanner of the SME. If the giving employee switches to the receiving company (i.e., the customer), and behaves as the above-mentioned, unrestrained KT may happen; the SME may lose not only the employee, but also the skills and knowledge which may be difficult to replace (Dodgson, 1993; Grundmann, 2001), and face the risk of competitive backlash (Carter, 1989; Mohr and Sengupta, 2002).

Management control on the giving employee, and the giving employee's loyalty to the giving company Figure 3.11 also shows that the giving employee's behaviours are influenced by both power and trust from its employer (i.e., the SME). Trust between the giving employee and SME has already been mentioned at the

selection stage. The following will mainly discuss the power. In the internal relationship between the SME and its giving employee, the power mainly comes from its internal mechanisms (e.g., internal regulations, contracts and training) (Connell *et al.*, 2003). In order to avoid facing the risk of competitive backlash (Carter, 1989; Mohr and Sengupta, 2002), the SME should impose a strict management mechanism (e.g., contract to limit the giving employee's behaviour) on the giving employee.

However, as knowledge (especially tacit knowledge) is difficult to find and difficult to audit, the SME cannot readily monitor the giving employee's behaviour. Secondly, it is difficult to precisely define or detail in contracts (or blueprints, patents and scientific text) the knowledge to be transferred; property rights in knowledge are also narrowly defined (Parker and Vaidya, 2001; Liebeskind, 1996). Therefore, as well as it must use a reliable employee as the giving employee who can carry out the KT tasks in accordance with its economic interests, the SME should also build up its own corporate culture to enhance employees' loyalty, and employ other motivation mechanisms to induce desirable KT behaviour.

In addition, the following two points may also cause problems that the SME has to cope with:

The duration of the transfer If the duration of the transfer is sufficiently long, the giving employee may build up a close inter-personal relationship with the receiving employee, even if they did not know each other before (Mohr and Sengupta, 2002; Connell *et al.*, 2003), which may make the SME face the risk mentioned previously.

Difficulty of the transfer Tacit knowledge is less transparent than explicit knowledge, and also more difficult to transfer than the latter. Its transfer normally demands that the receiving employee interacts intensively with the giving employee face-to-face. Both sides are therefore more likely to establish a close personal

relationship (Mohr and Sengupta, 2002; Barlow and Jashapara, 1998), which again may make the SME face the risk mentioned previously.

Therefore, the important factors involved at the interaction stage are suggested to be: *the giving employee's openness; trust with the receiving employee; management control on the giving employee; the giving employee's loyalty to the giving company; the duration of the transfer; and difficulty of the transfer.*

The Summary of all Important Factors Identified for the Giving Side

In accordance with the results of the analyses on the three stages (i.e., initiation, selection and interaction), the identified important factors for the giving side can be summarised as follows:

At the initiation stage, five factors are identified as important: *the importance of the knowledge for the SME; the SME's business dependence on the receiving company; trust between the SME and receiving company; the receiving company's ability to reciprocate; and the relevant influences from a third party (e.g., the receiving company's availability of alternative knowledge source).*

At the selection stage, there are five identified important factors: *trust between the SME and its giving employee; the giving employee's expressiveness; social interaction skills; prior experience and theoretical knowledge in the subject of the transferred knowledge.*

At the interaction stage, the important factors are suggested to be: *the giving employee's openness; trust with the receiving employee; management control on the giving employee; the giving employee's loyalty to the giving company; the duration of the transfer; and the difficulty of the transfer.*

3.4.4 Important Factors when a SME is a Receiving Organisation

According to the initial framework, when a SME is in the position of the receiving firm, it may experience four stages: initiation, selection, interaction and conversion. The following will identify the important factors involved at these four stages.

At the Initiation Stage

Because the KT is assumed to be firstly initiated by the receiving side, so the SME needs to identify its knowledge gap and available external knowledge sources before it negotiates with the giving side (Beijerse, 2000; Szulanski, 2000).

Assuming that a customer has a solution needed by the SME, the latter will negotiate with the former so as to get the solution. The customer, as a giving firm, may take into account the factors, such as, *the importance of the knowledge for itself, its business dependence on the receiving company, trust between the receiving company and itself, the receiving company's ability to reciprocate, and the relevant influences from a third party (e.g., the receiving company's availability of alternative knowledge sources)* (See the analysis at the initiation stage for the case that the SME is a giving organisation) to expect its benefits and costs caused by the knowledge transaction before it makes the transfer decision. Because these factors will influence the customer's transfer decision-making, and are obviously the right ones of which the SME should make use to influence the customer's decision. Hence, these factors are also important for the receiving company (i.e., the SME).

In summary, for the SME, as the receiving company, the important factors at the initiation stage may be as follows: *the identification of the knowledge gap; the identification of external knowledge source; the importance of the knowledge for the giving company; its business dependence on the giving company; trust between the giving company and itself; its own ability to reciprocate; and the relevant influences from a third party (e.g., availability of alternative knowledge sources)*.

At the Selection Stage

The SME will select an (or maybe several) employee as a receiving employee to acquire the needed knowledge from the giving firm (i.e., the customer). The difference between the selections of a receiving employee and a giving employee is that the absorptive capacity is required to the former (Cohen and Levinthal, 1990; Chen *et al.*, 2002; Mohr and Sengupta, 2002; Holmqvist, 2003; Connell *et al.*, 2003). Moreover, the receiving employee is required to have motivation to learn (Szulanski, 2000; Huber, 2001; Goh, 2002), and also certain theoretical knowledge background if the transferred knowledge is abstract or theoretical. In addition, the SME may positively try to acquire more knowledge than the customer wants to offer. However, the customer intuitively wants to protect its knowledge from diffusion, and only hopes to contribute what it wants to transfer. But the KT task is eventually carried out by the giving employee, his personal objectives may not be in accordance with the economic interests of his employer. So, opportunities for the SME to acquire extra, high-value knowledge lie on the giving employee. Therefore, the receiving employee is required to reliably do what the SME wants, and be skilled in social interaction with the giving employee.

In a word, when it selects its receiving employee, the SME may consider the factors such as *trust with the receiving employee; the employee's absorptive capacity; motivation to learn; social interaction skills with the giving employee; prior experience; and theoretical knowledge in the area of the transferred knowledge.*

At the Interaction Stage

The receiving employee will learn from the giving employee. The giving employee's openness will directly influence the transfer effectiveness (Cohen and Levinthal, 1990; Chen *et al.*, 2002; Mohr and Sengupta, 2002). If the receiving employee wants to force the giving employee to raise his openness level, the receiving employee (See Figure 3.12) has to go through the SME to ask the customer to exert powerful influence on the giving employee because the receiving

employee has little personal power to influence the giving employee's behaviour. The customer may positively respond to the appeal, but the giving employee still has many opportunities to make trouble for the giving employee if he is not replaced, because knowledge (especially tacit knowledge) transfer is difficult to audit. So, it is wise for the receiving employee to try his best to build up good relationship with the giving employee, and win his trust (at least, not disliked by him) so that the giving employee could raise his openness level and codification level to his knowledge.

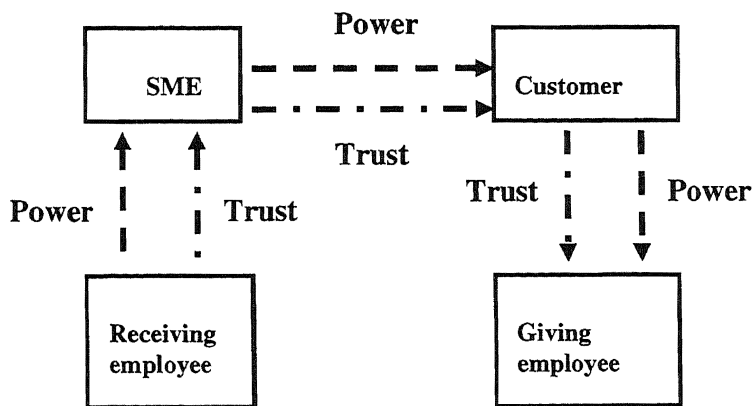


Figure 3.12 The Channels for the Receiving Employee to Influence the Giving Employee's Behaviours

In order to make sure that the receiving employee can acquire the needed knowledge from the giving employee, the SME may impose management control (e.g., training and guidance) on the receiving employee to make him to behave as it wants.

In addition, the duration and difficulty of KT are thought of as being important factors that may lead to a close inter-personal relationship between the receiving and giving employees (See the analysis at the interaction stage for the case that the SME

is a giving company), and thus will heavily influence the effectiveness of the KT between the two employees.

Based on this analysis, at this interaction stage, the SME, as the receiving company, is suggested to take into account the following factors: *trust with the giving employee; management control on the receiving employee; and the duration and difficulty of the KT.*

At the Conversion Stage

Because the conversion stage is actually a process of KT within an organisation, which is relatively well studied by relevant literature (e.g., Szulanski, 2000; Goh, 2002; Argyris and Schon, 1996; Dodgson, 1993; Cohen and Levinthal, 1990 – see Sections 2.2.3 and 2.3.1 – 2.3.4), this study will not discuss in depth the important factors for it.

Generally speaking, the receiving employee is a gatekeeper or boundary spanner of the SME, the company will lose relevant knowledge and skills if he keeps his acquired knowledge for himself, or works for other companies (even the SME's competitors). So, the receiving employee's loyalty to the receiving company (i.e., the SME) is very important. Further, the SME should build up the trust-based organisational culture to enhance employees' loyalty, and employ other motivation mechanisms to induce desirable KT behaviour.

Moreover, even if the receiving employee would like to transfer his acquired knowledge to his colleagues within the SMEs, the conversion from the individual learning to organisational learning may still suffer from some problems (See Section 2.3.4). So, the SME should set up an internal management mechanism for promoting the conversion of the individual learning into organisational learning.

According to this analysis, at this conversion stage, the SME, as the receiving company, is suggested to take into account the following factors: *the receiving employee's loyalty to the receiving company; internal management mechanism for promoting the conversion of individual learning into organisational learning; and trust-based corporate culture.*

The Summary of all Important Factors Identified for the Receiving Side

Based on the analysis results at the four stages (i.e., initiation, selection, interaction and conversion), the identified important factors for the receiving side can be summarised as follows:

At the initiation stage, seven factors are suggested to be important: *the identification of the knowledge gap; the identification of external knowledge source; the importance of the knowledge for the giving company; its business dependence on the giving company; trust between the giving company and itself; its own ability to reciprocate; and the relevant influences from a third party (e.g., availability of alternative knowledge source).*

Six factors are identified as important at the selection stage: *trust with the receiving employee; the employee's absorptive capacity; motivation to learn; social interaction skills with the giving employee; prior experience; and theoretical knowledge in the area of the transferred knowledge.*

At the interaction stage, there are four identified important factors: *trust with the giving employee; management control on the receiving employee; the duration and difficulty of the KT.*

Finally, for the conversion stage, the important factors are suggested to be: *the receiving employee's loyalty to the receiving company; internal management mechanism for the promoting the conversion of individual learning into organisational learning; and trust-based corporate culture.*

Up to now, the important factors involved at each stage of the KT process have been identified from the two perspectives (i.e., how to learn from a partner, and teaching a partner how to learn) and at the two levels (i.e., inter-organisational level and inter-employee level) (Mohr and Sengupta, 2002). These factors can be highlighted at the corresponding stages of the framework (See Figure 3.13), and are thus believed to be able to remind and help SMEs to address the 'boundary paradox'. Of course, these factors need to be empirically evaluated.

3.5 Chapter Summary

There are three research questions raised in Chapter 1: how to carry out an empirical investigation on SMEs' KT needs to provide sound evidence to support or negate the belief that external knowledge is of prime importance for SMEs; how to develop an inter-organisational KT framework to help SMEs understand and, thus to improve their KT process; and how to identify the important factors involved in the KT process to remind SMEs to pay attention to the 'boundary paradox'.

Based on the background knowledge provided by chapters 1 and 2, this chapter theoretically addressed these three questions. It firstly presented the key issues concerning SMEs' perception on the importance of, and needs for, external knowledge, their inter-organisational KT activities, channels and effectiveness, and thus provided a framework for the empirical investigation on SMEs' KT needs. Furthermore, drawing support from organisational learning and social networks, a co-ordinating mechanism for inter-organisational KT was developed. With the aid of the process view, a process model was proposed. The co-ordinating mechanism and process model, together with the cultural difference between organisations

Receiving Company

Giving Company

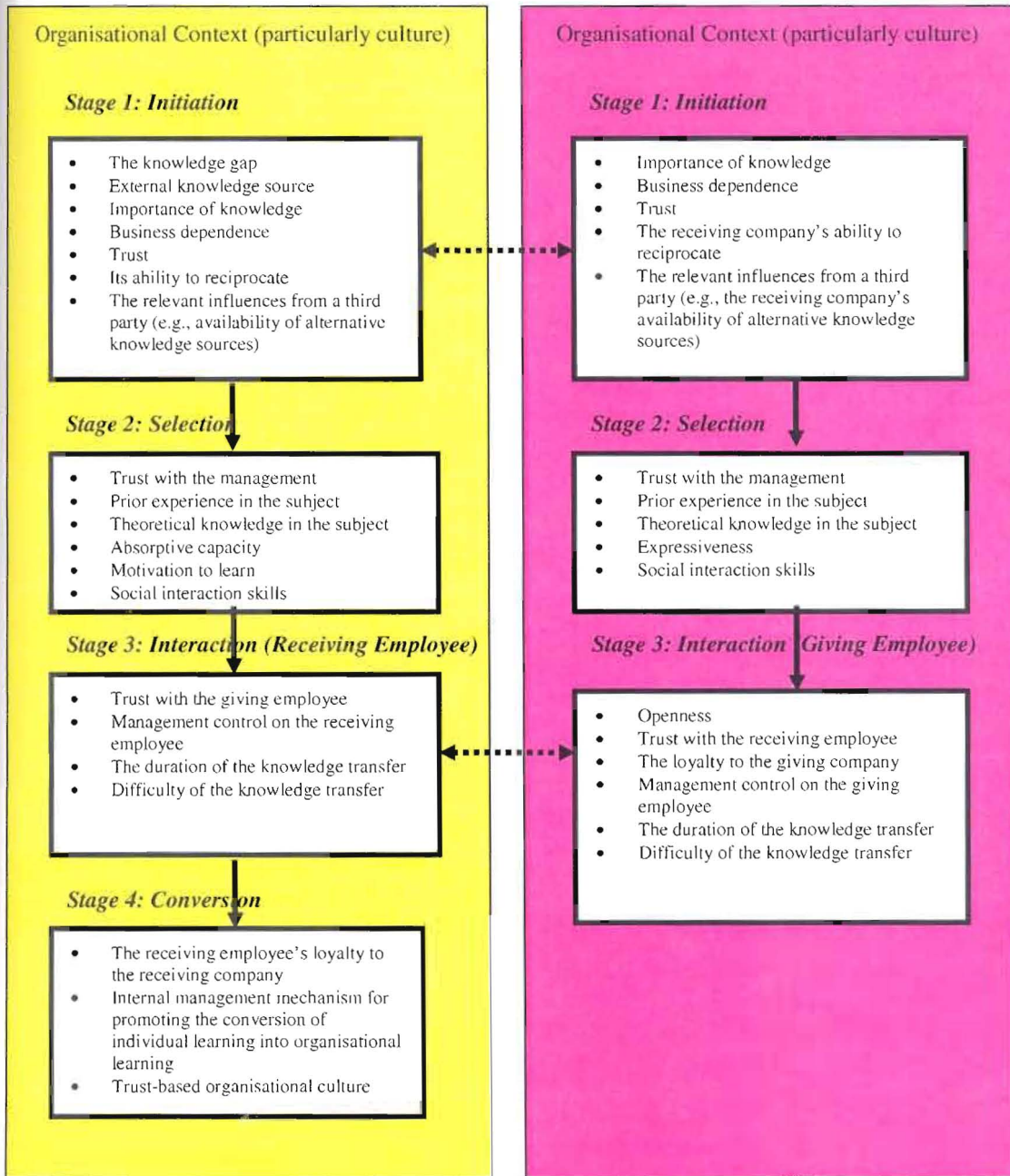


Figure 3.13 The Initial Framework and the Identified Important Factors

constituted an initial four-stage framework that sets up the connections between individual, organisational and inter-organisational levels, demonstrates the relationship between intra- and inter-organisational learning, and also clearly reflects the complexities and difficulties of the inter-organisational KT. Then, on the basis of the initial framework, from a strategic perspective, the important factors involved at the stages of the inter-organisational KT process were identified by means of the coordinating mechanism and relevant literature. These factors were highlighted within the corresponding stages of the initial framework so that SMEs would be reminded by them to pay attention to the 'boundary paradox', and take them into account as the companies exchange knowledge with their customers (or suppliers).

Therefore, the three research questions have been theoretically embodied in the presented key issues, the initial framework and the identified important factors. The following concerns are about how to collect empirical evidence and then process them for the investigation in accordance with the presented key issues, and whether the initial framework and the identified important factors really work as expected for SMEs. The next chapter (i.e., Research Methods) will demonstrate how to seek empirical answers for these concerns.

Chapter 4 Research Methods and Techniques

4.1 Introduction

Based on the background literature in Chapter 2 and the overview in Chapter 1, the previous chapter identified the key issues related to SMEs' KT needs for the empirical investigation so that the empirical outcomes can soundly support or negate the belief that external knowledge is of prime importance for SMEs. It also developed the initial framework for KT between organisations; and finally, from a strategic perspective, it identified the important factors involved in the inter-organisational KT process. The next questions are how to collect empirical evidence and then process them for the investigation in accordance with the presented key issues; whether the initial framework can really improve SMEs' understanding of the KT process; and whether the identified important factors can really remind SMEs to pay attention to the 'boundary paradox' (Quintas *et al.*, 1997).

This chapter aims to determine pertinent research methods and techniques to seek empirical answers to these questions. It firstly presents the research approach adopted in the study, then describes the selection of research methods and techniques, and finally demonstrates the processes of relevant data collection and analyses.

4.2 Research Approach Adopted in the Study

The purpose of this section is to select suitable research approach that will provide a framework to determine the pertinent research methods and techniques for the study. The selection is based on the discussions about positivist versus interpretivist, and quantitative versus qualitative research approach.

4.2.1 Positivist versus Interpretivist

From a philosophy perspective, a major dichotomy that exists in research lies in choosing between positivist and interpretivist approaches (Easterby-Smith *et al.*,

1991; Hussey and Hussey, 1997; Saunders *et al.*, 2002; Jankowicz, 2005). The positivist ontology believes that reality is real and predictable (Healy and Perry, 2000), sees the world as external and objective, and the observer as independent of what is observed. The choice of what to study, and how to study it, can be determined by objective criteria rather than by human beliefs and interests (Saunders *et al.*, 2002). Thus, the researcher should focus on facts, look for fundamental laws, reduce phenomena to the simplest elements, formulate hypotheses and then test them (Easterby-Smith *et al.*, 1991; Hussey and Hussey, 1997; Jankowicz, 2005). The epistemology for positivist is based on the assumption that the findings are true (Healy and Perry, 2000). The positivist approach (See following Table 4.1) is further believed to be fast and economical, and has a wide coverage of the range of situations. However, such research is criticised for its arguable objectivity and its inability to understand processes or the significance that people attach to actions (Easterby-Smith *et al.*, 1991; Hussey and Hussey, 1997; Saunders *et al.*, 2002; Jankowicz, 2005). The interpretivist ontology (See Table 4.1), by contrast, is based on the assumption that reality is constructed by the observer making sense out of the external events and data with which he presents (Healy and Perry, 2000). It is thus accepted as value-laded, focusing on people's meanings, trying to understand what is happening, looking at the totality of each situation and change processes, and developing ideas through induction from data (Easterby-Smith *et al.*, 1991; Hussey and Hussey, 1997; Saunders *et al.*, 2002; Jankowicz, 2005). The epistemology for interpretivist is based on the assumption that the findings are subjective (Healy and Perry, 2000). Nonetheless, the interpretivist approach suffers from weaknesses, such as: data collection can take up plenty of time and resources, and the analysis and interpretation of data may be very difficult and untidy because it is harder to control the pace, progress and endpoints (Easterby-Smith *et al.*, 1991; Hussey and Hussey, 1997).

**Table 4.1 Key Advantages and Disadvantages of the Main Approaches
(Saunders *et al.*, 2002)**

	Positivist	Interpretivist
Advantages	<ul style="list-style-type: none"> • Economical collection of large amount of data • Clear theoretical focus for the research at the outset • Greater opportunity for researcher to retain control of research process • Easily comparable data 	<ul style="list-style-type: none"> • Facilitates understanding of how and why • Enable researcher to be alive to changes which occur during the research process • Good at understanding social processes
Disadvantages	<ul style="list-style-type: none"> • Inflexible – direction often cannot be changed once data collection has started • Weak at understanding social processes • Often doesn't discover the meanings people attach to social phenomena 	<ul style="list-style-type: none"> • Data collection can be time consuming • Data analysis is difficult • Researcher has to live with the uncertainty that clear patterns may not emerge • Generally perceived as less credible by 'non-researchers'

The positivist approach to research owes much to what we would think of as scientific research, and treats the social world in the way it would be approached by the natural scientist (Saunders *et al.*, 2002), and thus encounters the following difficulties (Jankowicz, 2005):

- **The problems are inherently complex** The problems dealt with by the social researchers are frequently very complex: there are many variables, some modifying the relationships between others.
- **Problems cross discipline boundaries** Social problems don't sit within the neat boundaries of academic knowledge, or within categories which might suggest an appropriate technique to apply; they're frequently 'messy'.
- **Technical matters are rarely at the root of the problem** Social problem-solving is value-driven, may have social consequences, and is frequently intertwined in contradictory assumptions about social policy.

- **Problems don't have an independent life of their own** Professionals don't think in ways which are easily analysed by the hypothetico-deductive method featured in the positivist approach, which assumes a dispassionate 'observer', the existence of problems and truth 'out there', and a situation which sits still enough for the effects of scientific interventions to be noticed. Intuition, gut feeling, and flair are involved in management decision-making, and so on.
- **Problems are culturally relative** People in different cultures may treat the same social problems and evidence in different ways.

Because of these difficulties, there is normally a very small space for the positivist approach in the social research (Jankowicz, 2005).

Based on the overview of Chapter 1 and the background literature of Chapter 2, the issues involved in this research are known to be very complex, cross discipline boundaries and culturally relative; the 'facts' are very difficult to collect. The empirical works of this research thus mainly focus on gathering data about relevant respondents' or interviewees' subjective perceptions, beliefs and views on the issues. Therefore, it is the interpretivist, not positivist approach that is adopted in this study.

4.2.2 Quantitative versus Qualitative

Another major concern in social research is the dichotomy between quantitative and qualitative approaches.

Qualitative research is defined as a basic strategy of social research that usually involves in-depth examination of a relatively small number of cases, and in which cases are examined intensively with techniques designed to facilitate the clarification of theoretical concepts and empirical categories (Ragin, 1994). By contrast, quantitative research largely concentrates on issues that can be measured accurately, and where an analysis of such measurements leads to conclusions based

on 'reliable' variables. In general, qualitative approaches are primarily associated with interpretivist research, and quantitative primarily with positivist (Jankowicz, 2005). However, it does not mean that qualitative approaches can only be used by interpretivist research, or quantitative approaches only by positivist research. Both qualitative and quantitative approaches can be combined in a research, even when it is based on a purely interpretivist rationale (Jankowicz, 2005). But both interpretivist and positivist cannot be combined in the research because their epistemologies are based on mutually contradictory assumptions (i.e., the findings are true or not). "It is very important not to confuse the two distinctions: that between positivist versus interpretivist ontology and epistemology on the one hand and between qualitative versus quantitative data and analysis on the other. Even the most experienced of researchers make this mistake" (Jankowicz, 2005, pp.122-123).

Based on the above discussion, it is known that a research, whether it is based on an interpretivist or positivist rationale, may use qualitative or quantitative approaches or both of them. The following analysis will decide which of the choices is the right one for this study.

The research is known to be carried out through the empirical investigation on SMEs' inter-organisational KT needs; the development and evaluation of the initial framework for SMEs; and the identification and verification of the important factors highlighted in the framework. The purpose of the empirical investigation is to identify that SMEs, to what extent, believe they need external knowledge, and their current engagement, transfer channels and effectiveness in inter-organisational KT activities, and thus provide convincing evidence to support the hypothesis that external knowledge is of prime importance to SMEs. The aim itself requires that a wide range of SMEs in the United Kingdom should be targeted, and quantitative evidence, although based on subjective perceptions, could be collected. Obviously, a quantitative approach is more suitable to the investigation in accordance with the dichotomy between quantitative and qualitative approaches.

The evaluation on the initial framework aims to test whether the framework can help SMEs understand and thus improve their inter-organisational KT process. So the evaluation should focus on collecting respondents' comments on the framework, and opinions about the inter-organisational KT process. It should try to understand their meanings and identify new issues as they emerge, and adjust or refine the framework in accordance with the respondents' feedback and the new issues identified. Apparently, quantitative approach is ill-suited to the evaluation. The strengths of qualitative approach claim that it rightly meets the requirements of such an evaluation.

The purpose of the evaluation on the identified important factors is to test whether the identified factors are really important, and if they should be taken into account when a SME is a giving or receiving company from a strategic perspective. Strategic issues related to inter-organisational KT are very complicated (Quintas *et al.*, 1997; Beeby and Booth, 2000; Chen *et al.*, 2002; Mohr and Sengupta, 2002), and thus difficult to describe by simple quantitative elements. So, qualitative approach is preferable to quantitative one.

According to these analyses, it can be concluded that the right choice for this study is that both quantitative and qualitative approaches should be used. Specifically, quantitative approach should be used for the empirical investigation, and qualitative ones for the evaluation of the initial framework and the verification of the important factors highlighted in the framework.

In summary, this study should be based on an interpretivist rationale, and use both qualitative and quantitative approaches. This point provides a framework to select pertinent research methods and techniques for the study. The selections will be presented in the following Sections 4.3 and 4.4.

4.3 Selection of Research Method

Research methods and techniques are often used interchangeably (Jankowicz, 2005). For instance, some experts submit that face-to-face interview is a research method (Neuman, 2000; Neuendorf, 2002; Saunders *et al.*, 2003), but others argue that it is a research technique used in research methods, such as survey (Jankowicz, 2005). In order to clarify the confusions, Jankowicz (2005) claims that a method is a systematic and orderly approach taken towards the collection and analysis of data so that information can be obtained from those data. He therefore classifies research methods in social research into four types: explicatory method, case-study method, survey method and experimental method. Techniques, in contrast to methods, are particular, step-by-step procedures that can be followed in order to gather data, and analyse them for the information they contain (Jankowicz, 2005). As Bennett (1986) suggests, techniques regard how to do something rather than what to do, or why to do it. Jankowicz (2005) thus treats conversation, interview, focus group and questionnaire as research techniques.

Based on the distinction between research methods and techniques, Jankowicz (2005) makes further differentiation among the four methods as follows:

- In *explicatory method*, questions are directed at people and at written sources. Issues and events in the past are concerned in order to understand the present and predict the future; judgements about data are made through using historical review; conclusions are drawn on the basis of the themes that are recognised in interview and observational material by means of the ethnographic technique or a variety of biographical analysis techniques. The method focuses on the personal and social meanings of phenomena as experienced by the people or organisation being studied, and draws out the implications of those meanings for them.

- **Case study** method is used when a set of issues in a single organisation (or a smaller unit of analysis) are a focus, and the factors involved in an in-depth study of the organisation need to be identified. Alternatively, it is possible to carry out a comparative case study, in which the same questions can be asked in several related organisations. The data in a case study are obtained largely through the analysis of written documents, and by means of interview technique; in addition, stakeholder analysis is also available.
- A **survey method** aims to establish people's views of what they think, believe, value or feel, and discover these views for their own sake, or support an argument that is presented through sampling a population of potential respondents to generalise conclusions more widely. In contrast to historical review, the survey method draws most of its data from the present. Questions are directed at relatively large groups of people who represent a larger population. The method may use techniques such as questionnaire, interview, focus group, and so on.
- **Experimental method** may be used if the researcher is sufficiently familiar with the situations or events that are studied, in which the relative importance of one or more variables can be identified through techniques such as observation. Then an explanation of the events can be made, or a more general theory of such events can be contributed.

This research is interested in investigating SMEs' current practices and needs for inter-organisational KT, and seeing their views and perceptions on the applicability of the initial framework and identified important factors. It should draw most of its data from the present, and needs to target a large group of SMEs that represent a larger population so that the generalised conclusions can be applied widely. So explicatory method that mainly focuses on historical review, and case study method that involves a single organisation (or smaller unit of analysis) are not suitable for

this study. Neither is the experimental method because it is time-consuming and cannot target a large group of SMEs. Therefore, the survey method is considered as a right choice for the investigation on SMEs' inter-organisational KT needs and practices and the evaluations on the initial framework and identified important factors in the research.

Furthermore, based on the differentiation among the four methods, it may be found that a technique may be used in several methods (e.g., interview in case study and survey methods), and a method may use several techniques (e.g., case study uses interview, focus group and the analysis of written documents). Now, the survey method has been selected as a suitable one for this study; the following Section 4.4 will choose appropriate techniques for the method.

4.4 Selection of Research Techniques

This section aims to determine suitable techniques for the survey method that is used for the empirical investigation on SMEs' inter-organisational KT needs, and for the evaluations on the initial framework and the identified important factors. The selection is based on the discussions about both advantages and disadvantages of relevant techniques used in the survey method.

4.4.1 Research Techniques Used in the Survey Method

Mail questionnaires, face-to-face interviews and telephone interviews are three major techniques that are commonly utilised to collect information from respondents for the survey method (De Vaus, 1991; Frankfort-Nachmias and Nachmias, 1992; Neuman, 2000). Each one has its distinctive benefits and drawbacks (See Table 4.2); the best type of technique will depend on circumstances (McBurney, 1994).

Table 4.2 Advantages and Disadvantages of the Three Techniques

Criterion	Face-to-face Interview	Mail Questionnaire	Telephone Interview
Cost	High	Low	Moderate
Response Rate	High	Low	High
Control of Interview Situation	High	Low	Moderate
Applicability to Geographically Dispersed Populations	Moderate	High	Moderate
Applicability to Heterogeneous Populations	High	Low	High
Collection of Detailed Information	High	Moderate	Moderate
Speed	Low	Low	High

Source: Frankfort-Nachmias and Nachmias (1992).

4.4.2 Mail Questionnaire and Face-to-face Interview for the Empirical Investigation

Based on Section 4.2.2, the empirical investigation is suggested to use quantitative approach. Its quantitative evidence may be collected by either of the three techniques. According to De Vaus (1991), selecting a technique will involve: the nature of the population, sample size and distribution, survey topic, types of questions, time constraints, availability of skilled personnel, amount of money available, and the number of callbacks. De Vaus (1991, p.112) further stresses that the cost advantages of any technique depend on how geographically dispersed the sample is: “the greater the dispersion, the more expensive the personal [i.e., face-to-face] interview”. Because a wide range of SMEs will be targeted, face-to-face interviews are not appropriate in terms of time and cost of travel, and the number of available interviewers (Frankfort-Nachmias and Nachmias, 1992). Telephone interviews are not appropriate either; because a number of questions will be asked, the interviewees may be confused or lose patience. Therefore, a quantitative, mail questionnaire survey is the best choice for the empirical investigation because it involves the lowest cost, can cover a wide range of situations and be conducted by a

single researcher such as a PhD student (De Vaus, 1991; McBurney, 1994; Neuman, 2000).

However, this quantitative, mail questionnaire survey does have its drawbacks. As Carr-Hill (2002, p.1) has observed, “many of the results from a statistical analysis are simply incomprehensible without follow-up interviews with key informants”. Easterby-Smith *et al.* (1991) also argue that the abstraction inherent in quantitative research is not very effective in understanding the significance that people attach to actions. Qualitative research allows open-ended questions for important meanings to be discovered and the outcome of any qualitative research offers “a deeper understanding of experience from the perspectives of the participants selected for study” (Maykut and Morehouse, 1994, p.43). So it seems to be very useful if qualitative, follow-up interviews can be done in accordance with the key findings of the questionnaire survey.

In fact, once the key findings are identified from the mail questionnaire, the interviews can focus on validating the findings so that the questions and time for the interviews can be minimised. Furthermore, the mail questionnaire already covers a wide range of SMEs; the requirement for the coverage of the interviews may not be so strong, and the cost for the interviews can be further minimised. The outcomes of the interviews and the key findings of the mail questionnaire can be triangulated. This kind of triangulation combines the advantages of quantitative and qualitative studies, as well as mail questionnaire and face-to-face interviews, and can strengthen the researcher’s claims for the validity of the conclusions drawn where mutual confirmation of results can be demonstrated (Neuendorf, 2002). Neuendorf (2002) argues that it is rare to find a single investigation that combines techniques in this way, but such triangulated studies do exist. For example, Barry and Milner (2002), Lawson *et al.* (2003) and Ramsey *et al.* (2003) adopt such triangulation approach in their studies with SMEs. So, this research would like to adopt such approach so that

the triangulated conclusions are more reliable and convincing, and can provide deeper insights and better understanding on SMEs' inter-organisational KT needs.

To summarise, a mail questionnaire technique for quantitative purpose and follow-up interviews for qualitative purpose are adopted for the survey method that targets the empirical investigation.

4.4.3 Face-to-face Interviews for the Evaluation on the Initial Framework

From Section 4.2.2, it is known that the evaluation on the initial framework should use qualitative approach and focus on collecting respondents' comments on the framework, and opinions about the inter-organisational KT process. It is essential to make sure that respondents fully understand the framework and its relevant context before they make comments on it. However, the framework is represented by a figure (See Figure 3.13 in Chapter 3) that contains very rich context message. If the figure is not presented, and a good explanation of it cannot be made to the respondents, they will find it very hard to understand. Moreover, the respondents may still have some doubts that need to be cleared away even if the explanation on the figure is provided. On this occasion, face-to-face communication with the respondents is needed so as to capture their perceptions, opinions, doubts and even facial expressions. Therefore, face-to-face interviews are evidently the best choice.

4.4.4 Face-to-face Interviews for the Identified Important Factors

Based on Section 4.2.2, the verification of the identified important factors is suggested to use qualitative approach. The factors are embedded in the stages of the framework. Respondents cannot fully understand the meanings and positions of the factors before they have good understanding of the framework. So the factors cannot be independently evaluated without the necessary explanation of the framework. According to the previous discussion on the evaluation of the framework, the framework should be face-to-face explained to the respondents. Therefore, the best

way is that the framework and the identified important factors could be qualitatively evaluated together through face-to-face interviews so as to minimise the times for the explanation of the framework.

According to the analyses in Sections 4.4.2, 4.4.3 and 4.4.4, face-to-face interview is considered as the most suitable technique for the qualitative validation of the key findings of the mail questionnaire survey, and the qualitative evaluation on the initial framework and the identified important factors. The framework and the identified important factors should be evaluated together. Naturally, a decision to be made is whether the key findings should be validated separately from, or together with, the evaluations of the initial framework and the identified important factors. Because it is very difficult to find SME managers who would like to be interviewed, a sensible choice is that the validation of the key findings, and the evaluations of the framework and the identified important factors could be carried out in an interview. Therefore, each of the face-to-face interviews in this research is composed of three parts and has three corresponding objectives: validating the key findings, evaluating the framework, and evaluating the identified important factors.

In summary, the survey method using the mail questionnaire technique is selected as a suitable research method for the empirical investigation, and the survey method using face-to-face interview technique is thought of as being a suitable research method for the evaluation of the key findings of the mail questionnaire survey, the initial framework and the identified important factors. The key research steps taken in this study can thus be sketched as in Figure 4.1. The dash rectangle means that Chapter 4 is the current chapter.

Figure 4.1 shows that the mail questionnaire survey will identify SMEs' KT needs through addressing the key issues discussed in Chapter 3. The face-to-face interview has three parts: Parts 1, 2 and 3. Part 1 aims to evaluate the key findings of the mail

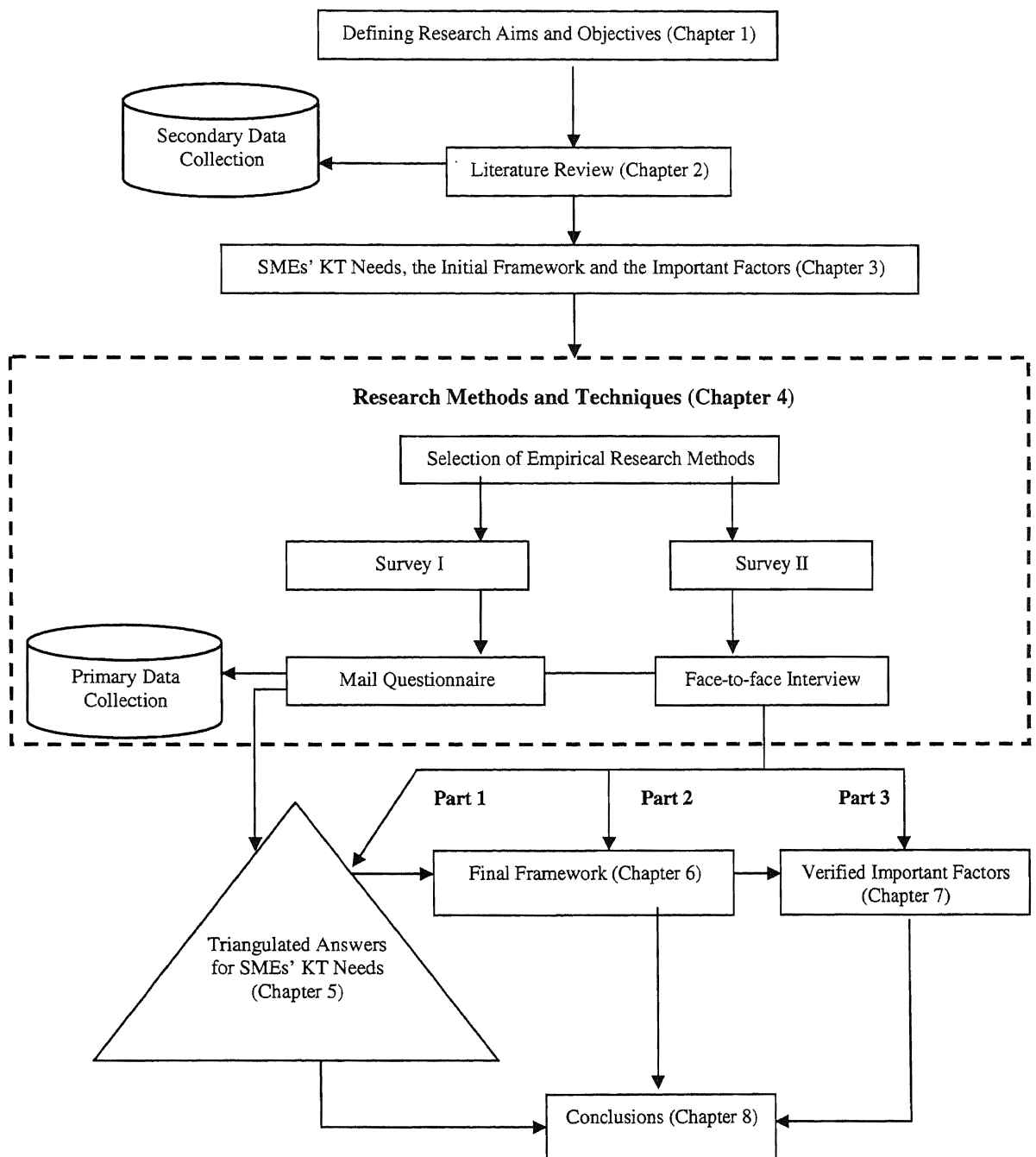


Figure 4.1 Key Steps for Conducting this Study

questionnaire survey. Similarly, Parts 2 and 3 intend to evaluate the initial framework and verify the identified important factors respectively. The evaluation results of Part 1 and the key findings of the mail questionnaire survey will be presented in Chapter 5. The triangle symbolises triangulation of the results from both sides. The results of Part 2 will be surfaced in Chapter 6. The results of Part 3 will be presented in Chapter 7. The conclusions made by Chapters 5, 6 and 7 will be further summarised in Chapter 8. Now, the detail information about the processes of the mail questionnaire survey and face-to-face interview is provided in Sections 4.5 and 4.6 respectively.

4.5 The Mail Questionnaire Survey

The purpose of this section is to present the objectives, questionnaire design, sampling, pilot test, formal survey and follow-ups, and so on for the mail questionnaire survey.

4.5.1 Research Objectives of the Mail Questionnaire Survey

The questionnaire survey aims to provide convincing evidence to support the hypothesis that external knowledge is of prime importance to SMEs. According to the discussion in Section 3.2, the survey is designed to specifically identify:

- The importance of external knowledge to SMEs.
- SMEs' needs for inter-organisational KT.
- SMEs' actual situation in the involvement of the relevant KT activities.
- SMEs' perception on the importance of social and electronic networks in helping them to acquire the necessary external knowledge, and their actual effectiveness in using social and electronic networks to do so.
- SMEs' effectiveness in using the acquired external knowledge to improve their business performance.

4.5.2 Questionnaire Design

The existing KM literature offers several examples of questionnaire surveys (or assessments) for companies. For instance, a questionnaire survey (Chase, 1997) jointly sponsored by the Journal of Knowledge Management, the Best Practice Club, and the Benchmarking Exchange, contains 18 questions covering knowledge creation, KM lever and technology in large companies. An on-line assessment (UCE, 2001) of KM, designed by the University of Central England, seeks to measure companies' abilities to manage knowledge from the perspectives of knowledge-in-use, knowledge systems, knowledge renewal, and 'knowledge economy' management capability. Beijerse (2000) identifies 79 instruments with which knowledge is organised in SMEs, of which 20 are for knowledge sharing, but mainly at an operational level. None of these could be directly used for an inter-organisational KT survey for SMEs in the context of this research. However, some of the previous survey questions can be used in this survey.

The questionnaire (See Appendix A) developed for this survey includes 14 questions.

- Question 1 aims to measure the size of companies.
- Question 2 (containing eight sub-questions) is taken from Chase (1997), and amended to reflect the importance of external knowledge. Because the task environment (e.g., customers, suppliers, competitors or other organisations) is perceived to be more important than the general environment for companies (Daft *et al.*, 1988), so the external knowledge related to the general environment is excluded by this question. Further, some important internal knowledge (e.g., own competencies/capabilities, own products/services) for a company is covered by this question. Then, the comparative judgement on the importance of both the task environment and the internal knowledge can be collected from the respondents. If the results demonstrate that the external knowledge is perceived by respondents to be more important than the internal knowledge for SMEs. This

will strongly support the belief that external knowledge is of prime importance to SMEs (Sparrow, 2001). Otherwise, the belief will be wrong.

- Question 3 (containing six sub-questions) is also taken from Chase (1997), and amended to reflect SMEs' sufficiency in the external knowledge identified by question 2. If the insufficiencies are perceived by respondents to exist in SMEs, they will have needs to acquire the external knowledge from the relevant organisations. Otherwise, they may have no need to acquire the external knowledge.
- Question 4 (containing twelve sub-questions) aims to identify the actual situation of SMEs' involvement in, or their needs for, inter-organisational KT activities. Six of the 12 sub-questions are taken from Beijerse (2000) and UCE (2001), three from each.
- Questions 5 – 12 aim to identify the actual situation of SMEs' involvement in social networks and electronic networks, collect information about the proportion of social networks which have their own electronic networks, and assess the importance and the actual effectiveness of both social and electronic networks in helping SMEs to acquire the necessary external knowledge.
- Question 13, taken from Chase (1997), aims to assess SMEs' effectiveness in using the acquired external knowledge to improve their business performance.
- Question 14 aims to identify the respondents' positions in their companies.

Three questions (questions 2, 7 and 13) use a five-point scale ranging from '1' (very ineffective or unimportant) to '5' (very effective or important); two questions (questions 5 and 6) are open-ended questions; the others are two- (i.e., yes or no) or multiple-option questions. All of them are designed to be as short and simple as possible, so that they are easy to understand and answer by the respondents.

The survey is descriptive, not exploratory, in nature and mainly examines the perceptions of respondents on the above issues. Although perceptual data has deficiencies, Duan and Kinman (2000) argue that there is a strong degree of

convergence between the two measurement methods (perceptual versus behavioural), and perceptual measurement should still yield valuable information.

4.5.3 Sampling

In order to obtain sample SMEs in the service sector (See the reason at the footnote of Section 1.2 (p.10)) in UK, the FAME (Financial Analysis Made Easy) database was utilised. The database is a computerised one and contains UK Standard Industrial Classification (SIC) of economic activities. So, companies in all industries in UK with their address, telephone number(s), the name of the director/manager(s), the latest profits, the most recent number of employees, and a description of the nature of their businesses can be obtained. Furthermore, sectors can be selected as many as or as few as required, targeting companies with a maximum or minimum number of employees can also be managed. Although the FAME database has these advantages, it also has some drawbacks. The major problem in using the FAME database lies in the inaccuracy of some of the information. For example, the number of employees does not seem to be entirely reliable. The inaccuracy may cause some wrong samples to be selected and thus lead valid responses to be reduced. This problem actually happened in the questionnaire survey (See details in the following Section 4.5.4).

According to the working definition of SMEs in Section 1.1.1, SMEs are the enterprises that employ more than 9 and less than 250 employees (OJEC, 2001). So, the selection criteria (10-249 employees and the service sector) were applied to the FAME database, and 1,000 sample companies were randomly identified.

4.5.4 Pilot Test, Formal Survey, Follow-ups and Responses

The initial questionnaire for a pilot test was sent to 100 companies which were randomly selected from the 1,000 sample companies in June, 2001. The owner or manager of each company was asked to respond. Nine effective responses were

collected after a follow-up mail, which represents a 9% response rate (excluding two wrongly-addressed questionnaires).

After a minor modification was made to the questionnaire, the formal survey was carried out in mid-September of 2001. Copies of the questionnaire were mailed to the owners or managers of another 900 sample companies. After the first and second follow-ups in November and December, 2001 respectively, a total of 96 effective responses were received.

Because there was only a minor difference between the pilot and formal questionnaires, the pilot and formal survey responses were analysed together. Therefore, the total effective responses from 1,000 sample companies were 105. With 25 returned questionnaires because of wrong addresses, the actual effective response rate was 10.8%.

Among the 105 responses, 4 were micro-companies (i.e., each of which has less than 10 employees), and 18 were large companies (i.e., each of which has more than 249 employees). This indicates that the companies' sizes may have changed since the statistics were published, or the data in the FAME database may be inaccurate. Only 83 responses were actually from SMEs and were analysed by means of SPSS in Chapter 5.

4.5.5 Explanation of the Response Rate

During the period of the pilot test, in order to investigate why the response rate was so low, 25 SMEs were randomly selected from the companies that did not answer the questionnaire, and their managers were telephone-interviewed. The interviews showed that the low response rate was not caused by the questionnaire, for instance, its sentences or the meaning of some terms were unclear or hard to understand, or because people felt embarrassed by answering the questions, but by the following reasons (See Table 4.3).

Table 4.3 shows that most of the interviewees replied that they did not answer the questionnaire because they were too busy (44%), or it was not directly relevant to their businesses (16%). Other people, who were not capable or not in a position to answer the questions, would not respond to the questions. The relatively low response rate may actually reflect characteristics of the target group, who appear unlikely to spend time on a questionnaire that cannot bring any direct benefits to their businesses.

Table 4.3 Reasons and Percentages for Companies which did not Answer the Questionnaire

Reasons for not answering the questionnaire	Number of companies	Percentage (%)
Very busy, no time to answer the questionnaire	11	44
It is not directly relevant to my business	4	16
Addressee had already changed job or retired	6	24
The company was bankrupt	2	8
The questionnaire was not received	2	8
Total	25	100

Table 4.3 also shows that the two important reasons for non-response were that: addressees had already changed jobs or retired (24%); and the companies were bankrupt (8%). Together, they account for 32%, which obviously reflected SMEs' two features: flexibility and volatility. Furthermore, 8% of non-responses were caused by the reason that questionnaires were not received. The total of these three reasons accounted for 40%. This could mean that, among the target group that did not answer the questionnaire, 40% actually did not receive the questionnaire. If this factor is taken into consideration, arguably, the actual response rate in the research would be higher than the real rate.

Review of relevant literature also shows low response rates in the questionnaire surveys which were carried out in SMEs, for example, 11% in Ramsey *et al.* (2003), 10.4% in Daniel and Wilson (2002), 10.4% in Daniel and Grimshaw (2002), and

9.2% (UK), 12.5% (Portugal) and 15.0% (Poland) in a survey carried out in the three countries (Duan *et al.*, 2002). Saunders *et al.* (2003) and Hatch and Lazaraton (1991) argue that a minimum number (i.e. effective responses) for statistical analyses should be 30. Therefore, the statistical analysis of 83 responses collected in the survey is seen as reasonable and effective, especially for a survey in the context of SMEs and KM.

4.5.6 Covering Letter

In order to make respondents feel that the questionnaire was different, special, important or worthwhile, and their responses were very important for the success of the survey (Saunders *et al.*, 2003; De Vaus, 1991; Frankfort-Nachmias and Nachmias, 1992), the covering letter was sent together with the questionnaire to the respondents. The covering letter (See the covering letter for the formal survey as an example in Appendix B) normally contains a number of essentials, such as official letterhead; explanation of the purpose of the survey and its usefulness; the importance of their responses; guarantees of anonymity and confidentiality and so on.

4.5.7 Incentive

In order to increase response rate as much as possible, the covering letter clearly indicated that the respondents were invited to request a free report of the survey if they wished.

The outcomes of the statistical analyses on the 83 responses, and the key findings drawn out from the outcomes are presented in Chapter 5. The key findings are further qualitatively validated through face-to-face interviews that will be introduced in the next section.

4.6 Face-to-face Interviews

This section will describe the objectives and types of face-to-face interview, how to design the interview, and how to conduct the pilot test, formal interview, coding and analysis for the interview.

4.6.1 Research Objectives of the Interviews

According to Figure 4.1, the interviews generally consist of three parts (i.e., Parts 1, 2 and 3). The specific objectives of the three parts are:

- The objective of Part 1 is to identify empirical evidence to support the key findings of the mail questionnaire survey.
- Part 2 will evaluate whether the framework generally reflects the inter-organisational KT practices of SMEs, and could help them have a better understanding of inter-organisational KT. The evaluation will mainly focus on the stages of the framework and their relationships, but will not involve how the organisational context or cultural differences influence the stages and their relationships.
- The purpose of Part 3 is to verify whether the identified factors are really important for SMEs. In Part 2, through the pilot interviews (See details in Section 4.6.5), the initial framework (See Figure 6.1) is revised as a new one (See Figure 6.3), i.e., the initiation stage is divided into two stages: identification and negotiation, and other stages remain as before. The evidence from literature (Szulanski, 2000; Goh, 2002; Argyris and Schon, 1996; Dodgson, 1993; Cohen *et al.*, 1990) claims that the conversion stage involves KT within an organisation and is well studied in comparison with between organisations; and the identification stage is also an internal affair for the organisation and well studied. However, the other stages (i.e., negotiation, selection and interaction) have received negligible attention, but will deeply involve or take into account inter-organisational relationship, and can strongly reflect the differences between within an organisation and between organisations. Therefore, this verification

will focus on the identified important factors that are embedded in these three stages, and will ignore these in other stages. Further, the evaluation will not involve how the organisational context or cultural differences influence the identified factors.

4.6.2 Types of Face-to-face Interview

Face-to-face interviews may have three types: structured interviews, semi-structured interviews and unstructured interviews (Saunders *et al.*, 2003). Each type has advantages and disadvantages and fulfils a different purpose (Patton, 1990). So, the best type will depend on the purpose of the interviews.

Structured interviews use interview guides based on a predetermined and standardised or identical set of questions (Saunders *et al.*, 2003). It thus has advantages in increasing comparability of responses and facilitating data analysis, however, does not allow the exploration of issues which are not anticipated and which surface during an interview.

Unstructured interviews are non-standardised, informal and unstructured conversations (Saunders *et al.*, 2003). Interviewer would use these to explore in depth a general area in which he is interested. There is no predetermined list of questions to work through in this situation, although the interviewer needs to have a clear idea about the aspects he wants to explore. The interviewee can freely talk about events, behaviour and beliefs in relation to the topic area. This kind of interview permits maximum flexibility to pursue information because questions can be individualised. However, it tends to take considerable amounts of time before a similar set of questions are posed to each interviewee in the research, and suffers difficulties in organising and analysing its collected data.

Semi-structured interviews fall between the previous two extremes, and are non-standardised (Saunders *et al.*, 2003). A list of themes and questions to be covered

are specified in advance. However, the sequence and wording of questions may vary from interview to interview. The interviewer may omit some questions in particular interviews, given the specific organisational context which is encountered in relation to the research topic. He may also ask additional questions to explore his research question and objectives, given the nature of events within particular organisations. Obviously, these interviews have advantage in helping the data collection to be more systematic and comprehensive by restricting the issues to be investigated in advance; but, their flexibility in sequencing and wording questions can result in substantially different responses from different perspectives, and thus could reduce the comparability of responses (Patton, 1990).

In this research, themes and objectives for the interviews are very clear; the relevant issues which need to be addressed through face-to-face interviews can also be clarified in advance. Moreover, the interviewees are SME managers (See reasons in Section 4.5.4) who are very busy, and also hope to restrict the issues to be investigated. So, unstructured interviews are not appropriate for this study. However, for this neglected research area, not all necessary issues could be determined prior to the interviews. Some unexpected issues may surface and need to be further explored. So, structured interviews are not suitable for this research either. Based on this discussion, there is no doubt that a right choice is the semi-structured type that can avoid the disadvantages of both structured and unstructured types.

4.6.3 Interview Design

The interview is semi-structured, and a pre-determined set of questions are thus proposed. The questions are presented in an interview protocol (See details in Appendix C) that shows general interview structure for the interviews. The major purpose of using a protocol is to increase the reliability of the interviews so that consistency of the results could be ensured (Yin, 1994). This protocol consists of introduction, background information and three parts of questions.

Introduction

In the introduction, the interviewer is reminded to pay attention to the important points, such as explaining the purpose and focus of the interview; providing some examples to help the interviewee have better understanding of the meaning of inter-organisational KT; stressing the confidentiality of the interview and so on.

Background Information about the Interviewee and his Company

The table (Presented in Appendix C) aims to remind the interviewer to collect background information about the interviewee, such as his name, job title, telephone number and e-mail, and background information about the interviewee's firm, such as the number of employees, and any specific products or services.

Part 1: Questions for Validating the Key Findings of the Survey

According to the key findings of the questionnaire survey, six questions are developed and used to collect factual information to support the findings.

Part 2: Questions for Evaluating the Initial Framework

Before the questions for Part 2 are asked, an explanation on the framework is provided for the interviewees (See details in Appendix D). Then, they are asked to comment on the framework through the five questions in this part.

Part 3: Questions for Evaluating the Identified Important Factors

After the pilot interviews (See details in Section 4.6.5), the framework containing the important factors (See Figure 7.1) is modified as Figure 7.4. According to Section 4.6.1, the evaluation on the important factors will focus on three stages (i.e., negotiation, selection and interaction). There are thirteen questions in this part that are used to collect empirical evidence about the important factors embedded in these stages.

According to Section 3.4.2, it is the giving side that dominates the KT (This argument is also supported by Interviewee 9: “the person who is requesting the knowledge is usually in a weak position, the person who is giving the knowledge is usually in a strong position unless the receiver is a bigger customer, and you have to make a balance.” – see details in Appendix E). So, the evaluation is carried out from the giving side’s perspective first. Furthermore, according to Figure 7.4, there are some factors (i.e., trust between the giving and receiving companies in the negotiation stage, and the duration of KT in the interaction stage) that commonly influence both sides. If they are verified as important by the giving side, it is generally assumed that they cannot be ignored and have to be treated as important by the receiving side, and are thus not verified any more from the receiving side’s perspective. Conversely, if they are verified as unimportant by the giving side, it may be assumed that they cannot be utilised by the receiving side to influence the other side’s behaviours; they should be ignored and are thus not verified as well. For example, at the negotiation stage in Figure 7.4, both sides have same kind of factors, they are therefore only verified at the giving side.

The End of the Interview

The protocol is only used as guidelines for the interviews. Therefore, not all the questions are actually used in all interviews. Instead, some questions are generated spontaneously during the interview as and when necessary.

4.6.4 Selection of Interviewees

The sampling for the mail questionnaire survey is known to have been limited in the service sector, because this research initially aims to address the inter-organisational KT issues related to Internet marketing that is thought of as being easily implemented in the service sector. A natural choice is that the sampling for the interviews is also limited in the service sector. The applicability of the conclusions and outcomes drawn from the interviews will be restricted by this choice. Another

choice is to select interviewees from not only the service sector but also non-service sectors such as manufacturing. The framework and the identified important factors that have been evaluated by the interviews can thus have wider applicability. Therefore, this study adopts the second choice and selects the interviewees from all sectors (i.e., all SMEs).

All interviewees were SME managers/directors or owners/managing directors who were thought of as having better understanding of KT situations in their organisations than other employees. The interviewees (See Table 4.4) were mainly selected from the areas of Bedfordshire, London and Sheffield. The selection was based on the main criteria as suggested by Yin (1994): convenience, accessibility and geographic proximity. Some of them (e.g., Interviewee 4) were from the mail questionnaire respondents.

4.6.5 Pilot and Formal Interviews

In order to ensure that question wording is comprehensible to respondents, pilot interviews are conducted. The interviews focus on Parts 1 and 2, i.e., the evaluation of the key findings of the mail questionnaire survey and the evaluation of the initial framework, and will not involve the verification of the identified important factors in Part 3 because the factors are based on the relevant stages of the initial framework, and thus not evaluated before the basis is accepted by the interviewees. The five interviewees (See Table 4.4) are firstly selected for the pilot test. The test aims to evaluate:

- whether the interviewees understand the terminology, such as KT, KT process, and framework. The interviewees are asked to give a concrete example about KT between their companies and their customers (or suppliers). From these examples, it could be discovered whether the interviewees understand the terminology. The examples could also provide evidence to support the key findings of the questionnaire survey;
- whether the questions are clear and easy to understand by the interviewees;

Table 4.4 General Information about Interviews

Interview Phase	Interviewee No	Specific Services or Products	Sector Categories	Employees No
Pilot	Interviewee 1	Retailing vacuums	Service	10
Pilot	Interviewee 2	Purely packaging	Non-service	26
Pilot	Interviewee 3	Sales of hygiene & laundry equipment	Service	245
Pilot	Interviewee 4	Consultancy on KM	Service	14
Pilot	Interviewee 5	Consultancy on communication & railways	Service	11
First Round	Interviewee 6	Sales on teaching materials & methods	Service	70
First Round	Interviewee 7	Developing trusts for communities	Service	37
First Round	Interviewee 8	Manufacturing tyres	Non-service	30
First Round	Interviewee 9	Distributing telecommunication products	Service	25
First Round	Interviewee 10	Materials processing & tooling	Non-service	45
First Round	Interviewee 11	Salvage service for insurance companies	Service	235
Second Round	Interviewee 12	IT consultancy & maintenance	Service	10
Second Round	Interviewee 13	Sport broker, advertising & clothing	Service	30
Second Round	Interviewee 14	Sales on newspapers, books & magazines	Service	10
Second Round	Interviewee 15	Manufacturing digital panel meters	Non-service	25
Second Round	Interviewee 16	A clothing shop	Service	23
Second Round	Interviewee 17	Processing metals	Non-service	238
Second Round	Interviewee 18	Language translation	Service	22
Second Round	Interviewee 19	Consultancy on nuclear risk management	Service	120
Second Round	Interviewee 20	International trade on chemical materials	Service	10
Second Round	Interviewee 21	Financial service	Service	240

- whether there are particular areas that may have been unclear previously (Janesick, 1998);
- whether the interview will effectively work, and the type of information being sought will actually be obtained (Berg, 1989).

The results of the pilot interviews show that the interviewees fully understand the terminology such as KT, KT process, and framework; the questions are clear and easy to understand; there are no unclear areas; and the interview can effectively work and the type of information being sought can actually be obtained. So the questions for the pilot interviews can be effectively used for the questions of Parts 1 and 2 in the formal interviews, no major modifications are needed.

Through the pilot interviews, certain empirical evidence for the key findings of the mail questionnaire survey is collected and the initial framework is modified as the first revised framework (See Figure 4.2). The following step is to carry out the first round of formal interviews. This round will fully cover Parts 1, 2 and 3. In other words, as well as the evaluation of the first revised framework and the key findings of the mail questionnaire survey, the verification of the identified important factors will start from this round. The reason is that most of the proposed stages of the initial framework have been proved to be acceptable in the pilot interviews, which means that the basis on which the important factors are based is acceptable for the interviewees.

The outcomes of the first round of interviews demonstrate that the questions in Part 3 are clear and easy to understand, and can effectively help the interviewer to obtain the type of information being sought. So, no major modifications on them are needed in the following interviews. The results of the first round also show that another framework (i.e., the second revised framework) emerges and one framework (i.e., the first revised framework) becomes two frameworks (See Figure 4.2). So the second round of interviews have to begin to evaluate the two frameworks.

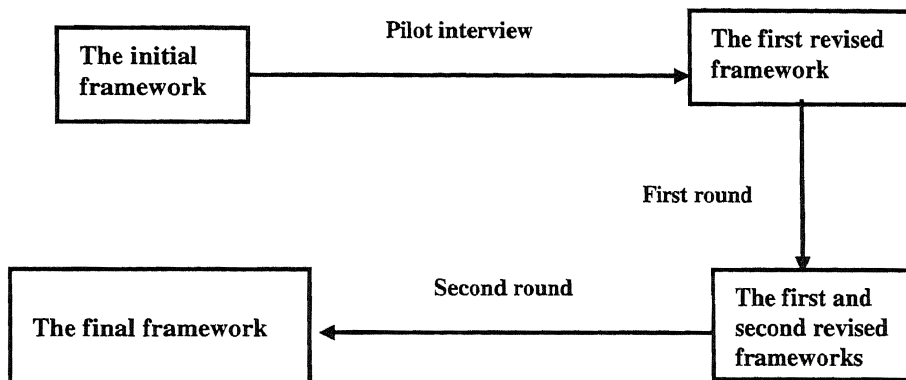


Figure 4.2 The Evaluation Process of the Initial Framework

The results of the second round show that both the first and second revised frameworks can be unified as one framework. The framework is accepted by SMEs, and no more revisions are needed, it thus becomes the final framework for SMEs (See Figure 4.2). In addition, up to this round, sufficient evidence has been collected for the evaluation of the key findings of the mail questionnaire survey and the verification of the important factors, therefore, no more interviews are needed for this study.

Because the interviewees are owners or managers who are very busy in their work, they cannot spend too much time for the interviews. So, the average duration of the interviews is controlled to be 45 minutes, up to a maximum of 1 hour 20 minutes, which is considered to be reasonable for in-depth interviews. All interviews (Except that one interviewee in the second round of interviews does not agree to be recorded) are tape-recorded so as to increase the accuracy of data collection.

4.6.6 Content Analysis of the Interview Data

All interviews are fully transcribed (See an example in Appendix E), except for the one unrecorded, but the notes taken from the interview are reviewed by the interviewee. The final version of the interview transcript consists of 56,157 words (Including the notes from the unrecorded interview).

The analysis of the raw data is very difficult because the data are messy and scattered. The organisation of the data into structured, meaningful themes can be approached from two perspectives. A deductive analysis involves arranging quotes into a set of pre-determined categories, whereas an inductive analysis allows the themes and categories to emerge from the data, rather than being imposed before analysis (Patton, 1990; Krane *et al.*, 1997). The deductive analysis is adopted as the interview aims to test the established theories and has a set of pre-determined specific questions (See details in Appendix C), and a set of pre-determined categories can be easily developed in accordance with the specific questions. The categories are presented in Table 4.5. From this table, it is known that there are 6, 5, 23 categories for Parts 1, 2 and 3 of the interview respectively. The categories for Parts 1 and 2 are easy to understand, but for Part 3, they are not. Someone may wonder why each of the factors listed at the negotiation, selection and interaction stages of the giving side has a corresponding category, but, some factors at the three stages of the receiving side have no corresponding categories. Based on Section 4.5.3, the reasons are that:

- it is the giving side that dominates the KT, so the evaluation is carried out from the giving side's perspective first;
- for the factors that commonly influence both sides, if they are verified as important or unimportant by the giving side, they should be treated as important or unimportant by the receiving side as well. It is thus unnecessary to verify them again from the receiving side.

Table 4.5 The Categories for the Content Analysis of the Interview

Parts / Stages		Categories	
Part 1		Importance of external knowledge about customers, competitors and suppliers; costly errors or mistakes because of insufficient knowledge about customers; inter-organisational KT activities; importance of social networks; importance of electronic networks; effectiveness in leveraging knowledge to improve business performance	
Part 2		Reflecting the KT practices; stages to be added; stages to be deleted; modification on lines or feedback loops; improving SMEs' understanding of the KT process	
Part 3	The Giving Side	Negotiation	Importance of knowledge; business dependence; trust; receiving company's ability to reciprocate; influences from a third party
		Selection	Trust with management; prior experience in the subject; theoretical knowledge in the subject; expressiveness; social interaction skills
		Interaction	Openness; trust with the receiving employee; loyalty to the employer; management control on the giving employee; duration of KT; difficulty of KT
	The Receiving Side	Negotiation	N/A
		Selection	Trust with management; prior experience in the subject; theoretical knowledge in the subject; absorptive capacity; motivation to learn; social interaction skills
		Interaction	Management control on the receiving employee

Once the categories have been determined, the following step is to elicit relevant quotes from the data into corresponding categories. This is a rather time-consuming job, particularly as the data is huge. The work load can be effectively relieved by NUD*IST (Non-numerical Unstructured Data Indexing Searching and Theorising) software. It is one of the most promising qualitative analytical tools that can help to reduce the volume of work necessary in a qualitative study (Rouse and Dick, 1994), particularly where there is a large amount of data to cope with (Maclaran and Catterall, 2002). This computer programme is primarily oriented to the markup, retrieval, and description of textual content (Neuendorf, 2002). The raw data can be stored in the project computer file so that everything can be kept together during the analysis process (Rouse and Dick, 1994). Asking questions and building and testing theories about the data can be done by using text search programmes that can retrieve all instances of words, phrases in the data (Catterall and Maclaran, 1996). The coded results can be put into a system of concept nodes (i.e., categories) that may be grouped hierarchically in a tree structure and displayed by the program (Neuendorf, 2002).

In order to make sure that reliable conclusions can be drawn from the interviews, two members of staff at Luton Business School, University of Luton, were invited to code some example quote(s) that were randomly selected for each of the categories (See details in Appendix F). Their coding closely matches the corresponding coding made by the author of the thesis (See Table 4.6), which means that from the interviews, other researchers can draw the same conclusions as the ones made by this research. Therefore, the quality of the conclusions drawn from this research can be regarded as reliable.

Because the questions for Parts 1 and 3 are almost the same between the relevant interview rounds, all interviews for each of them are analysed together. Only the analysis of the evaluation of the initial framework will show the division of the interview rounds so that the revisions of the framework, in the relevant rounds, can

be traced. NUD*IST 4 is utilised for the analysis of the qualitative data in this research. The findings for Parts 1, 2 and 3 are presented in Chapters 5, 6 and 7 respectively.

Table 4.6 Information about Double Checks for the Coding

Coding Checker	Coding Match Rate with the Author of the Thesis (%)					
	Part 1	Part 2	Part 3, the Giving Side			Part 3, the Receiving Side
			Negotiation	Selection	Interaction	
Staff 1	91.7	90	87.5	100	100	100
Staff 2	92.3	90	100	100	100	87.5

4.7 Chapter Summary

This chapter begins with the comparisons of the advantages and disadvantages between positivist versus interpretivist, and between quantitative versus qualitative approaches, the selection of the research method (i.e., survey method) adopted for this study, and a discussion of the benefits and limitations for each of the three research techniques (i.e., mail questionnaire, telephone interview and face-to-face interview) related to the adopted research method. Then the research techniques are determined in accordance with the research objectives of this study. The specific operational processes for the adopted research method and techniques are correspondingly described. From these, several conclusions can be drawn.

Firstly, the empirical works of this research mainly focus on gathering data about relevant respondents' or interviewees' subjective perceptions, beliefs and views on the key research issues, initial framework and identified important factors. It is the interpretivist approach that is adopted in this study because its epistemology is based

on the assumption that reality is constructed by the observer making sense out of the external events and data with which he presents, whereas the positivist approach is based on the assumption that the findings are true. In addition, both qualitative and quantitative approaches are used in the research, although the latter is primarily associated with positivist research. Specifically, quantitative approach should be used for the empirical investigation because the aim of the investigation requires that a wide range of SMEs in the United Kingdom should be targeted, and quantitative evidence, although based on subjective perceptions, could be collected. Qualitative approach is adopted for the evaluation of the initial framework and the verification of the important factors highlighted in the framework because the evaluation and the verification should focus on collecting respondents' comments on the framework and important factors, and try to understand their meanings and identify new issues as they emerge, and modify the framework or adjust the identified factors in accordance with the respondents' feedback and the new issues identified. In summary, this study should be based on an interpretivist rationale, and use both qualitative and quantitative approaches. This point provides a framework to select pertinent research methods and techniques for the study.

Secondly, based on the interpretivist rationale and the characteristics of both qualitative and quantitative approaches, through the comparative analysis on the advantages and disadvantages of the four research methods: explicatory method, case-study, survey and experimental method, the survey method is selected as a suitable method for this research because it can draw most of its data from the present, direct questions at relatively large groups of people who represent a larger population, and generalise conclusions more widely. In other words, the survey method is used for the empirical investigation, the evaluations on the initial framework and the identified important factors. Appropriate research techniques should thus be selected for the method to carry out these three tasks.

Thirdly, according to the first conclusion, the empirical investigation is suggested to use quantitative approach. Its quantitative evidence may be collected by either of the three techniques (i.e., mail questionnaire, telephone interview and face-to-face interview)) that the survey method mainly uses. On the basis of the comparative analysis of the strengths and weaknesses of the three techniques, a mail questionnaire was adopted because it is a cost effective technique in terms of the size and the geographical dispersion of the sample, and also feasible for a single researcher to conduct. The content of the questionnaire was therefore developed based on relevant literature. Then pilot test, formal mail questionnaire survey plus two follow-ups were carried out. The key findings were drawn from the statistical analysis on the raw data of the mail questionnaire survey. In order to have better understanding of the survey results, follow-up face-to-face interviews were carried out in accordance with the key findings.

Fourthly, face-to-face interviews for the qualitative purpose were adopted for the evaluation of the initial framework. This was because the framework is represented in Figure 3.13, which contains very rich context message, face-to-face explanation on it should be provided for the respondents, and their comments, opinions, doubts and even facial expressions should be captured so that the initial framework can be effectively refined or evaluated.

Fifthly, face-to-face interviews were also adopted for the evaluation of the identified important factors. The specific reasons were that the factors involve strategic issues related to inter-organisational KT that are very complicated, and difficult to understand without face-to-face communication.

Finally, through a comparative analysis on the strengths and weaknesses of the structured, semi-structured and unstructured interviews, the semi-structured interview was considered as a suitable type for these interviews. Therefore, an interview protocol was designed, and consisted of three parts. The questions in Parts

1, 2 and 3 were used for the validation of the key findings, the evaluations on the initial framework and the identified important factors respectively. 21 interviews were then carried out. NUD*IST 4 was utilised for the analysis of the qualitative data collected from the interviews.

In Chapter 5, the findings from the mail questionnaire survey and the results of the validation of the key findings will be triangulated and presented. The outcomes and conclusions for the evaluations on the initial framework and the identified important factors will be demonstrated in Chapters 6 and 7 respectively.

Chapter 5 SMEs' Inter-organisational KT Needs Analysis

5.1 Introduction

In Chapter 3, the key research issues for the empirical investigation on SMEs' inter-organisational KT needs were identified. In order to address these issues, Chapter 4 described how to determine pertinent research methods and techniques, design a questionnaire and administer a mail questionnaire survey that is limited in the service sector (See the reason at the footnote of Section 1.2, p.10).

In addition, in order to provide more reliable conclusions about SMEs' inter-organisational KT needs, the key findings of the survey are suggested to be further validated through face-to-face interview. According to Section 4.4, the validation of the key findings of the mail survey, as Part 1 of the interview (See Figure 5.1 (Copied from Figure 4.1)), consisted of 16 interviews (See the shaded area in Table 5.1) in the service sector, and experienced pilot, first and second round of interviews.

This chapter will present the statistical results and key findings of the mail questionnaire survey in the service sector; surface the support evidence collected from the face-to-face interviews; and triangulate the key findings and support evidence so as to provide more reliable conclusions and richer picture about SMEs' needs for inter-organisational KT in the service sector. This chapter begins with the discussion of the mail questionnaire survey results.

5.2 Mail Questionnaire Survey Results and Discussion

The mail survey was carried out in the service sector and collected 83 valid responses. The raw data were processed by means of SPSS. The following are the details of the survey results.

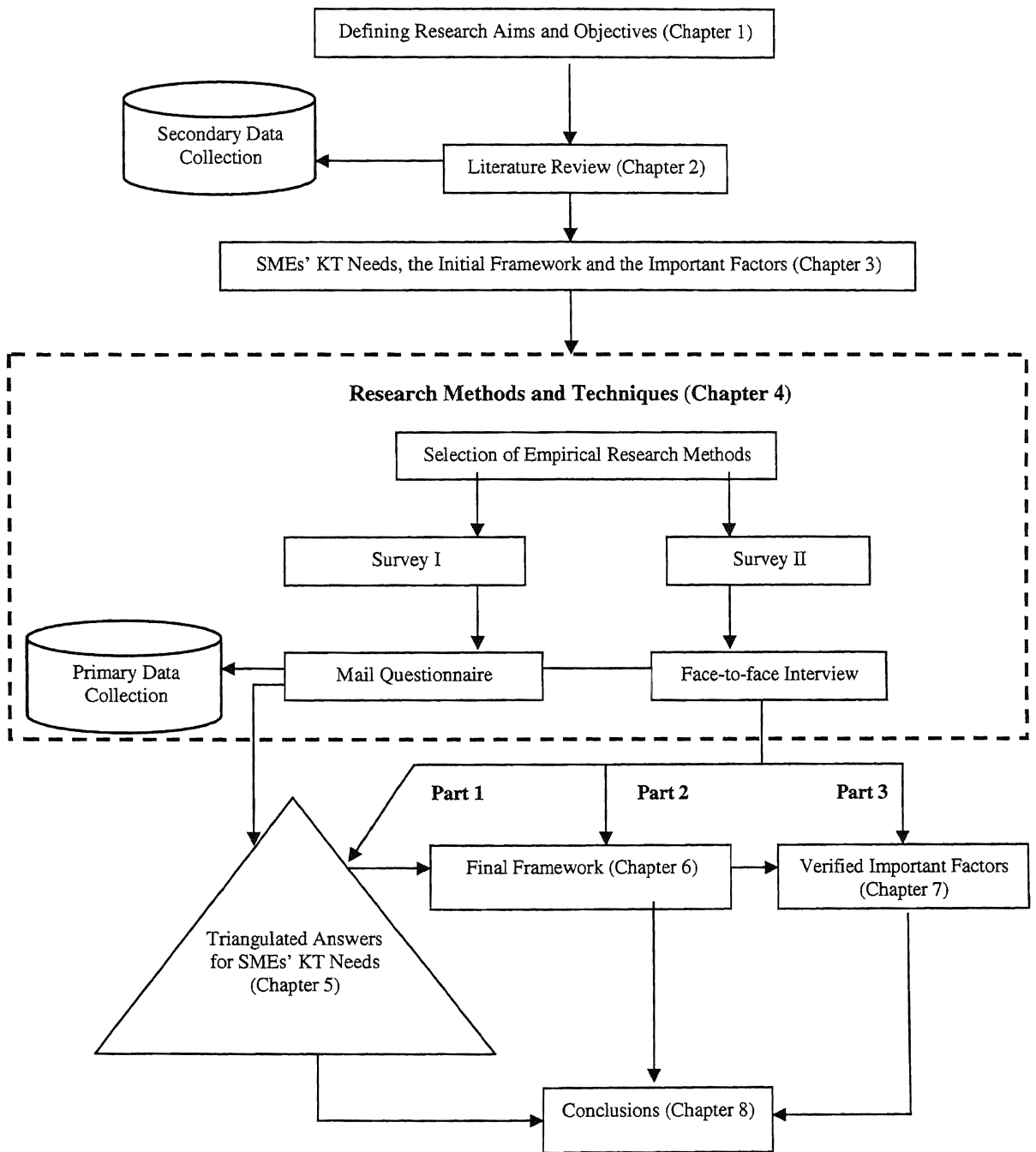


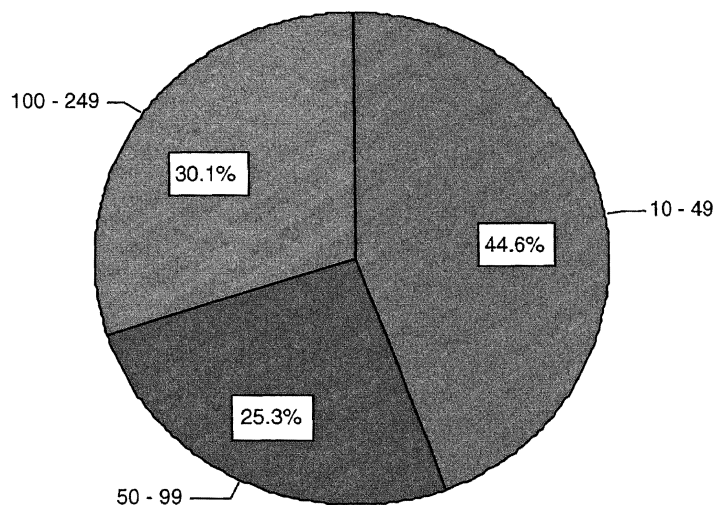
Figure 5.1 Key Steps for Conducting this Study

Table 5.1 The Interviews (i.e., the Shaded) for the Validation of the Key Findings of the Mail Survey

Interview Phase	Interviewee No	Specific Services or Products	Sector Categories	Employees No
Pilot	Interviewee 1	Retailing vacuums	Service	10
Pilot	Interviewee 2	Purely packaging	Non-service	26
Pilot	Interviewee 3	Sales of hygiene & laundry equipment	Service	245
Pilot	Interviewee 4	Consultancy on KM	Service	14
Pilot	Interviewee 5	Consultancy on communication & railways	Service	11
First Round	Interviewee 6	Sales on teaching materials & methods	Service	70
First Round	Interviewee 7	Developing trusts for communities	Service	37
First Round	Interviewee 8	Manufacturing tyres	Non-service	30
First Round	Interviewee 9	Distributing telecommunication products	Service	25
First Round	Interviewee 10	Materials processing & tooling	Non-service	45
First Round	Interviewee 11	Salvage service for insurance companies	Service	235
Second Round	Interviewee 12	IT consultancy & maintenance	Service	10
Second Round	Interviewee 13	Sport broker, advertising & clothing	Service	30
Second Round	Interviewee 14	Sales on newspapers, books & magazines	Service	10
Second Round	Interviewee 15	Manufacturing digital panel meters	Non-service	25
Second Round	Interviewee 16	A clothing shop	Service	23
Second Round	Interviewee 17	Processing metals	Non-service	238
Second Round	Interviewee 18	Language translation	Service	22
Second Round	Interviewee 19	Consultancy on nuclear risk management	Service	120
Second Round	Interviewee 20	International trade on chemical materials	Service	10
Second Round	Interviewee 21	Financial service	Service	240

5.2.1 Profile of Participant Companies and Respondents

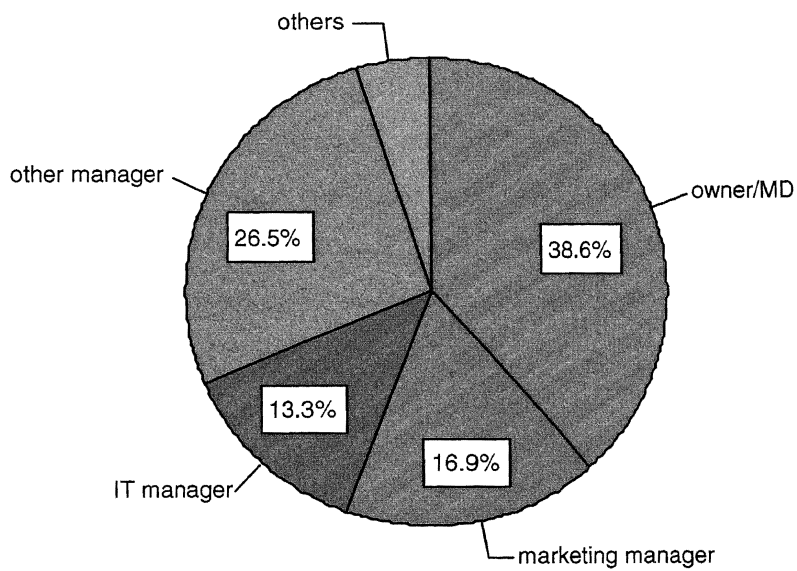
Figure 5.2 provides a profile of the companies participating in the survey. Of them, 44.6% are small businesses, 25.3% medium businesses that have between 50 and 99 employees and 30.1% medium businesses that have between 100 and 249 employees.



(N = 83)

Figure 5.2 Profile of Participant Companies

Figure 5.3 shows the respondents' position in their company. 38.6% are owners or managing directors, 30.2% marketing or IT managers, 26.5% other managers, and others 4.7%. So, the vast majority (95.3%) of them are senior staff.



(N = 83)

Figure 5.3 Profile of Respondents

5.2.2 The Importance of Relevant Knowledge for Participant Companies' Successes

The respondents were asked to judge the importance of adequate knowledge in the areas of “customers, competitors, suppliers, emerging market trends, own competencies/capabilities, own products/services, best practices/effective processes” to their companies' success. The result demonstrates that knowledge in all of the listed areas is very important or important, but the order of the priority is: customers, own products/services, own competencies/capabilities, best practices/effective processes, emerging market trends, competitors and suppliers (See Table 5.2). Of the identified areas, own product/services, own competencies and capabilities, and some of the best practices/effective processes belong to internal knowledge within the company, while the others belong to external knowledge in the sectors of the task environment. Knowledge about customers is the most important for all companies. This finding strongly supports the belief that external knowledge is of prime importance to SMEs (Sparrow, 2001).

Table 5.2 Perception on the Importance of Adequate Knowledge in the Relevant Areas

Relevant areas	Type of knowledge	Mean*	Std Dev.
Customers (n = 83)	external	4.84	0.45
Own product/services (n = 83)	internal	4.75	0.49
Own competencies and capabilities (n = 83)	internal	4.63	0.56
Best practices/effective processes (n = 82)	external/internal	4.40	0.56
Competitors (n = 83)	external	4.35	0.69
Emerging market trends (n = 82)	external	4.34	0.57
Suppliers (n = 83)	external	4.17	0.91

*Note: 1 = very unimportant; 2 = unimportant; 3 = indifferent; 4 = important; 5 = very important

Furthermore, knowledge of competitors is perceived to be more important than that of suppliers. Knowledge of emerging market trends and some of the best practices/processes are actually related to customers, competitors and suppliers. Therefore, the external knowledge of customers, competitors, suppliers, emerging

market trends and some best practices/effective processes are perceived as very important or important to SMEs.

Conclusions Drawn from the Foregoing Discussion

Adequate external knowledge in all of the areas of customers, competitors, suppliers, emerging market trends, and best practices/effective processes is perceived by respondents as very important or important to their companies' success. Of these, knowledge about customers is the most important. This finding strongly supports the argument that external knowledge is of prime importance to SMEs (Sparrow, 2001).

Supporting Evidence from the Interviews

Of the conclusions discussed, the key findings that knowledge about competitors and suppliers is very important, but knowledge about customers is the most important (even compared with the internal knowledge within SMEs) for SMEs, are further validated through the 16 interviews (See Table 5.1 in Section 5.2).

Although the key findings support the research argument about the importance of external knowledge to SMEs, they are still incomprehensible. The findings provide limited insight into important meanings associated with this argument and why managers believe certain types of external knowledge are more important than others. In order to identify these issues, 16 SME managers are asked, through face-to-face interview, to answer some open-ended questions. For instance, what is their perception on the importance of external knowledge about customers, suppliers or competitors? which external knowledge is more important? and why? The answers from the managers are analysed and summarised as follows.

All of the 16 interviewees believe that knowledge about competitors is very important because it can help them to benchmark their business practices and effectively develop their competitive strategies. The following are three examples:

“Obviously, knowledge about competitors is very important. You know, we have to have good understanding of the weaknesses and advantages of the competitors, then we could decide where the company heads, and what our [competitive] strategies are” (Interviewee 20).

“Yes, it's [knowledge about competitors] very important. We always want to find out what they've [competitors] done and what they're doing, and use them [knowledge about competitors] to update our knowledge and performance so that we are in line with the industry” (Interviewee 21).

“... we do watch their [competitors] web-sites regularly, as it is a way of drawing ideas and gaining information. The law changes regarding salvaging etc, etc. So it is always useful to know what your competitors are doing so that you can stay one step ahead of them” (Interviewee 11).

Knowledge about suppliers is also thought to be very important because the knowledge may help them to establish good relationship with the suppliers, which in turn helps them to provide better service to their customers. This point is supported by the following quotation:

“... what a big problem we may have, as a service company, is that, once we receive an order from a customer, we need to check whether we have this equipment in our warehouse. Sometimes we need some suppliers' help to timely meet customers' requirements. So the relationship with suppliers is also very important, we always develop relationships with our suppliers so that we can do our service better for customers” (Interviewee 3).

Interviewee 18 further argues that good relationships with suppliers should be maintained even if they may currently not be helpful, because they may provide help in the future. The following is the argument:

“Once a company has a problem, and wants a supplier's solution, usually, according to my experience, they generally want to see benefits from the relationship, because even if the supplier isn't helpful this time, may be helpful next time. The supplier also would like to offer good service for the partner because it wants to sell the solution to the partner. This is not a co-operation, but a commercial arrangement” (Interviewee 18).

One manager even stresses the ultimate importance of suppliers by saying that:

“When you’re running a company, the most important thing is not necessarily your customer, but your supplier because if you get a right product at right price, you can sell to anybody. If you don’t get a right product at right price, people will not buy it” (Interviewee 6).

However, the other 15 interviewees still consider that customers are the most important, good knowledge and understanding about customers is an extremely important premise for them to successfully meet their customers’ needs. Here are some comments:

“...if you haven’t had good understanding about your customers, have no good relationship with them, forget it, you wouldn’t exist” (Interviewee 18).

“...knowledge is important and gaining knowledge is also important, because if you don’t acquire knowledge from outside your own company then your company will never grow. So external knowledge, particularly related to customers, is very important” (Interviewee 7).

“Relationships with customers are extremely important. Customers always think they are king, we try to match their needs” (Interviewee 3).

“Customer relationship is very important. ... If you have strong relationship with your customers then it helps everybody. We have a good relationship with our customers [i.e., wholesale and retailers], where some of them will contact us and tell us of goods that are coming down in price in a few months time, be careful, don’t buy too much. Or they may tell us other valuable information or knowledge that we would be interested. All this helps our business, as we have inside knowledge of goods” (Interviewee 9).

Interviewee 5 even makes further comparison between the ‘voices’ from customers or suppliers and ‘internal people and processes’:

“We talk in terms of four voices in our organisation and another organisation: voice of customer, voice of supplier, stockholders and internal people and process. Voices of customers are obviously in terms of marketing. You need to know what the customer wants to know. You need to also understand what the customer would like to have in the short-middle term period, and predict what people we’re going to meet, and what problems they like to tackle. In terms of suppliers, it is also very important. Because in some industries, the supplier

shows potential trends and changes before the customer does because of their feedback chain. ... And stockholders are also important in terms of marketing too ... Internal people and processes are not quite so much" (Interviewee 5).

These results express the overall view that the external 'voices' are more important than the internal 'voices'; of them, the knowledge about customer is the most important. In order to gain this kind of knowledge, good relationships with customers should be developed and maintained, so customer relationship management is worthy of being stressed in SMEs. In a word, the interview discussions with managers confirm the key findings from the survey that external knowledge is of prime importance for SMEs, and help us to understand why managers believe so and the importance of customer relationship management for SMEs.

5.2.3 Serious Mistakes or Errors Made Because of Insufficient Knowledge

Table 5.3 indicates the participant companies' perceptions on the reasons for very costly errors or mistakes that they have made in the last five years. As many as 40.7% of the respondents admitted that their companies made very costly errors or mistakes because of insufficient knowledge about customers. The proportions for knowledge about suppliers, competitors and other organisations are 23.8%, 20.3% and 15.2% respectively. This implies that SMEs have knowledge gaps about customers, competitors, suppliers and other organisations, and thus have needs for KT from these organisations. The main attention should be focused on the customers.

Table 5.3 Types of Errors or Mistakes

Perception of very costly errors or mistakes for the following reasons:	Yes (%)	No (%)
Insufficient knowledge about customers (n=81)	40.7	59.3
Repeating same errors or mistakes (n=79)	36.7	63.3
Insufficient knowledge about suppliers (n=80)	23.8	76.2
Insufficient knowledge about competitors (n=79)	20.3	79.7
Insufficient knowledge about other organisations (n=79)	15.2	84.8

Conclusions Produced from this Analysis

Nearly half of participant SMEs (41%) have made costly errors or mistakes in the last five years because of inadequate knowledge about customers, and 37% of participant SMEs have repeated the same errors or mistakes. Therefore, there are large areas where SMEs can improve their abilities in acquiring adequate knowledge about their customers, and learning from their previous errors or mistakes.

Supporting Evidence from the Interviews

Among these conclusions, the key finding that nearly half of participant SMEs (41%) have made costly errors or mistakes in the last five years because of inadequate knowledge about customers, is validated through the interviews.

Though the finding reveals this issue is caused by SMEs' inadequate knowledge about customers, it is not possible to answer why this is the case and how this could be happened. The interviews conducted attempt to gain more in-depth knowledge about this issue. Twelve of the 16 interviewees answer this question. Of them, five indicate that their companies made serious mistakes or errors in the last five years because of insufficient knowledge about customers. Three of them are consultancy companies (Interviewees 4, 5 and 19), the others are a clothing shop (Interviewee 16) and an international trade company (Interviewee 20). The proportion (41.7%) for the mistake-makers to the total interviewed companies is very close to the result (40.7%) found in the survey. The reasons for the serious mistakes or errors made by the three consultancy companies are that they often find it very difficult to identify their customers' needs. "...*what the customer thought he wanted, is not actually what he needs*" (Interviewee 5); "... *if you say to people 'what do you want to know?' They don't know. Everybody knows what he doesn't want to know, or what he doesn't need to know. ...We have to educate the customers to understand what their needs are*" (Interviewee 4). The clothing shop also finds it very difficult to identify the customers' true needs. "...*you can get figures to show how many people shopping in certain shops, what sorts of things they are buying. But they do not*

always mean that your customers want that. So it is very difficult to decide what the right way is to go" (Interviewee 16). Further, the story of the trade company demonstrates that if a company doesn't have good knowledge about who is a right person to contact in a customer company, serious mistakes or errors might also occur.

"Several years ago, we began to sell a new chemical material to construction or manufacturing companies in an Asian country. After a period of time, we found that a competitor had much better performance than us although it started the business later [than us]. The reason is that, it is the technical managers [of the customer companies] who decide which material should be used. We didn't know this point, and conventionally contacted the customers' salespeople, but our competitor contacted the technical managers" (Interviewee 20).

Even if an employee has important information or knowledge about customers, but the senior manager is ignorant of it because of some problem in internal communication, or difficulty in the identification of the importance of knowledge, some serious mistake may still happen.

"Our company's knowledge sharing is a lot better than other consultancy companies, but I still think it's very poor to compare with its potential. ... I might give you one example. Last week, a colleague rang me and said that the Network Rail had a tender to 30 consultancy companies a week before to do a network rail which is called the SS Program. There were 48 rivals to apply for this huge tender. On Monday, three companies had been selected. ... But, actually, I went back to my e-mail three weeks before, and found that my colleague, who works in the railway, told me that the Network Rail will be going to put up a tender for the SS Program. And I had missed it. So, we are very frustrated by this at the moment. We are ineffective in communication, or ineffective in selecting a right channel to deliver important knowledge and information. Perhaps, I would have thought that I need to follow through with other people, and find out when this is going to happen, how this is going to happen. It put phenomenal pressure on individual consultants also to remember to tell me everything. However, how do you know what is important to communication, what is not important?" (Interviewee 5).

5.2.4 Participant Companies' Involvement in Inter-organisational KT Activities

Table 5.4 shows that the inter-organisational KT activities in which more than half of participant companies are already involved are: “send employees to relevant exhibitions/congresses” (82.9%), “use information from customers, suppliers, or other organisations to improve business performance” (75.6%), “establish strategy to obtain information from customers, suppliers, competitors and other organisations” (61.7%), “hire know-how from advisors or consultants” (59.3%), and “use information from competitors to improve business performance” (58.5%). The activities in which relatively fewer participant companies are involved are: “purchasing licenses” (17.3%), “learning through R&D contract” (17.9%), “learning through joint development agreement” (23.8%), “learning through joint ventures” (30.0%), and “send employees to universities or research institutes for further study” (30.5%). In total, 92.7% of participant companies have already been involved in at least one of the inter-organisational KT activities shown in Table 5.4.

Table 5.4 Participant Companies' Involvement in KT Activities

Relevant inter-organisational KT activities	Yes (%)	Need (%)	No-need (%)	Un-known (%)
Send employees to relevant exhibitions/congresses (n = 82)	82.9	6.1	9.8	1.2
Use information from customers, suppliers, or other organisations to improve your business performance (n = 82)	75.6	19.5	3.7	1.2
Establish strategy to obtain information from customers, suppliers, competitors and other organisations (n = 81)	61.7	27.2	6.2	4.9
Hire know-how from advisors or consultants (n = 81)	59.3	4.9	28.4	7.4
Use information from competitors to improve your business performance (n = 82)	58.5	20.7	12.2	8.5
Learning through customer-supplier partnership (n = 81)	46.9	17.3	27.2	8.6
Send employees to universities or research institutes for further study (n = 82)	30.5	8.5	42.7	18.3
Learning through joint ventures (n = 80)	30.0	11.3	37.5	21.3
Learning through joint development agreement (n = 80)	23.8	7.5	46.3	22.5
Learning through R&D contract (n = 78)	17.9	7.7	48.7	25.6
Purchase licence (n = 81)	17.3	2.5	50.6	29.6
SMEs that answered “Yes” to any of the above activities (n = 82)	92.7% (Responses: 76)			
SMEs that answered “Yes” or “Need” to any of the above activities (n = 82)	98.8% (Responses: 81)			

The activities in which the respondents perceive the greatest need to become involved are: “establish strategy to obtain information from customers, suppliers, competitors and other organisations” (27.2%), “use information from competitors to improve business performance” (20.7%), “use information from customers, suppliers, or other organisations to improve business performance” (19.5%), and “learning through customer-supplier partnership” (17.3%).

If the participant companies are already involved in an activity, they may be considered as having a need for that activity. Therefore, if the categories “Yes” and “Need” are combined, the companies have the greatest need for: “use information from customers, suppliers, or other organisations to improve business performance” (95.1%), “send employees to relevant exhibits/congresses” (89.0%), “establish strategy to obtain information from customers, suppliers, competitors and other organisations” (88.9%), “use information from competitors to improve business performance” (79.2%), “hire know-how from advisors or consultants” (64.2%), and “learning through customer-supplier partnership” (64.2%). Combining these results, 98.8% of the participant companies either already use, or have a need for some form of inter-organisational KT.

Conclusions Drawn from the Analysis

Nearly all SMEs surveyed (99%) state a need for some forms of inter-organisational KT, and 93% of them have already been involved in some inter-organisational KT activities. The majority of the SMEs (64%) have been involved in, or perceive a need for, learning through customer-supplier partnership.

Supporting Evidence from the Interviews

Of these conclusions, the key finding that more than 90% of participating SMEs have been involved in inter-organisational KT activities is further validated by the interviews.

The interview discussions support the key findings from the survey, but more importantly, they also shed light into why and how companies have been engaged in inter-organisational KT activities. All the interviewees admit that their companies have extensively involved in some inter-organisational KT activities, such as regular meeting with main customers (or suppliers), getting advice from friends or counterparts in other organisations and dealing with complaints. As we know, complaints “may always happen to all companies” (Interviewee 3). Specific KT processes for dealing with complaints may be seen through the following examples:

Dealing With Complaints

“There is always going to be some section of customers who are complaining about equipment quality, delivery time, service being carried out, etc. ... For example, if a customer complains about an equipment installation, a register will log on to the service department. An employee [maybe several] in the department will be sent to the customer. When the employee helps the customer sort out the problem, he comes back, and should fill the details in a report form, and input it into the computer service information system. ... When we have monthly manager meeting, the customer service director will itemise the reasons, the management will examine the number and reasons of the machine break-downs, and how quickly they were put back into action again. The relevant measures will be taken by the management to improve our business through different regions and divisions” (Interviewee 3).

“We have 8,000 customers. To get a good understanding of customers' complaints, we could ask 8,000 customers to fill in a questionnaire. In the questionnaire, we use some questions to ask them what they are thinking about the company, what they are viewing about the customer service. By the time we receive the questionnaires from the customers, it can take us a long time to go through the information to find out exactly which complaints are prior types. If 8,000 customers respond to the questionnaire, we have to sort them to A complaint, B complaint, C complaint, then use the results to improve our service to customers” (Interviewee 3).

Regular Meeting With Customers or Suppliers

“We have agreement with suppliers on regular meetings every month to exchange some information, marketing intelligence, know-how or problems about the vacuum product qualities. The meeting benefits both sides. The meeting has been normally attended by the managing directors from both sides” (Interviewee 1).

“We do have regular exchange visits, and regular contract up-dates to see if the contracts are working. Whether there are areas that need to be improved upon, and whether the customer has any problems. And if there are, to see if they can be sorted out and also to ask the customer if they have any suggestions on how to improve the service. So yes, [we have] regular up-date meetings. ...” (Interviewee 11).

Exchanging Knowledge or Information Through Private Social Networks

“It’s always there, and always happens. You have some friends, you may often meet them to exchange your opinions, experiences and ideas. Yes, it’s always there” (Interviewee 7).

“Yes, too much. They [employees] definitely do so. ... Before long, we found a clothing and shoe sponsor for a player. The sponsor is a great company. This work was done by one of my XX staff. He contacted the company through a lot of channels in USA, including his private channels, and finally reached a deal” (Interviewee 13).

The following quotes further demonstrate that SMEs have been involved in various kinds of inter-organisational KT activities, such as getting advice from consultancy companies, trading innovative ideas, delivering knowledge to customers, exchanging knowledge through conferences, workshops and exhibitions, conducting pilot market test with customers, co-operating with universities or other organisations, exchanging knowledge by means of business social networks, telephone and electronic networks, and even sharing knowledge with competitors.

Getting Advice from Consultancy Companies

“... we use some consultancy company to do market research for us. ... They spend months with us, can look at what we have done, and our customer data, and find out what kind of problems that customers regard in different market sectors, and help us to continue to develop our business in these sectors. They can tell us where is the best return to our effort” (Interviewee 3).

Trading Innovative Ideas

“One of our engineers developed an innovative idea on a new type of vacuum for cleaning the bottom of fish tanks. The knowledge of product improvement is highly valuable to suppliers. We negotiate with our supplier, and reach an agreement on transferring the innovation idea to the final product, which is as follows: if the manufacturing company uses the innovation idea to modify the

product, the modified product will only be sold by my company, not by other retail companies. Then, we gave the innovation idea to the manufacturing company” (Interviewee 1).

Delivering Knowledge to Customers

“My Company is a consultancy company, and so we exchange knowledge with the customers buying our knowledge. So, for instance, the customer might have a problem, then ask us what solutions we could come up with. We may come up with a document that will give them the solution. So they will be buying our knowledge” (Interviewee 19).

“... we have to educate them to understand their true needs. If we identified the needs, we've done the right job” (Interviewee 4).

“... Some client asks us to do employees' survey. They want knowledge about how their employees' feel. ... We start off with developing personalise questionnaire and get small focus groups together and find what the issues are. Then we develop a questionnaire that goes for all employees. After collecting the responded questionnaires from the employees, we analyse the results of the questionnaires. Then we form a focus group to get additional data based on about 3 or 4 key issues. ... then ... sitting with senior managers and telling them what the knowledge is, and develop an action plan with them to use the knowledge they have got” (Interviewee 5).

Exchanging Knowledge through Conferences, Workshops and Exhibitions

“... we have more than 270 members who are customers, ... we organise seminars, symposiums and conferences to exchange ideas, to tell them what is new, and to get information back from them ...” (Interviewee 7).

“There is a vacuum exhibition in Birmingham each year. We often go to there to acquire some information about new vacuum products and new cleaning products. This is also a measure to ensure the company will be kept informed with more updated information in the market” (Interviewee 1).

“Another way of exchanging knowledge is something called ‘working groups’. Each person in it is from a different company. It could be a working group on a specific project like ‘How to increase the width of the M25’ or a working group on ‘Air pollution’ which is a general topic. And they all share about how they try to overcome the problem and share information. A working group is an amazing way to relate between companies” (Interviewee 19).

Conducting Pilot Market Test with Customers

“... when we find new products, we will test them with certain customers, give the customers a certain period of time to test the market for us, to see what they think” (Interviewee 3).

Co-operating with Universities or Other Organisations

“We have co-operation with universities, academic organisations, companies. We have a knowledge centre as well. A lot of organisations join the centre as members” (Interviewee 4).

Exchanging Knowledge by Means of Business Social Networks

“... we [a clothing shop] are not big enough to negotiate terms. I'm a member of a buying group [a social network], they have a lot of independent members like myself. They'll negotiate with suppliers and get better terms for us because overall getting all those retailers together we have quite good buying power. ... they are a successful group, we mainly acquire marketing information or knowledge from them” (Interviewee 16).

Exchanging Knowledge through Telephone and Electronic Networks

“We exchange knowledge or information through telephone. Telephone is very convenient, ...” (Interviewee 9).

“Our service is multi-lingual translation. When our knowledge isn't sufficient, we learn by web-sites or from other organisations” (Interviewee 18).

“... we have a web-site, and have three big rooms in the site. The first room is that anyone can see. ... The second room is for the customers to access. They can access no confidential information or knowledge about their industry, and about things we learned here. And behind that room, there would be the third room only we can access” (Interviewee 5).

Some Companies even Share Knowledge with their Competitors

“Sometimes, we found that some competitors are very strong in some areas, and we are not so strong in these areas, we would suggest the clients use both of us, so that the clients would get better jobs. We do co-operate with some competitors. So, sometimes, I would [have] no doubt if I talk to my competitors, they share strategies with me, I share strategies with them. I would [have] no doubt [that] there are more chances for both of us to get more jobs” (Interviewee 5).

“Broadening the question, I always have communications with other people doing the same thing as myself for exchange of knowledge, and also with suppliers” (Interviewee 12).

Based on these examples, a conclusion can be drawn that the interview results absolutely support the survey finding that inter-organisational KT activities exist in each one of SMEs.

5.2.5 Importance of Both Social and Electronic Networks for Participant Companies

Table 5.5 shows that, on average, each of the participating SMEs belongs to 2.7 business associations. However, the standard deviation is very high, which shows that the number of associations in which the SMEs are involved varies considerably.

Table 5.5 The Number of Business Associations that Each of the Participant Companies has Joined

	Mean	Std Dev.	N
The number of business associations that each of the companies has joined	2.7	3.35	73

59 respondents listed the names of the most important business associations for their companies, while fifty-eight of them (one missing case) assessed the effectiveness of acquiring knowledge through their most important business associations. Most of them (86.2%) think that they are effective in acquiring knowledge through this social network. However, of these, only 32.6% (See Table 5.6) have their own electronic networks.

Respondents were also asked to judge the effectiveness of electronic networks in supporting their business associations. The findings (Table 5.6) show that 78.6% of the respondents believed the electronic networks were effective in supporting their companies' business associations. However, it should be noted that this conclusion is based on a small sample size ($n = 14$).

Table 5.6 The Participant Companies' Perceptions about Networks

Relevant questions	Yes (%)	No (%)
Does your most important business association have its own electronic network (n = 43)?	32.6	67.4
Is your most important business association effectively supported by its own electronic network (n = 14)?	78.6	21.4
Does your company have its own extranet (n = 81)?	19.8	80.2
Could your company access other companies' extranets (n = 80)?	35.0	65.0
Do you think social networks are important for your company to obtain the needed knowledge (n = 75)?	88.0	12.0
Do you think electronic networks are important for your company to obtain the needed knowledge (n = 78)?	80.8	19.2

Extranets are a common form of electronic network for exchanging knowledge with other companies. However, the findings (See Table 5.6) from the survey show relatively little use of them by the participating SMEs. Only 19.8% of the SMEs have their own extranets, while 35% can access the extranets of other companies.

Over 80% of the respondents (See Table 5.6) think that both social and electronic networks are important channels for their companies to obtain the needed knowledge. However, social networks (88.6%) seem to be slightly preferred to electronic networks (80.8%).

Conclusions Produced from the Discussion

Both social networks and electronic networks are considered by the respondents (88% and 81% respectively) to be important channels for their companies to acquire the needed knowledge. A major proportion of the participant companies' most important business associations are effective in helping the companies to acquire knowledge, but only 33% of these are supported by their own electronic networks.

There is a large gap between the participating SMEs' perceptions of the importance of electronic networks, and their actual use of them.

Supporting Evidence from the Interviews

Among the conclusions, the key finding that both social networks and electronic networks are considered by the respondents (88% and 81% respectively) to be important channels for their companies to acquire the needed knowledge, is evaluated by the interviews.

The interviews with managers provided opportunities for them to elaborate their options on this issue. Twelve of the 16 interviewees answered the relevant questions. Of them, two (Interviewees 16 and 7) did not think that electronic networks were so important for them to get the needed knowledge. However, the others supported this point. An example is presented as follows:

“Yes, [electronic networks are] very useful. That's the key. That's very important. You know, our business is for the translation service. It's been totally transformed because of the Internet and e-mail. We started 20 years ago, there was only old fax machine. No email, no web-site, nothing, totally different business. Now our communication manner is changed, we use them [the Internet and e-mail] for communication around the world. We also developed a web-site so that customers can put their translation on our web-site, thus we can download from our web-site. And translators can get information about the jobs from web-sites. It is definitely important to keep the technology” (Interviewee 18).

But only two of them (Interviewees 18 and 11) can acquire knowledge through extranets. Eight mainly use the Internet to acquire knowledge because their business partners don't have or authorise them to access the extranets. Please see the following quotes:

“The idea of using extranet was actually proposed by a major customer. The company adopted the idea and it was proved to be very effective way of sharing and transferring information and knowledge” (Interviewee 11).

“We’re a small business and have no extranet, and cannot access the partner’s extranet as well” (Interviewee 1).

More and more businesses are believed to be about to use the extranets and so on. So there is great potential space for SMEs to further make use of other electronic networks although they are so proud of their performance in the Internet:

“One of the great things now is the Internet, it is fantastic for finding information. To get knowledge, one of the first things that I tend to do is to jump onto the Internet” (Interviewee 19).

Almost all the interviewees think that social networks are very important channels for them to acquire their needed knowledge. However, some of them admit that they are very busy and have no time to join some activities organised by some general social networks, such as industrial associations or business links. Here is an example:

“We use chamber of commerce for advises. We are so busy here, ... We tend to be independent on our own. In the industry we found it [i.e., Business Link] is too bureaucratic. We sent two girls and me to attend a course. We found it a very long day and not very fruitful. In the end we tend to do our own work” (Interviewee 18).

They are obviously more keen to join or establish the social networks that are very close to their businesses, such as the networks with key customers or buying groups.

“The buying group is very important for us, they have strong power and good negotiation skills, and can get better terms for us in trading with the suppliers. Without them [the buying group], it’s very difficult for us to get what we want [from the suppliers] because we don’t have such strong power as the buying group. So, the most important link to us is the buying group” (Interviewee 16).

Some interviewees (Interviewees 4, 5 and 20) argue that some very important knowledge is more likely to get through social networks than electronic networks. For example, to address the previously-mentioned serious mistakes or errors and identify the customers’ true needs, a feasible solution is that the companies should establish good relationships with their customers and iteratively clarify the needs

through intensive negotiation and communication. The key knowledge about the right person in Interviewee 20's story is also acquired through personal social networks. So, the social networks seem to be preferable by the interviewees to the electronic networks. These findings are closely correspondent to the conclusions drawn from the survey.

5.2.6 Effectiveness in Leveraging Knowledge in Participant Companies

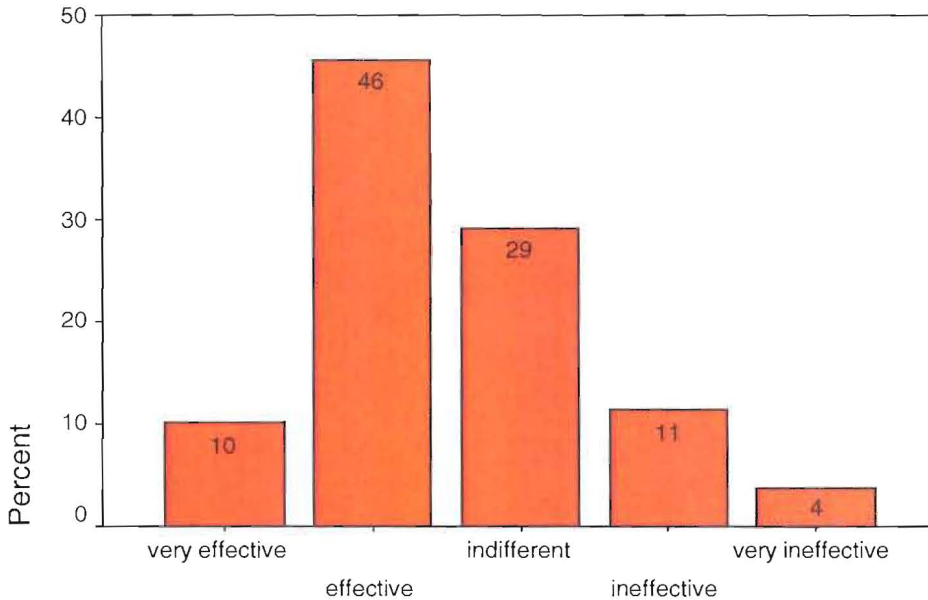
The respondents were asked to judge whether their companies could leverage external knowledge to get their intended improvement on business performance. Figure 5.4 shows that only 56% of the 83 respondents believed that their companies were very effective or effective in leveraging knowledge from other companies to improve business performance. As shown in Table 5.3, 36.7% of the respondents believe their companies made very costly errors or mistakes in the last five years because of repeating the same errors or mistakes. Taking this into consideration, it means that the participant companies should improve not only their ability for successfully converting the acquired external knowledge into their own organisations, but also the ability to learn from errors or mistakes.

Conclusions Drawn from the Discussion

Only 56% of the respondents believe that their companies are very effective or effective in leveraging knowledge from other organisations to improve their business performance. Therefore, there is an opportunity for the participant companies to improve their abilities for acquiring external knowledge, and successfully converting the knowledge to their own organisations.

Supporting Evidence from the Interviews

The key finding that only 56% of the 83 respondents believe that their companies are very effective or effective in leveraging knowledge from other organisations to improve their business performance, is further explored during interviews.



(N = 79)

Figure 5.4 Effectiveness in Leveraging Knowledge

Fourteen of the 16 interviewees answered the relevant questions. Of them, half considered that their companies had been effective or very effective in leveraging external knowledge to improve their businesses. However, the other half didn't think so. This proportion (i.e., 50%) is very close to the proportion (i.e., 56%) found by the survey. There are various kinds of reasons for their ineffectiveness in leveraging external knowledge. For example, external knowledge, especially important knowledge, is difficult to acquire (Interviewees 7, 9 and 18); feedback from business

partners may take a long time (Interviewee 7); some companies (Interviewees 4 and 5) don't know what they really want, so their knowledge gaps are very difficult to identify; key employees (Interviewee 12) have no motivation to learn from business partners, or key employees switch to other companies once they have acquired the needed knowledge (Interviewees 12 and 18); some important information or knowledge sharing between individuals is unsuccessful because of ineffectiveness in internal communication or mistakes in selecting a right communication channel, or the importance of the knowledge is difficult to identify (Interviewee 5). Some companies (Interviewees 5 and 16) even lack experience or ability in applying acquired knowledge into practices. Here are such examples:

External Knowledge, Especially Important Knowledge, is Difficult to Acquire

“Sometimes it is not easy to acquire knowledge, because nobody knows. And sometimes they won't tell you. Sometimes they won't be allowed to tell you. You can sometimes get the knowledge but at other times you can't. It depends. If the knowledge will help to improve business in both ways then they will sometimes give you knowledge. They will do cost analysis, benefit analysis, and make balance between the benefits and costs, then decide the knowledge is given or not” (Interviewee 9).

“... companies would like to keep critical knowledge, key trade secrets for themselves, and not sharing those with others, otherwise, their market place will be damaged. ... so it's always reluctant to give too much knowledge which could prevent the need of current commercial relations” (Interviewee 18).

“It all depends on the content of the knowledge. The more critical the knowledge, the more I would worry about that knowledge getting outside our own company” (Interviewee 7).

Feedback from Business Partners May Take a Long Time

“It's [successful KT] not so easy. Because what happens is [that] our seminars and symposiums are spaced between a year. And when things aren't working out the way a member expected them to, we wouldn't get the feedback until a survey has been sent out. Maybe about six months, and a lot of damage could have been done during that time” (Interviewee 7).

Some Companies Don't Know What They Really Want, So Their Knowledge Gaps are Very Difficult to Identify

"... if you say to people 'what do you want to know?' They don't know. Everybody knows what they don't want to know, or what they don't need to know" (Interviewee 4).

"Three or two complicated problems are that, what the customer thought he wanted, is not actually what he needs, ..." (Interviewee 5).

Employees Have no Motivation to Learn from Business Partners

"The smaller customers will very often have no interest in the computer and are paying me to look after it. So when I give them advice to their problems, they don't necessarily bother to remember it as they will think, 'oh, I'll just call him to fix it if anything goes wrong.' ... It has to hurt them before they take notice of any advice that has been given to them" (Interviewee 12).

Turnover of Staff or Key Employees Switch to Other Companies Once They Have Acquired the Needed Knowledge

"IT policy and the way that they [small customers] use the machines, you have to constantly reinforce it due to turnover of staff. Sometimes management are slow to emphasis staff of such, so you have to keep reminding them of things like visiting illegal sites, making sure they remember to back up their work, and so on" (Interviewee 12).

"Some employees were arranged to get knowledge or expertise from other companies, but they might not work for their own companies once they got the needed knowledge. ... This is the problem that I just mentioned. It is related to trust. In my experiences, it happens in small businesses quite often. For example, a key employee here developed good relationship with one of the customers, then left with the customer. It quite often happens" (Interviewee 18).

Some Important Information or Knowledge Sharing Between Individuals are Unsuccessful Because of Ineffectiveness in Internal Communication or Mistakes in Selecting a Suitable Communication Channel or the Importance of the Knowledge is Difficult to Identify

"Our company's knowledge sharing is a lot better that other consultancy companies, but I still think it's very poor to compare with its potential. ... We are ineffective in communication, or ineffective in selecting a right channel to deliver important knowledge and information. ... However, how do you know what is important to communication, what is not important?" (Interviewee 5).

Some Companies even Lack Experiences or Abilities for Applying Acquired Knowledge into Practices

“Information or knowledge is there, but it is not always easy to put it into practise. ... it is very difficult to decide what the right way is to go” (Interviewee 16).

“... the fundamental problem with the knowledge transfer is that knowledge transfer between some organisations and consultancy comes in the form of a huge report, so they would be presented in written form either on paper or on electronic format. Even if the report was given to you, you are never going to use it because it is too big, too difficult” (Interviewee 5).

5.3 Chapter Summary

This chapter attempts to investigate inter-organisational KT needs in SMEs by conducting a mail questionnaire survey and some company interviews. The mail survey offers valuable insight into SMEs' current inter-organisational KT situations, and their managers' perceptions on various issues related to the KT in the service sector. Key findings emerged from the survey are further validated and elaborated through the semi-structured face-to-face interviews. By adopting this triangulation methodology, it is believed that the key findings and interview results have been triangulated and strengthened, and thus can provide a more reliable understanding and knowledge on SMEs' inter-organisational KT needs and practices in the service sector.

The empirical evidence from this research confirms the general belief that external knowledge is of prime importance to SMEs (Sparrow, 2001). The customers may have the greatest influence on SMEs, thus knowledge about the customers is perceived as most important. In order to gain this kind of knowledge, good relationships with customers should be developed and maintained, so it is evident that SMEs also need to develop and maintain good customer relationship management.

Nearly all SMEs (99%) demonstrate a need for some forms of inter-organisational KT. They have extensively involved in some activities, such as regular meeting with main customers (or suppliers), getting advice from friends or counterparts in other organisations, and dealing with complaints. Some of them even share knowledge with competitors. These activities are important routes for SMEs' inter-organisational KT, but their effectiveness still needs further investigations.

As nearly half of SMEs have made costly errors or mistakes because of inadequate knowledge about customers, raising awareness about this problem, identifying reasons and learning from previous mistakes need to be addressed by managers. The important reasons for causing the errors or mistakes are that the customers' needs are very difficult to identify, internal communication is ineffective or the importance of knowledge is difficult to identify, and the right knowledge about doing businesses with the customers is insufficient. To address these problems, effective engagement in social networks seems to be preferable to the electronic networks.

Social and electronic networks are both important channels for SMEs to acquire the needed external knowledge. The companies are obviously keen to join or establish the social networks that are very close to their businesses, such as the networks with key customers or buying groups. Most of the SMEs use the Internet to acquire knowledge, but there is greater potential for them to use other forms of electronic networks, such as online communities, Intranet, and extranets.

The empirical evidence reveals that only 56% of SMEs believe that they are very effective or effective in leveraging knowledge from other organisations to improve their business performance. Some important reasons have been identified. These includes that knowledge gaps are very difficult to identify; key employees have no motivation to learn from business partners or switch to other companies once they acquire the needed knowledge; ineffectiveness in internal communication, or

mistakes in selecting a right communication channel, or difficulty in the identification of the importance of knowledge; and lack of experience or ability in applying acquired knowledge into practices. Insights into the causes for less effective knowledge leverage in SMEs calls for more research to address this important issue.

Although this empirical investigation is limited in the service sector, its findings still present a vivid picture about SMEs' needs and practices in inter-organisational KT, and thus provide very strong underpinnings for the development (or identification) and evaluation of the initial framework and the identified important factors for SMEs. Of course, if the investigation could also cover the non-service sectors, the picture would be fuller and more vivid. In the next chapter, the evaluation of the initial framework will be introduced. The evaluation of the identified important factors will be discussed in Chapter 7.

Chapter 6 Evaluation and Revision of the Initial Framework

6.1 Introduction

In Chapter 3, in order to help SMEs have a better understanding of the complexities and difficulties of inter-organisational KT, an initial framework (See Figure 6.1) was developed with the support of organisational learning, social networks and Szulanski's (2000) process view.

From Section 1.1.2, it is known that the framework development can theoretically contribute to knowledge even if external knowledge is not important for SMEs. In Chapter 5, the conclusions from the empirical investigation, although it is limited to the service sector, confirmed that external knowledge is indeed of prime importance for SMEs, and they have very strong needs for inter-organisational KT. This confirmation provides very strong empirical underpinning for the development of the initial framework. The framework would be of not only theoretical but also practical value if it could work as expected, and be accepted by SMEs. So the framework needs to be empirically evaluated through interviews with SME managers so that their perceptions or comments on the framework can be captured (See the reasons in Section 4.4.3).

This chapter aims to present the outcomes of the face-to-face interviews, show the revision process of the initial framework, and demonstrate whether the framework is really perceived by SME managers as helpful for their understanding of the inter-organisational KT process. According to Section 4.6, the evaluation of the framework, as Part 2 of the interview, consists of 21 interviews (See Table 6.1). The interviewees are selected from not only the service sector but also non-service sectors such as manufacturing (See Table 6.1) so that the evaluation results can be applicable to all SMEs, not just SMEs in the service sector. The evaluation focuses on the stages of the framework and their relationships (i.e., the connections or lines between the stages), and doesn't involve contextual issues such as organisational culture differences. It experiences pilot, first and second round of interviews

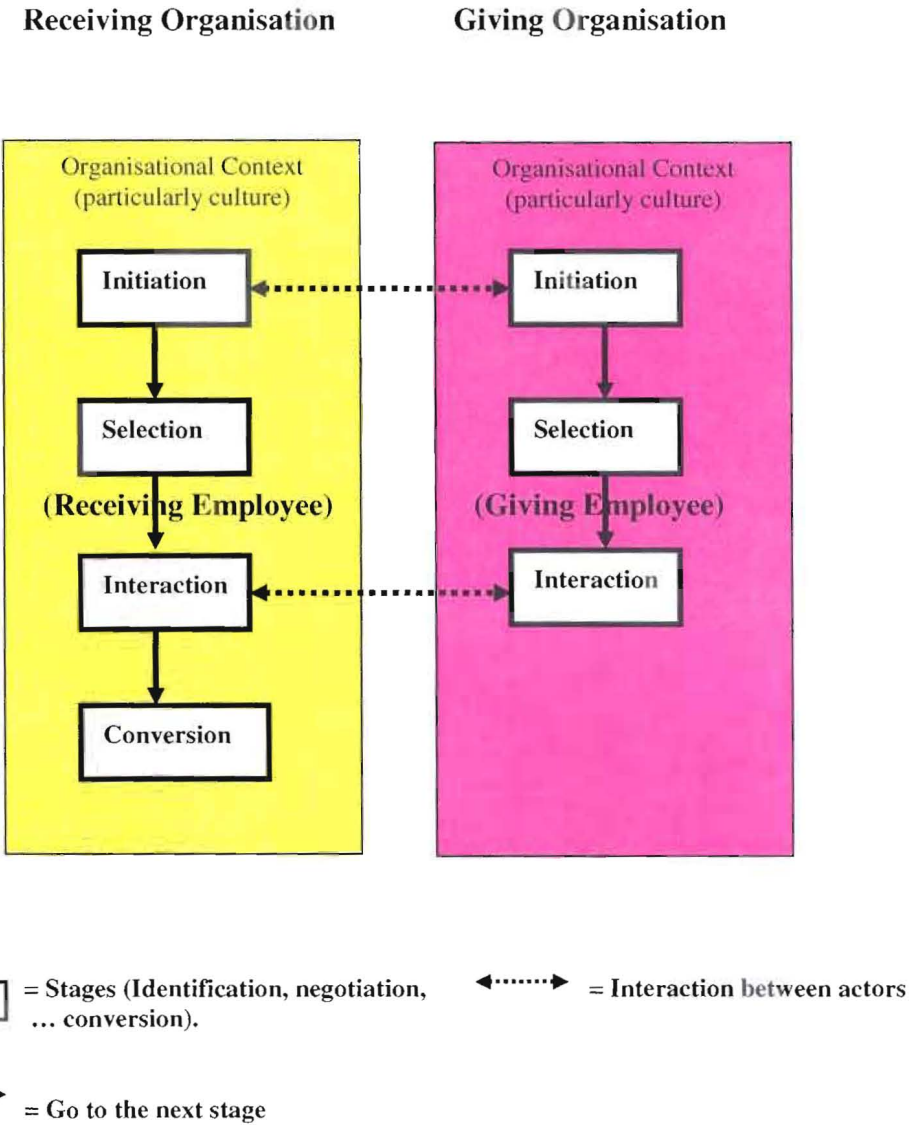
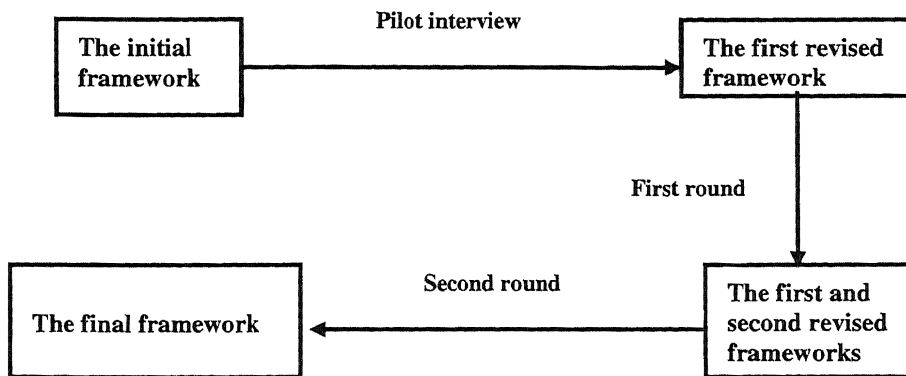


Figure 6.1 An Initial Framework for Management-authorized Inter-organisational KT (Copied from Figure 3.7)

Table 6.1 The Interviews for the Evaluation of the Initial Framework (Copied from Table 4.4)

Interview Phase	Interviewee No	Specific Services or Products	Sector Categories	Employees No
Pilot	Interviewee 1	Retailing vacuums	Service	10
Pilot	Interviewee 2	Purely packaging	Non-service	26
Pilot	Interviewee 3	Sales of hygiene & laundry equipment	Service	245
Pilot	Interviewee 4	Consultancy on KM	Service	14
Pilot	Interviewee 5	Consultancy on communication & railways	Service	11
First Round	Interviewee 6	Sales on teaching materials & methods	Service	70
First Round	Interviewee 7	Developing trusts for communities	Service	37
First Round	Interviewee 8	Manufacturing tyres	Non-service	30
First Round	Interviewee 9	Distributing telecommunication products	Service	25
First Round	Interviewee 10	Materials processing & tooling	Non-service	45
First Round	Interviewee 11	Salvage service for insurance companies	Service	235
Second Round	Interviewee 12	IT consultancy & maintenance	Service	10
Second Round	Interviewee 13	Sport broker, advertising & clothing	Service	30
Second Round	Interviewee 14	Sales on newspapers, books & magazines	Service	10
Second Round	Interviewee 15	Manufacturing digital panel meters	Non-service	25
Second Round	Interviewee 16	A clothing shop	Service	23
Second Round	Interviewee 17	Processing metals	Non-service	238
Second Round	Interviewee 18	Language translation	Service	22
Second Round	Interviewee 19	Consultancy on nuclear risk management	Service	120
Second Round	Interviewee 20	International trade on chemical materials	Service	10
Second Round	Interviewee 21	Financial service	Service	240



**Figure 6.2 The Evaluation Process of the Initial Framework
(Copied from Figure 4.2)**

(See the whole process of the evaluation in Figure 6.2). The details of the evaluation results will be presented round by round (including the pilot interviews) so that the revisions of the framework, in the relevant rounds, can be traced. The presentation begins from the pilot interviews.

6.2 Testing of the Initial Framework – Pilot Interviews

The pilot interviews aim to evaluate whether the initial framework is accepted by SMEs. Specifically, they focus on evaluating:

- whether the stages of the initial framework need to be modified, for example, some of them should be deleted, or more stages should be added to it;
- whether the relationships (i.e., lines) between the stages need to be modified, for instance, some straight lines should be deleted or changed.

The pilot consists of five interviews (See Table 6.1). The interviewees are asked to make comments on the framework on the basis of their companies' KT practices. Of them, three interviewees (i.e., Interviewees 1, 2 and 3) think that the framework is good, and does not need to be revised, or just a little modification.

"I think the framework is very useful. In small companies, they do need someone to exchange some information, marketing intelligence, trade secret and know-how with other companies" (Interviewee 1).

"It is good to use the framework to summarise the knowledge transfer process" (Interviewee 2).

"This framework is fine, and doesn't need some modification or correction. It works internally and externally. Because, on one hand, it can be used for a company to externally exchange information or knowledge with another company; on the other hand, for the receiving company, the receiving employee may report the acquired information or knowledge back to management to improve business. For the giving company, the management could find more knowledge, experience or information internally within all of the organisation, and provide it to the receiving company if necessary. This model could be worked on developing a new service sector within a company" (Interviewee 3).

However, Interviewees 4 and 5 think that the framework needs to be further revised.

"I think this work is perfect, absolutely fine, but another stage 'identification' needs to be added at the top of the model. Because in the stage 'initiation' of your model, the receiving company should identify its needs, you must put it as part of your process. I think you should put the 'identify needs' as another stage. Because once the needs are identified by the receiver, it then decides whether or how to acquire the information or knowledge. When it then gives the information across to the giver, the giver should clarify back again. They understand the needs properly. It so properly goes on before it goes into this [negotiation]" (Interviewee 4).

"What is nervous is the straight lines in the flow chart. Because when you get to my age, you'll realise that nothing is on the straight line, everything is circular. In the initiation stage, actually, it happens in iteration, ... I just give you an example to opposite your straight line. There is a company that touches the railway, and provides engineering products to the railway industry. They have been told by a large company that engages them in the railway industry.

They have to become a Six Sigma company. The Six Sigma is a methodology developed by Motorola, and is something scary and costs a lot of money. So, when they come to this point, they asked us how to acquire the knowledge or information. We help them to find their needs and expertise iterative and increasingly” (Interviewee 5).

“At the selection stage, sometimes, the employee selection in the receiving company may also have the giving company’s involvement. For example, a bank implemented a project, and asked us to offer some training to their employees that would be involved in the project. The bank decided that each employee had to have a minimum level of knowledge. So they had to have knowledge about evaluation, co-operation, problem-solving, and specific process control. At certain subject areas, each employee had to have its knowledge all. So, they came to us to check what information or knowledge we could give to them. Then, based on that, they selected all of their employees actually” (Interviewee 5).

“At the conversion stage, it may still need the giving company’s involvement. I give you a simpler example. Some client asks us to do an employees’ survey. They want knowledge about how their employees’ feel. We would select a consultant to work with one or two people in that organisation. we analyse the results of the questionnaires. Then we form a focus group to get additional data based on about 3 or 4 key issues. We know that if we give them the knowledge on paper or electronic format, nothing ever happen because they don’t know what to do with that, so we involve the conversion stage apart from the initiation of the project. The knowledge share must end with sitting with senior managers and telling them what the knowledge is, then develop an action plan with them to use the knowledge they have got” (Interviewee 5).

It seems that the interviewees have two different opinions on the framework. The reasons that cause the different responses may be as follows. The companies in which Interviewees 4 and 5 work are two consultancy companies. The KT processes between them and their customers normally last a long time and are much more complicated. The content of the transferred knowledge is much richer and more complex; the receiving company doesn’t even know its specific needs and how the acquired knowledge can be used. Its KT is very difficult to be successfully achieved. These points can be seen from the following quotations:

“... The next thing is to meet these people to understand more about their needs, ... We held workshops as well, because ... if you say to people ‘what do you want to know?’ They don’t know. Everybody knows what they don’t want to know, or what they don’t need to know. ... We have to educate the customers to understand what their needs are” (Interviewee 4).

“If we called customers to the first meeting, everything is really urgent, ... I can tell you that, my data that I collected, tells me that the shortest time between the first meeting and the delivery of first consultancy is 10 to 12 weeks. The longest time for us is 19 months. Three or two complicated problems are that, what the customer thought he wanted, is not actually what he needs, so, in the negotiation between his perceived needs and our expertise, both sides need to find what the value to the organisation or someone else is” (Interviewee 5).

“At the conversion stage, the fundamental problem with the knowledge transfer is that knowledge transfer between some organisations and consultancy comes in the form of a huge report, so they would be presented in written form either on paper or on electronic format. Even if the report was given to you, you are never going to use it because it is too big, too difficult” (Interviewee 5).

Based on these points, it is known that the receiving companies need much more help from the consultancy companies, both of them need to iteratively contact each other at every stage. Therefore, they oppose the straight lines in the framework.

However, the companies in which Interviewees 1, 2 and 3 work normally involve exchanging some ideas (Interviewee 1), advice (Interviewees 1, 3) or knowledge (Interviewee 2) with their suppliers (or customers). They clearly understand what they want; their KT process does not last so long and the content of the transferred knowledge is not so complicated. So, they do not oppose the straight lines in the framework.

According to this analysis, some conclusions or modifications can be summarised as follows.

Firstly, although the interviewees have different opinions on the specific progress route of each stage, they seemingly don't disagree with the division of the stages for the KT process, except that Interviewee 4 suggests that the initiation stage should be divided into two stages (i.e., identification and negotiation). It is thus concluded that the division of the stages is roughly accepted by the interviewees.

Secondly, Interviewee 5 believes that the KT between organisations progresses in circles, not straight lines, which coincides with an argument “... organisational learning and co-operation between companies can be seen as non-linear and dynamic processes that interact” (Rodriguez *et al.*, 2003, p.138). So, Interviewee 5's belief cannot be ignored.

Finally, on the basis of these conclusions, and also because this research aims to stand at a higher level to generally draw the stages for management-authorised knowledge exchange between a SME and its customer (or supplier), the initial framework should be revised so that it can cover the KT processes that happened in different situations. Its specific modifications are suggested as follows (See the first revised framework in Figure 6.3):

- In order to emphasise the important role of the identification of the needs, the initiation stage is divided into two stages: identification and negotiation.
- Several feedback loops are added to the relevant stages so that iteration and increment at each stage can be reflected.

The first revised framework (See Figure 6.3) not only identifies the important stages of the inter-organisational KT process, but also shows the dynamic interactions between relevant organisations. More importantly, the framework emphasises the

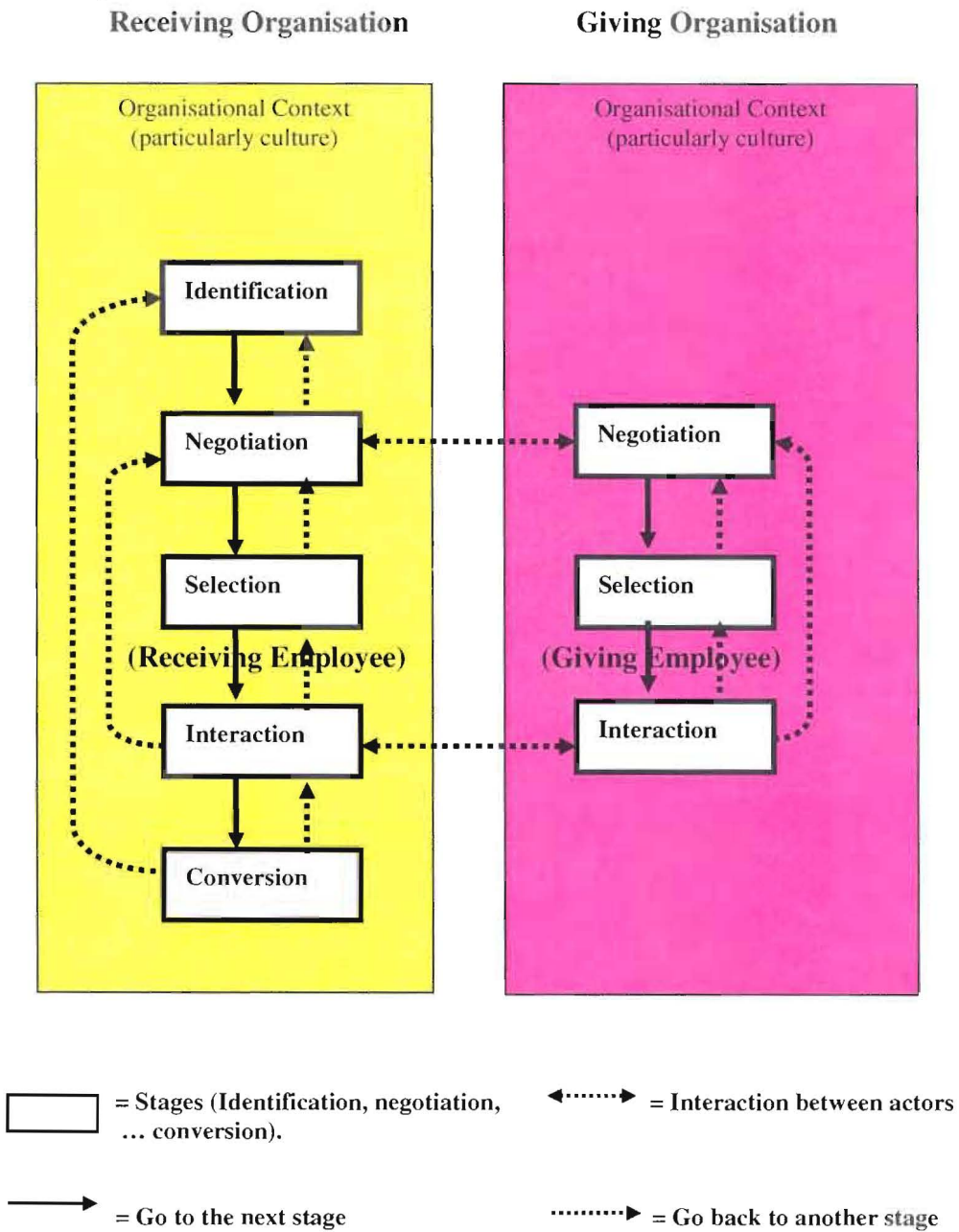


Figure 6.3 The First Revised Framework

repetitive nature of the process among stages and demonstrates the necessity of iterative loops between some stages. The transfer process may, sometimes, not simply progress in the stage sequence, but in iterative loops, as it may be necessary to go back to the previous stage. For example, once the receiving organisation initially identifies its needs for acquiring external knowledge, and the external knowledge source (i.e., the giving organisation), the former will negotiate or discuss with the latter to further clarify what it exactly wants. Sometimes, the needs initially identified by the receiving organisation may be found to be inaccurate, thus it is necessary for the receiving organisation to go back to the identification stage to further clarify its needs. Then it will negotiate or discuss with the giving organisation again. This process may carry on until the needs of the receiving organisation are correctly identified. Although the selection of a receiving employee is the receiving organisation's internal affair, sometimes, the receiving organisation may inform or consult the giving organisation about its arrangement of the receiving employee. So there is a feedback loop that goes from the selection stage to the negotiation stage until the receiving employee is finally selected. Further, the transfer process in the receiving organisation may also have iterative loops during its interaction with the giving organisation. Similar things may happen to the giving organisation as well.

At the conversion stage, the receiving employee will apply the acquired knowledge to the receiving organisation's business. The receiving employee may still need the giving employee's help because he may not fully understand the acquired knowledge or not fully absorb the knowledge needed for the application. This will initiate a feedback loop from the conversion stage to the interaction stage, then back to the conversion stage again. Furthermore, different organisations have different environments; the application of the knowledge in the new environment may trigger some new problems, which may cause the receiving organisation to identify its new needs for knowledge acquisition. Some of them may be internally met in the

conversion stage. Some of them may cause the receiving organisation to seek a new external knowledge source and begin a new round of inter-organisational KT. Therefore, there is a backward loop from the conversion stage to the identification stage.

The revised framework vividly reflects the complexity, difficulty and dynamics of the inter-organisational KT, and seems to be rather perfect. However, it needs to be further evaluated to see whether it really reflects the KT practices and is applicable for SMEs. This evaluation will be carried out in the following round of interviews.

6.3 Verification of 1st Revised Framework – 1st Round of Interviews

Is the first revised framework acceptable for SMEs? In order to get an answer for this question, a new round of interviews, i.e., the first round of interviews, is required. Similarly, this round still focuses on evaluating whether the stages of the first revised framework and their relationships need to be further modified. The round consists of six interviews (See Table 6.1). The interviewees' responses are summarised as follows.

Of the six interviewees, five (i.e., Interviewees 6, 7, 8, 9 and 11) give very positive responses to the revised framework, and think that the framework does reflect their companies' inter-organisational KT practices, and doesn't need to be further revised. For example:

“It's excellent. I like it very much. Because every knowledge transfer starts from a knowledge gap, in this framework, you first identify the knowledge gap, this is absolutely right. What is it you want to know? What is it you need to know? What is it you've already known? You may have internal knowledge, if you have internal knowledge then you won't need all of that [the framework], you can go straight down. Sometimes you may not need to go outside to gain knowledge, someone you work with may know. Therefore, you need to identify the knowledge gap first to see if you need external

knowledge. Secondly, this framework looks like a flow chart in project management, [is] easy to understand, easy to remember. Further, the feedback loops between the stages exactly reflect the iterative and circulating characteristics of the knowledge transfer” (Interviewee 9).

“This more or less presents a typical transfer of ideas and knowledge between companies. Like a company that we work with, it deals with other organisations which we’re linked to. We work as partners. We contact their senior managers, and exchange ideas about a particular project. We identify what we need to do first. What will make it better? Can we work together? So we speak to them and we go in for this contract and we go in for it together. This would be the negotiation stage, we put our ideas together. ‘Ok, yes, we can work with you, we can provide you with our knowledge, etc.’ We also state that we have expertise here that we can provide them with. Then, there are people that are designated to carry out this function with the partner. So they both work together at the interaction stage of the project. They execute the project, at the end of the whole project we would like to have some feedback about our expertise from the partner, which we would like to incorporate into the company again, so that next time we would know what to do with this particular problem/project. ... The knowledge exchange between us does progress in circles. We often repeatedly clarify our needs, or explain of what we give to them. So, yes, it [the framework] works for our company” (Interviewee 7).

“This framework is fine, and doesn’t need some modification or correction. Based on my experience in my company, I think the major elements are reflected in the model” (Interviewee 6).

“It’s [framework] good. Yes, I can actually identify with that. I would say that this is quite a good representation of a full cycle” (Interviewee 11).

In contrast to the above strong supports for the revised framework, Interviewee 10, based on his experiences in small businesses, seems to prefer to have some modifications on the framework so that it is more suitable for small businesses. The following is his argument:

“Yes, there’s an identification of knowledge gap, that’s fine, because if you don’t have the gap, then you wouldn’t be talking to people, ... Obviously, it depends on the size of the company. Typically, that [framework] doesn’t work so much for the small companies that I’ve worked for, from what I’ve seen, the larger end of the medium size companies would go for that [first revised framework]. Generally what I am saying [is], the smaller the company, the more it is going to be informal. Towards the larger end of your medium-sized

company, the more it will be formalised, the more that you will find that this interaction between stages 3 and 4 will be happening. So, in a medium company, that [framework] would work, with a small company, you would need to cut it down a lot more. Specifically, the selection stage should be deleted, both the negotiation and interaction stages should be combined together into one stage” (Interviewee 10).

According to the comments of the majority of the interviewees, it can still be concluded that the first revised framework is applicable to SMEs, although Interviewee 10 doesn’t support it as strongly as the others. At least the framework is unanimously considered as being suitable for medium-sized companies, because even Interviewee 10 also believes that “the larger end of the medium-size companies would go for that [the first revised framework].” However, Interviewee 10’s opinions cannot be ignored. It is possible that the first revised framework may be applicable for both small and medium-sized companies, but more suitable for the latter, just as Interviewee 10 argues: “it depends on the size of the company”. In other words, its suitability changes as it is applied for different size companies. This point needs to be further evaluated.

Moreover, Interviewee 10’s specific suggestions on the modification of the framework (i.e., “Specifically, the selection stage should be deleted, both the negotiation and interaction stages should be combined together into one stage.”) coincide with Interviewee 9’s comments that, “sometimes, no bridge here [i.e., the interaction between receiving and giving employees]. The managers do not like that bridge, because if I have good relationship with a person, I may exchange more knowledge with him, if I trust you, I can tell you more. So, in this stage, once the employees have very good relationship, it’s hard for the managers to control, they don’t know what knowledge the employees have, what knowledge the employees will exchange. However, if they are busy and have to use the bridge, they would like to use employees they trust to do it. ...” (Interviewee 9). These arguments imply that there is another kind of KT form that needs to be considered. Based on these arguments and the first revised framework, another framework is developed and

named as the second revised framework (See Figure 6.4). This framework means that the management from both the receiving and giving companies would directly interact with each other, and doesn't go through the employee level. Once the needed knowledge is acquired, the receiving company's management would directly apply the knowledge in the conversion stage to improve their businesses. Interviewee 10 believes that the second revised framework is more suitable for small companies. This point also needs to be evaluated.

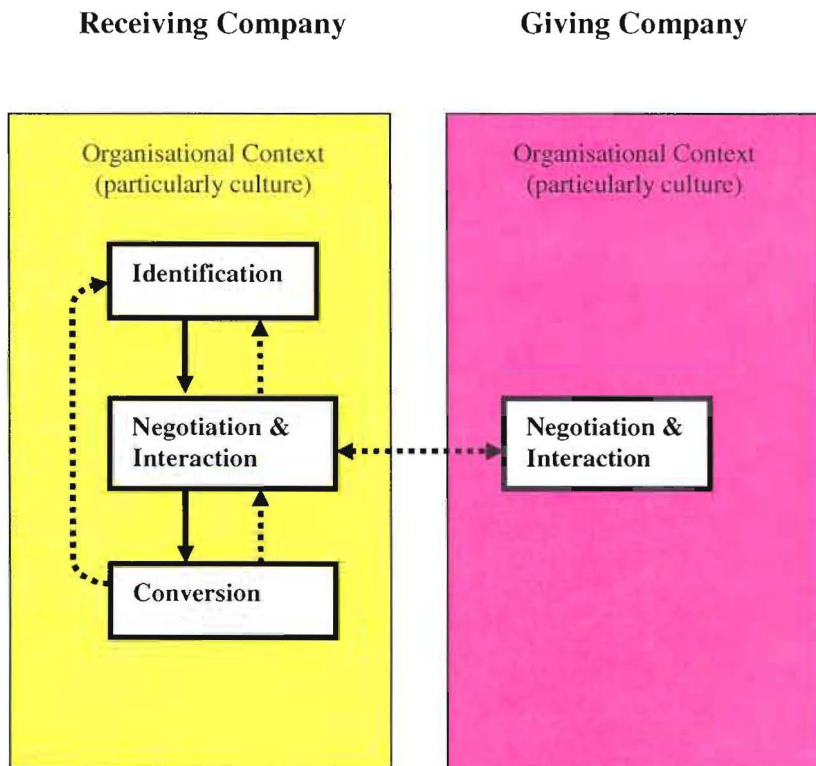


Figure 6.4 The Second Revised Framework

An important point that should be noted is that the second revised framework doesn't replace, but co-exists, with the first revised one, at least, at the current period. Furthermore, based on the analysis, the following conclusions about both frameworks can be summarised:

- The first revised framework seems to be applicable for both small and medium-sized companies, but more suitable for the latter. However, this belief needs to be further confirmed.
- Compared to the first revised framework, the second one is believed to be more suitable for small companies. This argument also needs to be empirically evaluated.
- The third point to be clarified is whether the second revised framework is also applicable for medium-sized companies.

To clarify these arguments, another round of interviews is needed.

6.4 Evaluation of Both 1st and 2nd Revised Frameworks – 2nd Round of Interviews

According to these points, the new round, i.e., the second round of interviews, aims to evaluate:

- whether the first revised framework is really applicable for both small and medium-sized companies, and even more suitable for the latter. If not, whether its stages and their relationships need to be modified;
- whether the second revised framework is acceptable for small, and even medium-sized companies. If so, which one it is more suitable for; if not, whether its stages and their relationships need to be further revised.

The second round consists of ten interviews (See Table 6.1). Of the ten interviewees, seven are from small companies, and the others are from medium companies. Among the interviewees (Interviewees 12, 13, 14, 15, 16, 18 and 20) who are from

small companies, Interviewee 13's comments are exactly in accordance with Interviewee 10's opinion: "it depends on the size of a company". He argues that, "I have two companies, one has 5 employees, the other one has 30 employees. To my experience, I think that both frameworks are acceptable for my companies. However, the bigger company may use the complex one a bit more, because it has more employees. It may have several departments, for instance, marketing department, business department, human resource department, administrative office, so the boss doesn't need to do specific work, and has more chances to select employees to do the job. But for the smaller one, it may use the simple framework a bit more because it has less employees. Even the managing director may also need to do various kinds of specific work; it has not got so many employees to select, to arrange. Therefore, it depends on the scale of a company. The bigger a company is, the more likely the first [revised] framework is used; the smaller the company is, the more likely the second one is used."

Interviewee 13's arguments are strongly supported by his counterparts (Interviewees 12, 14, 15, 16, 18 and 20). They fully agree that the two frameworks are acceptable for them, however, the second one is used a bit more. Here are some examples:

"I recognise these patterns. Both of them are applicable for us, but, you know, we don't have so many employees; I often do some specific work as well. So the second is more suitable for us" (Interviewee 12).

"Both of them are acceptable for us, but the second one is preferable to us. Because our company is a small trade company, and has not got so many employees to be selected, as a managing director, I may do some specific jobs as well. Some important knowledge or information, such as communication channels with the key customers and suppliers, trade practices and secrets have to be kept for myself. I directly contact them, and don't want other employees involved in things. These cases rightly follow the second framework" (Interviewee 20).

"These are very good graphs. I can see these [frameworks] are for our businesses really a lot, indeed, they do work for us. If we do business with little companies, the knowledge exchange practices are like that [the second revised framework], but with big companies, the practices are mainly like that

[the first one]. ... Because they are big companies, managers normally just make decisions, the specific works are done by employees, we need to contact both management and employee levels, ... Small customers, their managers may make decisions and carry out specific work as well” (Interviewee 15).

Interviewees (Interviewees 17, 19 and 21) who are from medium companies, especially from the larger end, also strongly support Interviewee 13’s arguments. They think that the first revised framework is used a bit more for their companies although both are applicable to them. The following are their comments:

“I agree with these frameworks, they are what we are doing at the moment. It [transfer] progresses like these ways [frameworks], and goes to top to start a new transfer, they’re [frameworks] quite good. ... Both of them [frameworks] work for us, however, I think this [the first revised one] is more realistic, and more suitable for our company. Because, I can say, those like top management or senior people, they are not supermen, can not do everything, and have to provide the jobs to employees. ... If we are a very small company, this one [simple one] may be enough for us” (Interviewee 17).

“Personally, I think, the top level may not talk too much. They may just communicate with each other, and agree to do the business. Much specific work will be given to their subordinates. ... So, for most of the time, the first [revised] framework may work for our company. The second one may be used either, but not so much” (Interviewee 21).

According to the comments of the interviewees, two conclusions can be drawn as follows:

- The empirical evidence from both small and medium companies strongly supports Interviewee 13’s arguments, and can thus be converged into a general conclusion: both the first and second revised frameworks are applicable for SMEs. However, the bigger the size of a company is, the more likely the first one may be used; the smaller the size of the company is, the more likely the second one may be used.
- The second framework can be treated as a special case of the first one. Because, if the management selects himself as the giving (or receiving) employee to do a specific transfer job, the first framework will become the second one.

According to Section 3.4, a SME may be a receiving or giving company. The two conclusions actually imply that the SME, whatever it is, has two options (i.e., its management selects himself or his staff as the giving (or receiving) employee) as it exchanges knowledge with its customer (or supplier). *The bigger the size of the SME is, the more likely its management selects his staff as the giving (or receiving) employee; the smaller the size of the company is, the more likely the management selects himself as the employee.* Based on this point, both the first and second revised frameworks can be unified as one framework presented in Figure 6.5.

6.5 Improvement on SMEs' Understanding of Inter-organisational KT

In both the first and second round of interviews, eight of 16 interviewees (Interviewees 7, 9, 13, 14, 15, 17, 20 and 21) are asked to evaluate whether the frameworks could help them have better understanding of inter-organisational KT. Of them, six (Interviewees 7, 9, 14, 15, 20 and 21) give very positive answers for this question (Please see the following examples). The other two interviewees (13 and 17) don't clearly say 'yes' or 'no' to this question. Even if their answers are negative, it is still the majority of them who agree with the helpfulness of the frameworks. Therefore, it may be generalised that the frameworks could help SMEs have better understanding of the KT.

"It's very simple, its stages, ... and map are easy to follow. It arranges ideas logically and systematically, step by step, like a flow chart. It shows what to do, ... what relationships are between them [stages], ... therefore, it can improve the understanding, and is very helpful for anybody, not just me" (Interviewee 9).

"Yes. The frameworks are well structured, and provide systematic clues that we may miss out, so, they are helpful [for us to have a better understanding of the process]" (Interviewee 14).

"The frameworks are fantastic, definitely brilliant. If we have these frameworks, we could know what stages we are in each separate area, and their dynamics, ... they [frameworks] will benefit our work" (Interviewee 15).

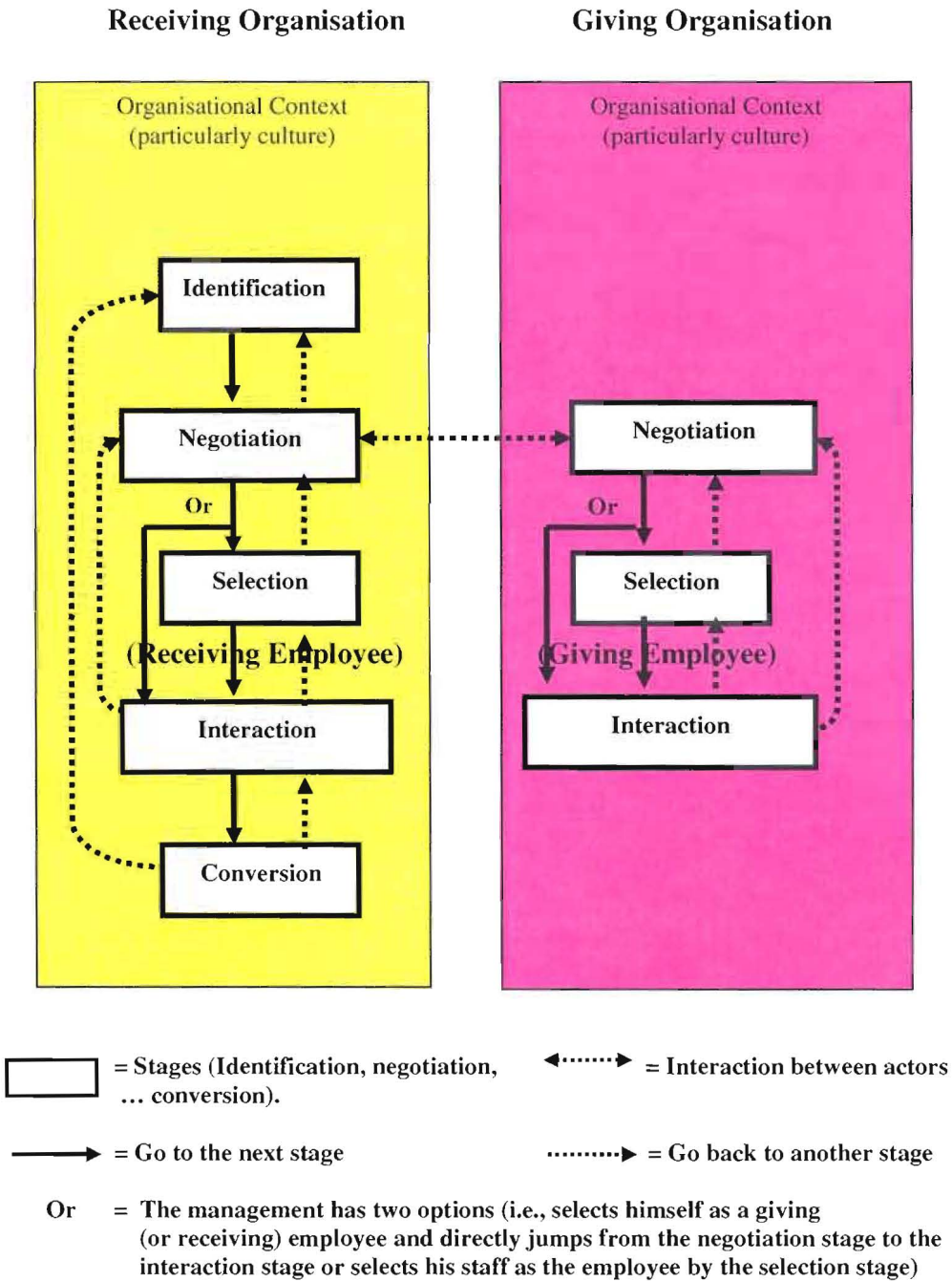


Figure 6.5 The Final Framework

6.6 Chapter Summary

Through the pilot and several rounds of formal interviews, the initial framework is revised and becomes the final framework (See Figure 6.5). Based on the empirical evidence collected from the interviews, some important conclusions can be summarised as follows:

- The final framework not only identifies the important stages (i.e., identification, negotiation, selection, interaction and conversion) in inter-organisational KT process, but also shows the non-linear and dynamic interactions between involving organisations. More importantly, the framework emphasises the repetitive nature of the process among stages and demonstrates the necessity of iterative loops between some stages. The transfer process may, sometimes, not simply progress in the stage sequence, but in iterative loops, as it may be necessary to go back to the previous stage.
- The framework shows that the management may select himself as a giving (or receiving) employee and directly jump from the negotiation stage to the interaction stage; or go through the selection stage to select one of his staff as the giving (or receiving) employee. The empirical evidence from SMEs demonstrates that the bigger the size of a company is, the more likely its management selects his staff as the giving (or receiving) employee; the smaller the size of the company is, the more likely the management selects himself as the employee.
- The interview results claim that the framework vividly describes the complexities, difficulties and dynamics of the inter-organisational KT. It generally reflects SMEs' KT practices, and is thus applicable for SMEs
- The feedback from SMEs indicates that the framework arranges ideas logically and systematically, step by step, like a flow chart, and are well structured and easy to understand. It is believed to be able to provide systematic clues about the

relationships between the stages, the non-linear nature and dynamics of the KT process, and thus could help SMEs have better understanding of the KT process.

In the next chapter, the interview results for the evaluation of the important factors that are embedded in the stages of the framework will be discussed.

Chapter 7 Verification and Revision of the Identified Important Factors

7.1 Introduction

On the basis of the initial framework (See Figure 3.7) in Chapter 3, some important factors involved in the inter-organisational KT process are identified from a strategic perspective, and presented at the relevant stages of the framework (See Figure 7.1 (copied from Figure 3.13)). The identified factors are believed to be able to further reflect the complexities and difficulties of the KT and remind SMEs to pay attention to the 'boundary paradox' (Quintas *et al.*, 1997). SMEs should take these factors into account as they exchange knowledge with their customers (or suppliers).

In Chapter 6, through the pilot, the first and the second round of interviews, the initial framework is revised as the final framework (See Figure 7.2 (copied from Figure 6.5)). From the stages' perspective, both the initial and final frameworks are the same, except the former's initiation stage is divided into both the identification and negotiation stages of the latter. So, the important factors identified for the stages of the initial framework (See Figure 7.1) should also be important for the corresponding stages of the final one, but the separation of the important factors of the former's initiation stage should be made for the latter. The factors 'the knowledge gap' and 'external knowledge source' in the receiving side obviously belong to the identification stage. The other five factors (e.g., 'importance of knowledge', 'business dependence' and so on) are put into the negotiation stage. From Section 3.4.3, it is known that most of the factors involved at the initiation stage of the initial framework are identified in accordance with the negotiation of the KT transaction between organisations. This separation is thus reasonable. So the ground that relates the factors to particular stages in the final framework is the same as that in the initial framework, i.e., literature analysis (See details in Section 3.4). Figure 7.1 can therefore be modified as Figure 7.3.

Receiving Company

Giving Company

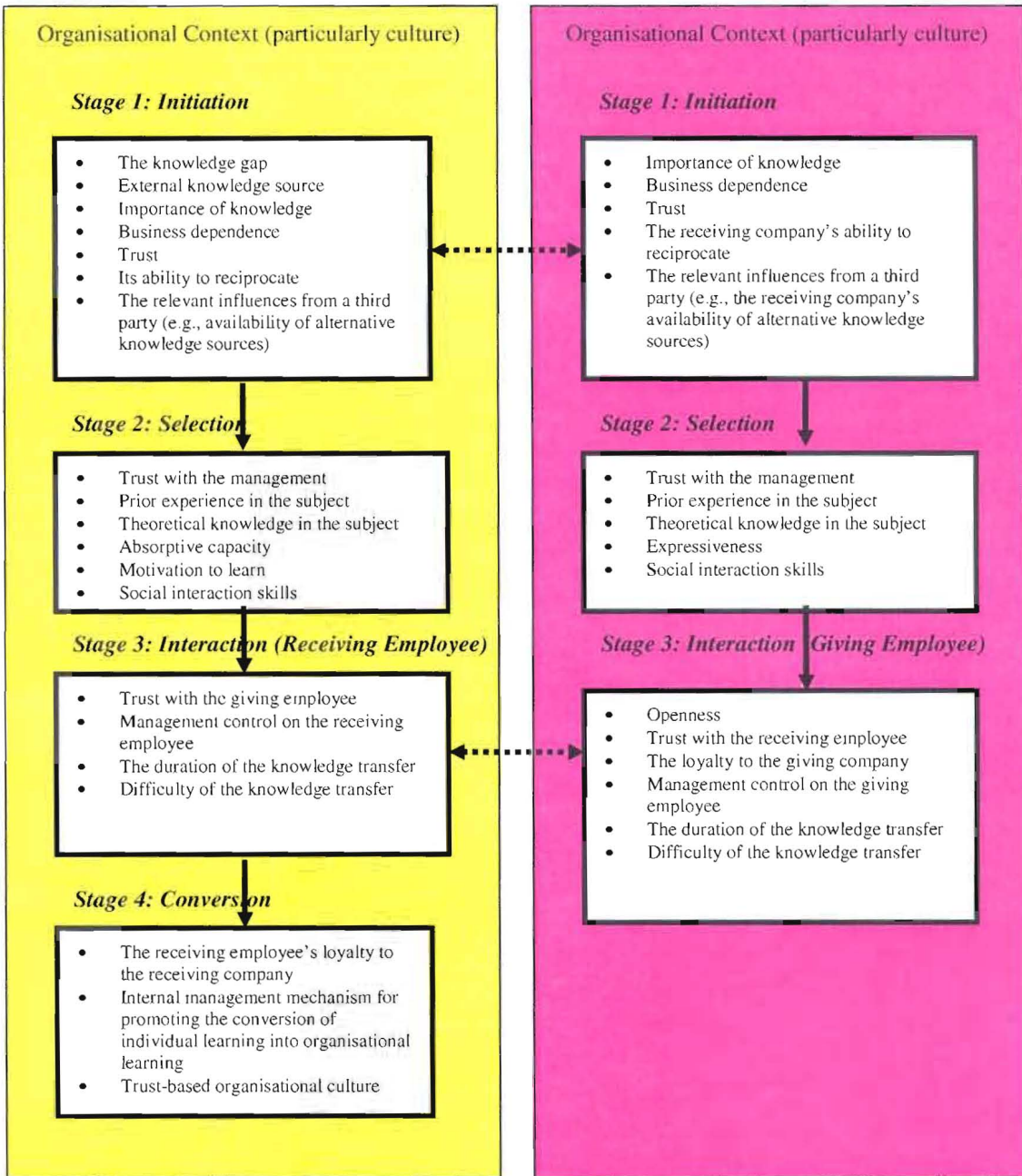


Figure 7.1 The Initial Framework and the Identified Important Factors

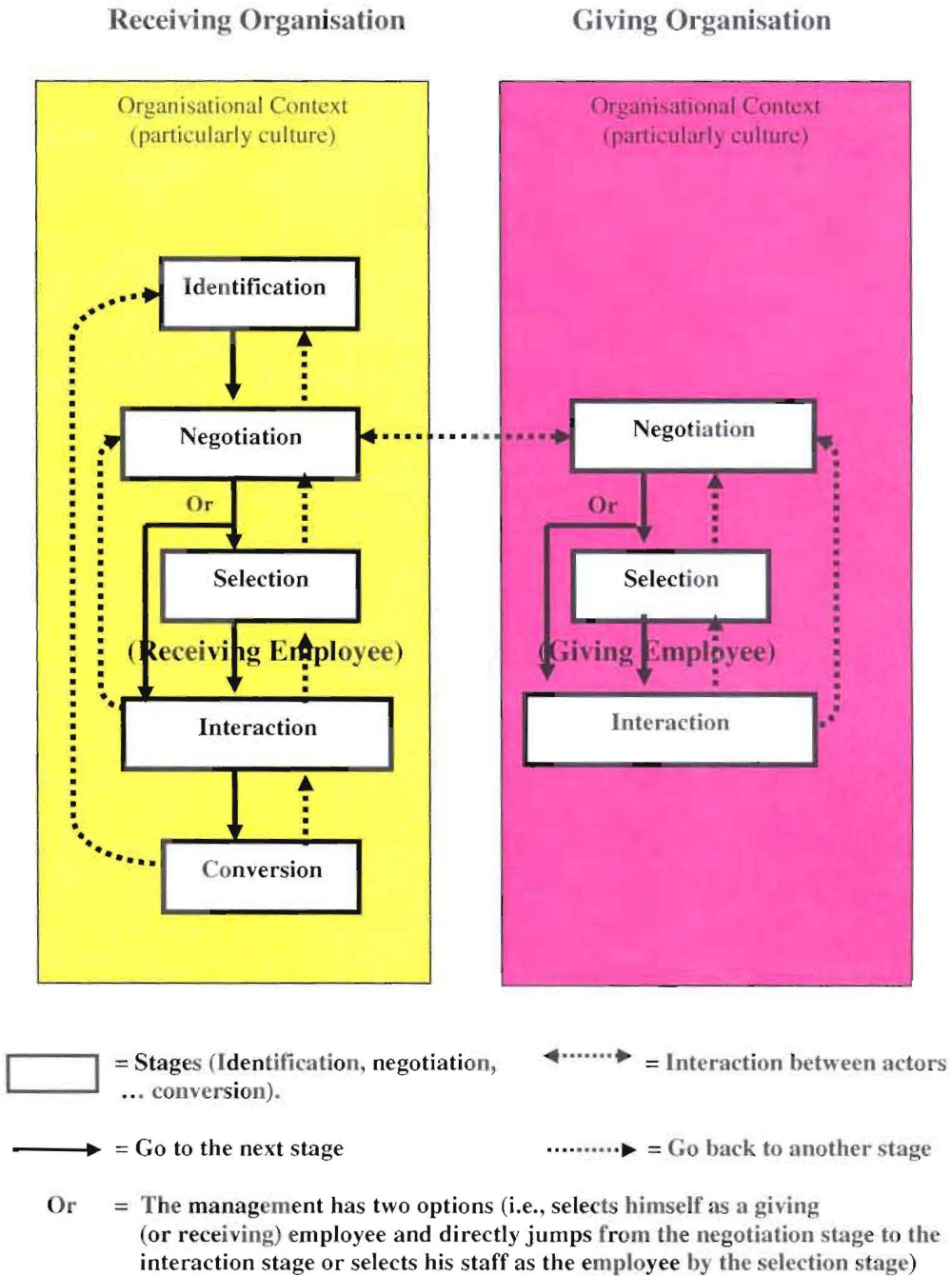


Figure 7.2 The Final Framework

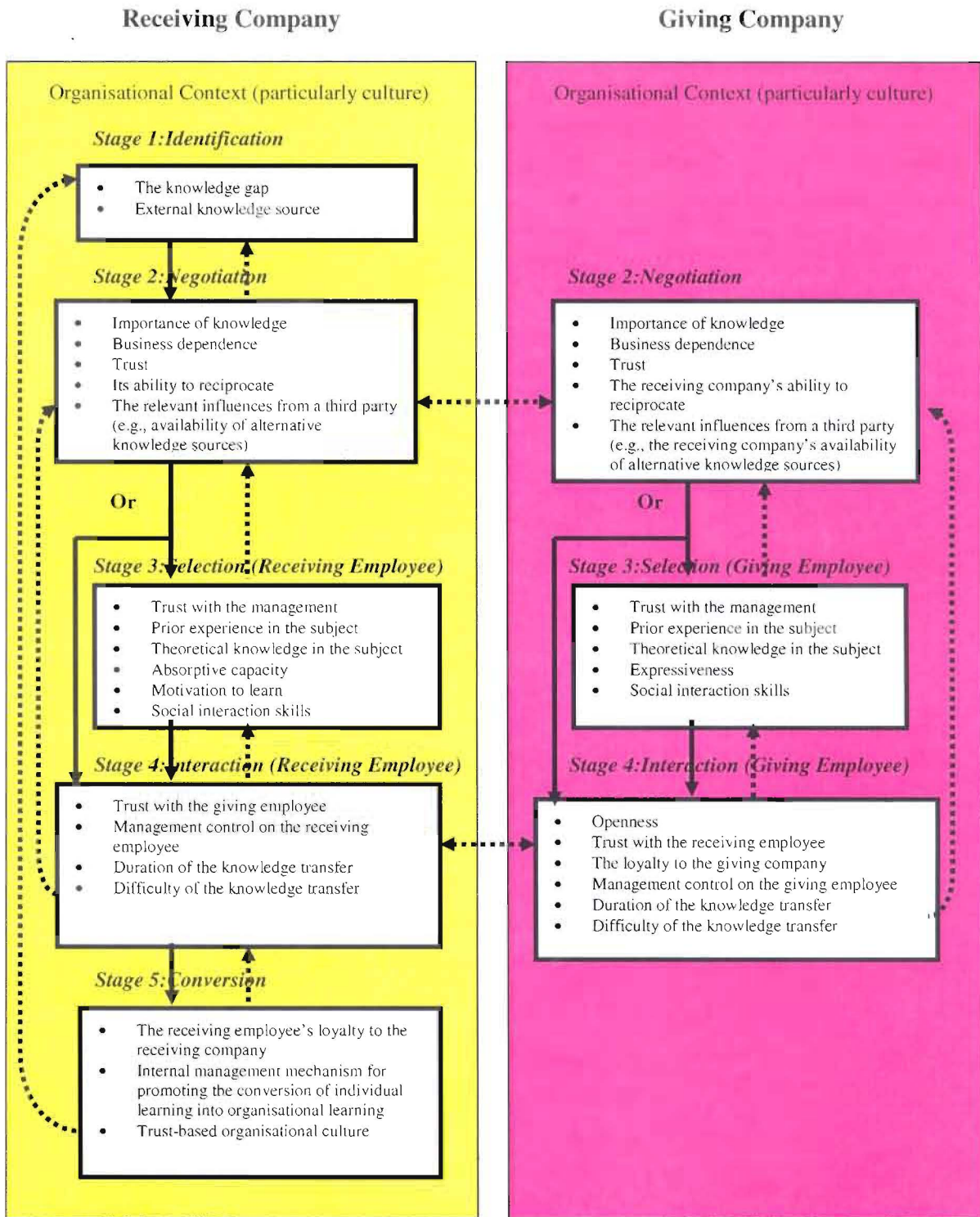


Figure 7.3 The Final Framework and the Identified Important Factors

The following is to verify whether the factors highlighted in the framework are really important for SMEs. The verification, as in Part 3 of the interview (See the preceding Figure 7.4 (copied from Figure 4.1)), experiences two rounds of interviews (i.e., the first and second round) that total up to 16 (See the shaded area in preceding Table 7.1). Because the verified important factors are embedded in the relevant stages of the frameworks, however, the stages of the first revised framework (used in the first round of interviews) are the same as those of the final one, the factors to be verified are thus the same for the two rounds of interviews. Therefore, the raw data collected from them are analysed together.

The interview time is very limited because the interviewees are SME managers and are normally very busy, they don't want to spend too much time on the interviews. It is difficult to request all interviewees to answer all questions. Therefore, although there are a total of 16 interviewees, sometimes, only a proportion of them have a chance to verify the importance of a specific identified factor. The proportion will be clearly reflected in the following verification of each of the identified factors.

This chapter aims to present the results of the content analysis on the verification of the important factors. According to Section 4.5.3, the verification is carried out from the giving side's perspective first, so the chapter begins with the discussion on the verification results of the giving side.

7.2 The Verification Results on the Giving Side

According to Section 4.5.1, the verification of the important factors will focus on three stages: negotiation, selection and interaction. The following will introduce the verification results for the three stages respectively.

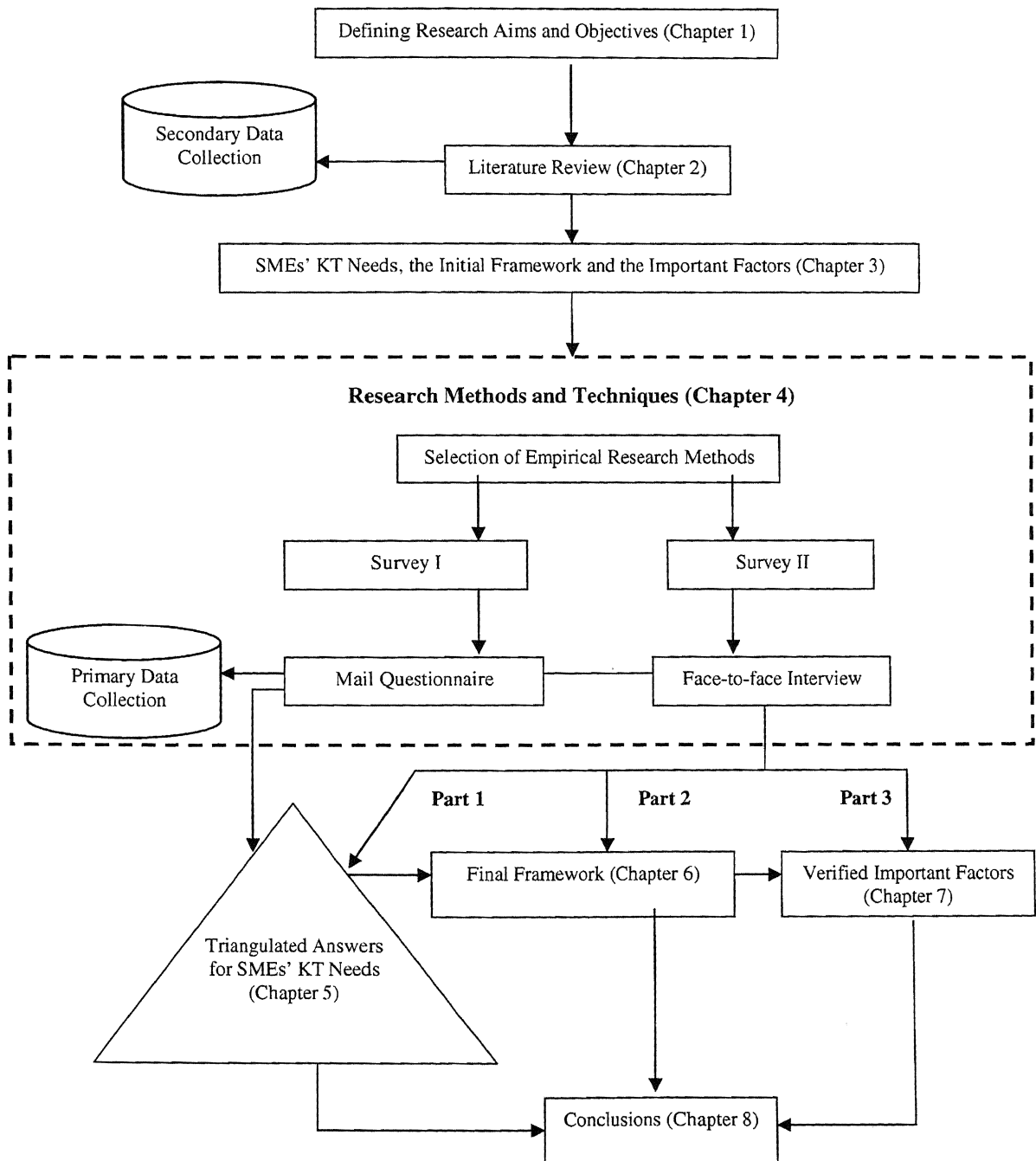


Figure 7.4 Key Steps for Conducting this Study

Table 7.1 The Interviews (i.e., the Shaded) for the Verification of the Important Factors

Interview Phase	Interviewee No	Specific Services or Products	Sector Categories	Employees No
Pilot	Interviewee 1	Retailing vacuums	Service	10
Pilot	Interviewee 2	Purely packaging	Non-service	26
Pilot	Interviewee 3	Sales of hygiene & laundry equipment	Service	245
Pilot	Interviewee 4	Consultancy on KM	Service	14
Pilot	Interviewee 5	Consultancy on communication & railways	Service	11
First Round	Interviewee 6	Sales on teaching materials & methods	Service	70
First Round	Interviewee 7	Developing trusts for communities	Service	37
First Round	Interviewee 8	Manufacturing tyres	Non-service	30
First Round	Interviewee 9	Distributing telecommunication products	Service	25
First Round	Interviewee 10	Materials processing & tooling	Non-service	45
First Round	Interviewee 11	Salvage service for insurance companies	Service	235
Second Round	Interviewee 12	IT consultancy & maintenance	Service	10
Second Round	Interviewee 13	Sport broker, advertising & clothing	Service	30
Second Round	Interviewee 14	Sales on newspapers, books & magazines	Service	10
Second Round	Interviewee 15	Manufacturing digital panel meters	Non-service	25
Second Round	Interviewee 16	A clothing shop	Service	23
Second Round	Interviewee 17	Processing metals	Non-service	238
Second Round	Interviewee 18	Language translation	Service	22
Second Round	Interviewee 19	Consultancy on nuclear risk management	Service	120
Second Round	Interviewee 20	International trade on chemical materials	Service	10
Second Round	Interviewee 21	Financial service	Service	240

7.2.1 The Negotiation Stage

At the negotiation stage, the factors to be verified for the giving side are: importance of knowledge, business dependence, trust, the receiving company's ability to reciprocate, and the relevant influences from a third party (e.g., the receiving company's availability of alternative knowledge sources). The verification on them is analysed as follows.

Importance of Knowledge

In the literature (Schrader, 1991; Barlow and Jashapara, 1998), the importance of knowledge is claimed to be a very important factor that should be taken into account by the giving company when it decides whether it should provide the receiving company with the needed knowledge. The interviews conducted attempt to empirically confirm this claim. Eight out of 16 interviewees (Interviewees 6, 7, 9, 12, 13, 15, 17 and 18) discuss this issue. All of them respond that importance of knowledge is really a very important factor that they have to consider when they make KT decisions. They have to assess the value of the knowledge requested by the receiving company and the potential risks that may be caused by the transfer to themselves. In order to maintain their companies' competitive advantages, or keep the receiving company rely on them, they have to withhold some critical knowledge or information. Here are some examples of the responses:

“It all depends on the content of the knowledge. The more critical the knowledge [is], the more I would worry about that knowledge getting outside our own company” (Interviewee 7).

“If the knowledge is very important for the company, I will not give it [the knowledge] out. Nobody wants to put himself in danger” (Interviewee 9).

“It's difficult to think of an example, but yes, because at the end of the day I don't want to decrease his [i.e., customer] dependency on me. I need to make sure he continually relies on me, so some important knowledge would not be given to him. It's not often, but I am sure that we have withheld knowledge for business reasons” (Interviewee 12).

“Yes, I will think whether the knowledge is very important for my company, whether I should give the knowledge to him [customer]. Further, I will think whether the knowledge transaction may cause some competitiveness for us, and influence my business” (Interviewee 13).

Based on the above evidence, it can be generalised that the more important the knowledge for the giving company, the less likely it is that it will give the knowledge to its customer or supplier. Therefore, ‘the importance of knowledge’ is a very important factor.

Business Dependence

According to Section 3.4.3, in order to benefit SMEs’ understanding, the term ‘business dependence’ is used to replace the term ‘power’ for this negotiation stage. Business dependence reflects the extent that company A’s business depends on company B’s. If company A has a high business dependence on company B, then company B will have big business power to influence company A’s KT behaviours. So, business dependence is theoretically considered as an important factor that influences the knowledge exchange between companies. Eleven of 16 interviewees (Interviewees 6, 7, 8, 9, 11, 12, 13, 14, 15, 16 and 17) are asked by the interviewer to verify whether the factor is important and has to be considered when they make KT decisions. One of them (Interviewee 8) says nothing about this issue, but the others (Interviewees 6, 7, 9, 11, 12, 13, 14, 15, 16 and 17) provide very positive answers for it. The empirical evidence from them demonstrates that the theoretical opinion is right. If a company, no matter it is a customer or supplier, commercially depends on another company very much, it would be inclined to keep in touch with the latter so that their business link could be maintained or strengthened, and therefore sometimes feels it very difficult to refuse the request from the latter. The following are such examples:

“Sometimes, for a big customer’s request, you may have to take the risk, you have to do that [transfer] even if you’re not so happy. So, this is an important factor” (Interviewee 9).

“If your business is totally dependent on your customer, then it becomes paramount that you exchange ideas or information with the customer” (Interviewee 7).

“Yes, we put more effort into the main customers. And if there is a time problem, for example, there are two emergencies at the same time, and one of them is with a main customer, then we would deal with the main customer first and then the smaller company second. So, yes, that affects knowledge transfer” (Interviewee 12).

Interviewee 2, although not asked by the interviewer to make comments on this issue, also provides a relevant example:

“Sometimes, major players [i.e. our suppliers] may use their power to force us to give some useful information to them. As a small company, we feel that [we] have to do what they asked. For example, one of our major suppliers asked us to fill in a form, which asks us to give sensitive information to them.” (Interviewee 2).

Generally speaking, a SME is normally a victim of the power embedded in the business dependence because its business is so dependent on its major customer or supplier that its KT behaviours may be dominated by the business partner. In order to fully make use of this factor (business dependence), some small companies even unite together to form a tight association so that they are in a better position to request what they want from their business partners (e.g., Interviewee 16’s clothing retailing shop joins a buying group). The following is the evidence:

“It [business dependence] is very important. The buying group is very important for us, they have strong power and good negotiation skills, and can get better terms for us in trading with the suppliers. Without them [the buying group], it’s very difficult for us to get what we want [from the suppliers] because we don’t have such strong power as the buying group. So, the most important link to us is the buying group” (Interviewee 16).

All the evidence clearly argues that ‘business dependence’ is a very important factor that should be considered by SMEs when they exchange knowledge with their customers or suppliers.

The Receiving Company's Ability to Reciprocate

When the giving company provides the receiving company with the needed knowledge, the former normally expects to receive reciprocation from the latter at that time or in the future. However, if the receiving company has no or limited ability to reciprocate, the giver may face some risk of losing the expected benefits (Schrader, 1991; von Hippel, 1987). So, the receiving company's ability to reciprocate should be an important factor that the giving company has to take into account as it decides whether to transfer the knowledge. Nine of 16 interviewees (Interviewees 7, 8, 9, 10, 12, 13, 15, 16 and 17) make efforts in verifying this argument. Only one of them (Interviewee 8) argues that too many factors (e.g., 'importance of knowledge', 'trust', etc.) are highlighted at the negotiation stage, and thus negates the factor as an important one. However, all others (Interviewees 7, 9, 10, 12, 13, 15, 16 and 17) believe that the reciprocation is the basis for SMEs' knowledge exchanges, the consideration or expectation on it is deeply embedded in their transfer behaviours, the factor is thus very important. The following are relevant comments from the interviewees:

"Yes, very important. We'd like to give knowledge to customers that more likely bring benefits for us. So it [the factor] is very important" (Interviewee 17).

"That [the ability to reciprocate] can improve the relationship with the small companies. So it helps to cement the relationship. Often information and advice rather than anything else is what is reciprocated. So, yes, that can help the knowledge transfer relationship" (Interviewee 12).

"That [the ability to reciprocate] would influence what we do. ... Because I keep saying if it will benefit our customer to provide better service for us, of course, we would like to transfer these new ideas and services to them, then our company will benefit" (Interviewee 7).

"... you would be a bit more judicious in whether you gave information or not, ... The whole thing is about do we get benefit both ways or not, or is it a one way street" (Interviewee 10).

Reciprocation at inter-organisational KT doesn't mean that the knowledge receiver must contribute knowledge to the giver in the future once it receives some knowledge from the latter. The receiver may reciprocate the giver through other forms, such as providing a better service. Here is an example:

“... the managers and below will talk to anybody that will give the information, but there is an informal reciprocal arrangement that you will help them out if they need it. It may not be to [give] information, it may be to give a better service next time round, or loan them equipment or give them storage space” (Interviewee 10).

Sometimes, even competitors can share knowledge as well if they can reciprocate with each other.

“It depends if the company that is coming to me is a [direct] competitor. If it is someone who is in the same market as myself, then I would not like to pass my knowledge on to them as they may use that knowledge better than me. But if it is someone who works in a business where we complement each other with what we work on, then I may pass on some of my knowledge, in return for some of theirs. It's an issue of competitiveness, and also reciprocation” (Interviewee 7).

According to these responses from the interviewees, it can be concluded that ‘the receiving company's ability to reciprocate’ is very important, cannot be ignored by the giving company when it makes its transfer decisions.

The Relevant Influences from a Third Party (e.g., the Receiving Company's Availability of Alternative Knowledge Sources)

The evidence from literature (Dyer and Nobeoka, 2000; Albino *et al.*, 1999) demonstrates that a third party, based on its own economic benefits, may use its relationship with the giving (or receiving) organisation to influence the KT process. Schrader (1991) further contends that, if the receiving company could acquire the knowledge from other external sources or develop the knowledge by itself without great effort and difficulty (Schrader, 1991), the giving company may not treat the knowledge as important, and may transfer it to the receiver. Otherwise, their

relationship may be adversely influenced. The availability of alternative knowledge source reflects that, to what extent, the receiving company can acquire the same kind of knowledge from other sources. The more sources the receiving company has, the more likely the giving company will transfer the knowledge. All these arguments show that the relevant influences from a third party are an important factor that will influence KTs between the giving and receiving organisations. The interviewees are asked to verify whether this belief is correct. Nine of 16 interviewees (Interviewees 7, 8, 9, 10, 12, 13, 15, 16 and 17) respond to the issue. One of them (Interviewee 8) supports the belief, but with a little bit of reluctance. Nonetheless, all others (Interviewees 7, 9, 10, 12, 13, 15, 16 and 17) completely agree on it. Obviously, they mainly concern the case that their customers may switch to alternative knowledge sources (i.e., the competitors). The evidence can be found from the following quotations:

“This [the alternative knowledge sources] is a very important factor, ... If the customer doesn't have any other choices then you have no problem. ... If he has a choice, then that puts you in a difficult position. He may go to someone else if you don't give the knowledge to him. ... so you have to assess the risk involved in telling the customer the information and knowledge that he wants to know” (Interviewee 9).

“Oh, yes, it [the alternative knowledge sources] would be very important, because we don't want them [receiving company] to switch to other companies, we don't want this to happen. So if they have other knowledge sources, we have to be careful to keep them stay with us” (Interviewee 15).

“I've found that [alternative knowledge source] makes life more difficult. ... If they [customers] have alternative sources, then it makes my job [consultancy] more difficult ... if the client does have another knowledge source, then you have to have a bit of politics when dealing with them. But it is rather an impediment” (Interviewee 12).

In addition, a powerful example is also found from the interview with Interviewee 5, although she is not asked by the interviewer to confirm this belief. The example shows that the receiving company's competitor even uses its power to stop (potential) knowledge transaction between the giving and receiving companies:

“XXX, a great communication company, requested [that] we cannot provide consultancy services for other communication companies if we provide the services for them. Because they worry we may pass on their sensitive knowledge or information to their competitors. We sign an agreement about this before we do business with them. So we cannot provide [consultancy] services to other communication companies in a certain term although we are asked [by them] to do so” (Interviewee 5).

Drawing on these comments, it is easy to know that ‘the relevant influences from a third party’ (e.g., ‘the receiving company’s availability of alternative knowledge sources’) are really important, and SMEs have to treat them carefully as they make the KT decisions.

Trust (with the Receiving Company)

Trust means that a social actor extrapolates that another actor will behave as he expects (Luhmann, 1979; Bachmann, 1999). If a company can transfer knowledge as its customer (or supplier) expects, then it earns trust from the latter, and may in turn get more reciprocation (e.g., knowledge or businesses) from the latter. However, once the trust is broken, it is hard to recover; the company thus loses its relationship and knowledge sharing with the customer. So, trust is believed to be a very important factor that can affect the giving company’s KT decisions. The interviewees are asked to evaluate whether the factor is as important as the belief reflects. Eleven of 16 interviewees (Interviewees 6, 7, 8, 9, 10, 12, 13, 15, 16, 17 and 19) discuss this evaluation. All of them strongly support the belief. Trust is thought of as being more important than other factors (Interviewee 9), such as ‘business dependence’ (Interviewees 15 and 17) and the influences from a third party (e.g., ‘the availability of alternative knowledge sources’) (Interviewee 7) although they are important because “if you haven’t got trust with your customers, you wouldn’t exist” (Interviewee 8, similarly Interviewees 12 and 15). So, “trust is the most important factor” (Interviewee 17, and similarly, Interviewees 9 and 19), and “definitely at the top of the [factor] list” (Interviewees 12 and 15). The following are some examples taken from the interviewees’ comments:

“I would say that trust is top of the [factor] list. You know very quickly if you have established a relationship. ... This [trust] is the most important, for small businesses, if you lose trust, you lose business” (Interviewee 12).

“Trust is the most important, it’s definitely at the top of the list, because if we can’t be trusted to do what they have asked us to do, then we have lost them before the phone call has even started. ... So, yes, trust is the most important because without it we have lost everything” (Interviewee 15).

“Trust is a very important factor. Because if you have a company that you exchange knowledge, information and ideas with, then you have a rapport with them. They have become a company that you know, so to trust them with the information that you give them, to trust them not to give it out to a competitor is important, and they trust you with the information that they give you to help you to improve your services. But if you lose that trust, you lose that company and the knowledge that they can share with you” (Interviewee 7).

“Obviously, if I know the customer very well, know it very long, the longer I know it, the more likely I give the knowledge to it” (Interviewee 7).

Based on this analysis, a conclusion can be generalised that, at the negotiation stage, all factors listed for the giving company are important, but the most important one is ‘trust’. The giving company has to think about the factors, expect the costs and benefits caused by them, and make a balance of them when it decides whether the knowledge is transferred or not.

7.2.2 The Selection Stage

At the selection stage, the management of the giving company will decide what kind of employee should be selected to do the specific transfer work. In Figure 7.4, trust (with management), prior experience, theoretical knowledge, expressiveness and social interaction skills seem to be important factors that the management should take into account when he makes the selection decision. The following evidence will demonstrate whether the factors are really important for SMEs at the stage.

Trust (with the Management)

Trust here means the trust between the management and the giving employee. According to social network theory, trust is a part of the relationship between social actors, and can be used to influence the actors' social behaviours (Bachmann, 1999; Luhmann, 1979). So, trust seems to be an important factor that the management should consider in the selection process so that it can effectively influence the selected giving employee's KT behaviours. However, this argument needs to be empirically verified. Seven of 16 interviewees (Interviewees 7, 9, 11, 13, 14, 15 and 17) join the verification. Of them, five (Interviewees 7, 11, 13, 14 and 17) claim that the importance of the trust will depend on a specific situation, generally speaking, the more critical the knowledge is, the more likely the management would like to select an employee whom he trusts to transfer the knowledge. The following are some examples:

“Importance of trust will depend on the specific situation. If the knowledge is simple, the trust is not necessary; if the knowledge is critical, trust is very important, I should select an employee whom I know very well, to prevent some critical expertise, and secret from being leaked” (Interviewee 7).

“Trust is very important. But not always, you know. Some [knowledge] is simple, trust isn't needed [for the giving employee], [however], some [knowledge] is important, complicated, the employee should be in line with me, [thus] I may not worry the [knowledge] transfer goes astray” (Interviewee 17).

Furthermore, Interviewee 9 thinks that the trust cannot be ignored, and can be used as an important measure to prevent the leakage of knowledge, particularly as the management is very busy and has to select a giving employee.

“...if they [managers] are busy and have to use the bridge [the interaction between giving and receiving employees], they would like to use employees they trust to do it. ... also there has to be trust and a good relationship between the employees and managers, otherwise, the employees may tell more [knowledge to the employees from other companies]” (Interviewee 9).

Even if the management has not got so many employees to select, Interviewee 15 still believes that the trust is very important, and wants to use it (maybe pretend to trust the employee) to encourage or influence the employee:

“Yes, that [trust] is very important. Because we are a small company, we really have to rely on each other to work as team. ... So each one will have a specific task and each one must do it well in order for the products to work smoothly. ... Sometimes, the product didn't work and came back [to us] because it wasn't assessed properly, but you have to trust that person to do the job right” (Interviewee 15).

According to the responses from the interviewees, it can be concluded that the trust is very important; the more critical the knowledge is, the more likely the management would like to select an employee whom he trusts to transfer it. The trust cannot be ignored even if the management is very busy or has not got so many employees to select.

Prior Experience in the Subject

Prior experience is thought of as being an important factor for the giving employee when he provides knowledge to the receiving employee (Wathne *et al.*, 1996; Albino *et al.*, 1999). Eight of 16 interviewees (Interviewees 7, 10, 11, 13, 14, 15, 17 and 19) are asked to make comments on this issue. All of them generally support this point. Particularly if the knowledge to be transferred is complicated (e.g., advice provided by a consultancy company, such as Interviewee 19's), the giving employee's prior experience is very important. Because “if a person has prior experience [in a subject], it may be easy for him to play his role as requested” (Interviewee 17), the KT is more likely to be successful, the customer is less likely to lose. The details can be found from the following claims:

“Yes, prior experience [for the giving employee] is a big factor. Because you need to have someone who knows what he's talking about. When you transfer knowledge [to the receiving company], they might come back with a quick question and if you say 'oh! I don't know, I have to go and find out', then it doesn't give them [the receiving company] confidence. ... it's no point in

giving them knowledge, then telling them ‘well, I’m not really sure if it’s ok, I think it’s this.’ ... If I had to go and select someone, it would have to be the person with the most experience or enough experience to be confident in the subject matter” (Interviewee 19).

“It’s [prior experience] important. I think the way to select an employee to help a customer, is by selecting the one that has the experience and knowledge of the services that my customer needs. Because if I send an employee to help a customer and that employee has no experience and knowledge of what that customer requires, then I and my company are not doing our jobs effectively, and we then lose that customer and business. So the employee must have prior experience and knowledge of what that customer needs” (Interviewee 7).

“Prior experience is an important factor, particularly for some complicated jobs. For instance, our production engineers, they should be either formally trained with experience of shop floor and processes, or they could be of the more traditional route, apprenticeship trained skilled person and then go into the offices as a production engineer” (Interviewee 10).

The evidence shows that the interviewees hold an identical view that ‘prior experience in the subject’ is a very important factor that the management should consider as he selects the giving employee from his staff.

Theoretical Knowledge in the Subject

Theoretical knowledge in the subject is suggested as a factor that may be taken into account as the giving employee is selected. Six of 16 interviewees (Interviewees 7, 8, 13, 15, 18 and 19) are invited to evaluate this suggestion. Most (Interviewees 7, 8, 13, 15 and 19) of them don’t think that theoretical knowledge in the subject will strongly influence their selections on the giving employees. Just as Interviewee 13 claims, “...we pay more attention to practical experience, less attention to the theory”. Even some consultancy companies (e.g., Interviewee 19’s) that may involve complex KTs also prefer ‘prior experience’ to ‘theoretical knowledge’. This point may be proved by the following quotation:

“Yes, [theoretical knowledge is important], couple that with experience. But I think experience is slightly more important. You can have someone who is very good at theoretical knowledge, but theoretical knowledge is only

idealistic. It's the practical experience. People want practical experience. Anyone can go and read from a book on how a kettle works, but you want the experience to know that if you don't put water in it, it blows up! So it's the very little things that people want more" (Interviewee 19).

However, for companies whose businesses heavily rely on theoretical knowledge (e.g., language translation services provided by Interviewee 18's company), theoretical knowledge is still thought of as being an important factor. Here is an example:

"Theoretical knowledge in the subject, in most cases, is important, because it may help the employee to have good understanding of the subject" (Interviewee 18).

These opinions are apparently contrary. However, based on the opinions of the majority of the interviewees involved in this evaluation, also because most SMEs belong to labour-intensive industries that do not require their employees to have much theoretical knowledge or highly skilled expertise (Deakins, 1999; Duan *et al.*, 2001; Duan and Kinman, 2000), 'the theoretical knowledge in the subject' has to be considered as unimportant, and removed from the factor list, although it is suitable for certain SMEs.

Expressiveness

Expressiveness represents the ability of the giving employee to use oral or facial expression, and body language to clearly express what he knows, and will directly affect the KT effectiveness. So, when the management considers whether an employee should be selected as the giving employee, the employee's expressiveness is an important factor that should be taken into account. This argument is verified by six of 16 interviewees (Interviewees 7, 13, 14, 15, 17 and 19). All of them strongly support it. The following are some examples:

“If your employee has the knowledge but cannot transfer or explain the knowledge to your customer, then that does not help the customer with their query, nor does it help the company. So it is important that the employee can effectively explain knowledge and information to the customer” (Interviewee 7).

“I would say that it [expressiveness] is an important role because you are asking me questions and I need to give you the knowledge that you need to get your job done. If I am speaking to you in jargon, don’t express it properly, then you can’t understand me, and you can’t get your job done efficiently” (Interviewee 15).

“Expressiveness is very important, if the giving employee has good expressiveness, it will benefit his customers” (Interviewee 17).

“If the knowledge transfer is difficult, or long, this guy is very clever, has good ... expressiveness, and can be arranged for this so that the transfer can be finished earlier” (Interviewee 17).

Companies in the non-service sectors, for instance, companies in which interviewees 15 and 17 work, may involve complex knowledge exchange with their customers or suppliers, it is quite understandable that the companies request their giving employees have good expressiveness. For the companies in the service sector, for example, the companies in which interviewees 7, 13, 14 and 19 work, their staff normally involve routine things such as selling up stocks, putting in orders, etc. (Interviewee 16). Knowledge exchange between the staff and customers seems to be very simple, expressiveness may not be so important for the staff. However, the responses from the interviewees show that the staff’s expressiveness is still important. “If your employee has the knowledge but cannot transfer or explain the knowledge to your customer, then that does not help the customer with their query, nor does it help the company” (Interviewee 7). Therefore, the claims from the interviewees in the service and non-service sectors demonstrate that they are consistent on their belief that ‘expressiveness’ is a very important factor that should be considered as an employee is selected as a giving employee.

Social Interaction Skills

When the giving employee transfers knowledge to the receiving employee, he needs to communicate and interact with the latter to further clarify what problems the latter faces and what the latter really wants. Obviously, if the former has good social skills, he may make latter feel comfortable and relax, the latter would in turn be encouraged to talk, or would like to speak his problems to the former. Which will make them easier to find the exact knowledge to be transferred, and thus make the transfer more efficient and effective. Therefore, the 'social interaction skills' are theoretically considered as an important factor that should be taken into account as an employee is selected as the giving employee. This point is empirically evaluated by seven of 16 interviewees (Interviewees 11, 12, 15, 18, 19, 20 and 21). All of them agree with it. The following is certain evidence taken from the interviewees:

“Yes, it’s [social interaction skills] very important. For example, if I arrange for someone to contact customers to develop our trading business, I’d like to select an employee who has good social skills to introduce our businesses to the customers. We really have to make them [customers] happy” (Interviewee 20).

“Also, another very important thing is the inter-personal skill. As you can imagine, if you are asking someone to negotiate and communicate with the client, it’s no point in asking a person who is scared of speaking to do that. You need to have someone who is good at listening, good at talking and very logical in his protocol and making any notes” (Interviewee 19).

“Good social skills are very important, and can make people feel warm and comfortable” (Interviewee 21).

“This [social interaction skills] is important. Our engineers are asked to transfer knowledge properly to our customers. They should have good interpretative skills and good telephone manner to make customers happy, comfortable and easy to understand what they say” (Interviewee 15).

Based on this evidence, it is easy to conclude that social interaction skills are indeed very important for the giving employee.

Through empirically verifying the factors listed for the selection stage in Figure 7.4, it can be generalised that the employee's prior experience, expressiveness and social interaction skills are normally important factors that should be taken into account as he is selected as the giving employee. The importance of the trust between the employee and management will depend on specific situations; the more critical the transferred knowledge is, the more important the trust between them is. In regard to the theoretical knowledge, it is not so important for most SMEs. Therefore, only the factor 'theoretical knowledge in the subject' should be removed from the list.

In addition, the selection seems to be very similar to the recruitment. As we know, when a person is recruited for a specific post, the person is normally required to have good expressiveness, social skills and prior experience related to the post. It thus seems that the KT activities related to the post can be directly assigned to the person once he takes the post, no further selection is needed. In fact, the recruitment may simplify the selection, but cannot replace it because of the following reasons.

- The requirements on the employees' prior experience, expressiveness and social interaction skills may be met through the recruitment, but the requirement on trust couldn't. Just as Interviewee 11 said, "when we recruit, ... We also look for trust, but that usually develops over time within the company". So, as the management wants to have a trustworthy person to transfer important knowledge, he still needs to make a selection through assessing the performances and behaviours of each of his subordinates.
- In the recruitment, although the person claims or demonstrates that he has prior experience, expressiveness and social interaction skills in both the CV and interview, his actual abilities in these areas still need to be verified through a certain period of practical work. The person may be dismissed if he is not fit for the post. The measure itself is actually a kind of selection.
- Several people may be recruited for the same kind of job. For a specific work, the management may also need to make a selection among them although this case doesn't happen so much in small companies.

- Sometimes, the employee may be asked to do transfer works that are out of the range of his post. The selection is also needed for this case.

7.2.3 The Interaction Stage

At this stage, the giving employee will interact with the receiving employee, and transfer the knowledge to the latter. According to relevant literature (Cohen and Levinthal, 1990; Wathne *et al.*, 1996; Albino *et al.*, 1999; Szulanski, 2000; Chen *et al.*, 2002), the giving employee's prior experience, expressiveness, openness, and trust with the receiving employee will heavily influence the effectiveness of this interaction process. Because prior experience and expressiveness have been considered at the selection stage, they are not mentioned here again. However, openness and trust with the receiving employee should be treated as important factors at this stage. Furthermore, in Figure 7.4, other factors, such as 'the giving employee's loyalty to the giving company', 'the duration' and 'difficulty' of the KT, and 'management control on the giving employee', are also listed as important. The following will present whether these factors are empirically verified by the interviewees as important.

Openness

Openness has been defined as the giving employee's willingness to transfer his knowledge in a collaborative interaction, in order to stress the attitude of the giving employee of not hiding his knowledge, so that potential learning is facilitated (Wathne *et al.*, 1996; Albino *et al.*, 1999; Huber, 2001). From the giving company's perspective, on the one hand, the giving employee should be encouraged to transfer the required knowledge to the receiving employee, otherwise, the giving employee may hide the knowledge, which would lead the KT to be unsuccessful, and the company thus would lose the benefits from the KT transaction. On the other hand, the giving company doesn't want the giving employee to tell everything (Particularly the highly valuable knowledge) to the receiving employee so that its competitive edges are damaged. Therefore, openness is so important that it should

be properly controlled by the giving employee as he transfers knowledge to the receiving employee. However, this claim needs to be empirically verified. Six of 16 interviewees (Interviewees 6, 12, 13, 17, 20 and 21) discuss the verification. All of them agree that openness is very important and should be properly controlled by the giving employee. The following are such examples:

“...because some important knowledge or information that is very valuable to us may be involved at this stage [interaction], the giving employee should be aware of what can be told, and what cannot, to protect our edges” (Interviewee 17).

“At the interaction stage, ... for the giving employee, if my employee is selected to be a giving employee, he should think about and know what to say, what not to say” (Interviewee 6).

“Of course, openness should be controlled. The giving employee cannot tell everything [to the receiving employee]” (Interviewee 21).

Even if the knowledge to be transferred is not so critical, some interviewees (e.g., Interviewee 13) still believe that the giving employee should skilfully control his openness so as to keep the receiving employee relying on him. The following is the comment:

“This [openness] is very important. If we have a co-operative relationship, if the giving employee doesn't control his openness, the receiving employee may feel it is too easy to get the knowledge. The giving employee should properly control the openness, and should not deeply explain the knowledge, not explain it in detail, and keep him relying on you. So, openness [control] is necessary (Interviewee 13).

This evidence clearly demonstrates that SMEs are fully aware of the importance of openness, and would like to control it properly so as to protect their competitive edge. So, the ‘openness’ is indeed a very important factor for the giving employee at the interaction stage.

Trust with the Receiving Employee

Trust here refers to the trust between the giving and receiving employees. The trust is believed to be an important factor that has a direct and positive influence on the giving employee's openness (Wathne *et al.*, 1996; Albino *et al.*, 1999; Goh, 2002), and thus affects the effectiveness of KT between these two actors. So, from the giving company's perspective, on the one hand, it normally doesn't want to see that the relationship between its giving employee and the receiving employee is so good that the former may transfer its competitive edge to the latter; on another hand, it also doesn't want to see that the relationship is so bad that its business is badly influenced. Therefore, trust with the receiving employee is actually a kind of double-edged sword. It is so important that any inappropriate treatment on it may cause adverse influences for the company. Six of 16 interviewees (Interviewees 9, 10, 13, 15, 17 and 19) are invited to make comments on this issue. Most of them (Interviewees 10, 13, 15, 17 and 19) confirm that their companies advocate that the giving employee should build up good relationship with the receiving employee, and convince the latter of what he tells, and try to make the latter happy so that the receiving side will come back to do business with the giving company again. Here are some examples:

“Well, it's definitely the relationship [trust] between the two [the giving and receiving employees] is paramount. ... because if you pass over the information they will come back to you. They will use you and your services again, it's one way of giving more than just your product or your service. It gets people coming back again” (Interviewee 10).

“That [the trust between the giving and receiving employees] is really important to us, because if we have a good customer relationship, then we are going to get more money. It is all to do with the profit margin. If our profit margin is high then we get a bonus. So we really have to keep our customers sweet” (Interviewee 15).

“The relationship with the receiving employee is important. The giving employee should set up good relationship with the receiving employee, try to make him happy, so that his company may do business with us again” (Interviewee 17).

However, some of them (e.g., Interviewees 9, 13 and 17) also worry that their important knowledge may be leaked by their giving employees if the relationship between the giving and receiving employees is too good. For example:

“Yes, the trust between the giving and receiving employees is very important. If they have very good relationship, their communication, interaction may progress very well. This will bring benefits for both companies. However, if their relationship is really very good, and over the working relationship, which may not be so good for the companies, some important know-how may be leaked” (Interviewee 13).

“...at this [interaction] stage, once the employees have very good relationship, it’s hard for the managers to control, they don’t know what knowledge the employees have, what knowledge the employees will exchange” (Interviewee 9).

“Yes, sometimes, I worry about it [the leakage of important knowledge]. But, sometimes, opportunity and risk co-exist. If you want your staff to establish extensively good relationships with your customers so as to do very good business, you have to take the risks. You may not prevent this problem from happening” (Interviewee 17).

According to these comments, it can be concluded that the trust between the giving and receiving employees is indeed a ‘double-edged’ sword for the giving company, it may not only benefit but also damage the company’s business. From a management perspective, the advocacy on the trust between the giving and receiving employees should be controlled to a proper extent.

The Loyalty to the Giving Company

In Figure 7.4, ‘the loyalty to the giving company’ is considered as an important means which can be used to curb the knowledge leakage mentioned above. Do SME managers accept this argument? Five of 16 interviewees (Interviewees 9, 13, 15, 17 and 19) are required to provide answers for this issue. All of them accept the argument. Some examples may be found from the following responses:

“The loyalty to the giving company is important, because some important knowledge or information that is much valuable for us may involve this [interaction] stage, the giving employee should be aware of what can be told, and what cannot, and protect our edges” (Interviewee 17).

“Yes. It [loyalty to the giving company] is important. Because in any exchange of knowledge you represent your company, and in that way you have to be loyal to your company. If you are exchanging knowledge [with me], and I say to you ‘Here I am. Look at this website, my company did it. Oh, by the way! My company is terrible, you know, don’t trust them, they are horrors!’ You are not going to look at the website. And in the end, that’s going to come back to me. You would tell your boss, and your boss would tell my boss. So I think loyalty is very important especially when communicating, as you represent your own company” (Interviewee 19).

“Yes, the trust between the giving and receiving employees is very important. ... However, if their relationship is really very good, and over the working relationship, which may not be so good for the companies, some important know-how may be leaked. So, the employee’s loyalty is also very important” (Interviewee 13).

“Yes, sometimes, I worry about it [the leakage of important knowledge]. But, sometimes, opportunity and risk co-exist. If you want your staff to establish extensively good relationships with your customers so as to do very good business, you have to take the risks. You mayn’t prevent this problem from happening. I think this may be related to a MD’s personal charm. If staff think you’re a good boss, they’ll not let you down, not do these things. ... We advocate heart-to-heart communication with our staff, heart-to-heart management. ...” (Interviewee 13).

According to these comments, it is known that the giving employee may provide the receiving employee with more valuable knowledge than that the giving company wants if the giving employee is misled by his good private relationship with the receiving employee or disloyal act to the employer. The knowledge leakage may lead the company to face the risk of competitive backlash (Carter, 1989; Mohr and Sengupta, 2002). As knowledge (especially tacit knowledge) is difficult to find and difficult to audit, the giving company cannot readily monitor the giving employee’s behaviour. Strict management control on the giving employee is thus not enough to prevent the knowledge leakage from happening if the employee behaves on the basis

of his private benefits. Therefore, 'the loyalty to the giving company' is considered as an important means which can be used to curb the knowledge leakage. The responses from the interviewees demonstrate that SMEs are consistent on the argument, and believe that the factor is really important at this interaction stage. To induce the loyalty from the employee, just as Interviewee 13's argument states, heart-to-heart management, heart-to-heart communication with the employees are needed.

Management Control on the Giving Employee

Management control on the giving employee means that the management guides the giving employee on how to transfer the knowledge by means of management regulations, rules, strategies, instructions and even legal powers, such as contracts, agreements and patents. It is considered as another important means that can be used to curb the leakage of knowledge. Eight of 16 interviewees (Interviewees 6, 7, 9, 11, 13, 14, 17 and 19) make comments on this issue. Seven of them (Interviewees 6, 7, 9, 11, 14, 17 and 19) generally agree that management control is important or necessary, particularly as important knowledge is transferred. The following is some evidence:

“Management control on the giving employee is important. Well, if some important knowledge may be involved [at the stage], the employee should be guided or trained on what to say and what not to say” (Interviewee 17).

“If the transferred knowledge is very important, the giving employee may need to have a very clear training by managers even if the contract about his transfer behaviours is not necessary” (Interviewee 6).

“What happens is sometimes managers like to have control of the knowledge. They will tell you what you can tell and how much you can tell” (Interviewee 9).

“The knowledge is reviewed at intervals so that we know that there is not too much or too little knowledge being passed on. Again I will choose an employee that I can trust to give the correct amount of knowledge as well as the right knowledge; I will offer some guidance as well” (Interviewee 7).

In order to prevent the leakage of knowledge, particularly very important knowledge, some managers (e.g., Interviewee 16) always try to “keep it [really sensitive knowledge] for themselves as much as possible” (Interviewee 16), and “wouldn’t want to go any further” (Interviewee 16). However, Interviewee 13 argues that, “it [knowledge] cannot just be kept by managers, because these documents or information may need to be input into computers or databases, which will definitely be done by some employees. Furthermore, some employees may also use this information or knowledge in their work”. Thus, a lot of companies (e.g., Interviewee 6’s company) sign confidentiality agreements or contracts with their employees.

“My company has strict regulation on employees’ exchange of information, knowledge or know-how with other companies, especially competitors. Some important materials and methodology should be strictly protected. ... We also have contracts to ensure staff cannot leak any confidential information, or important copyright, know-how, etc. If they don’t abide by the regulation, they will be sacked” (Interviewee 6).

Some interviewees (e.g., Interviewee 14) obviously believe that the leakage of knowledge can be effectively prevented by contracts or patents, at least the legal power or regulation is better than nothing (Interviewee 14). The following is her comment:

“Yes. I have a regulation that asks my employees not to divulge who are my suppliers, and how much my prices are. If I have no regulation, the situation may be worse. The regulation can put some pressure on the employees, and constrain their behaviours” (Interviewee 14).

However, a lot of interviewees (Interviewees 6, 7, 9, 13, 17 and 19) also contend, “it’s [the leakage of knowledge] hard for the managers to control, they don’t know what knowledge the employees have, what knowledge the employees will exchange” (Interviewee 9); “You didn’t hope this case [the leakage of knowledge] to happen, but sometimes, it’s difficult to control, difficult to find. ...you can’t prevent employees’ minds, and their thinking” (Interviewee 17); “The telephones in our offices are recorded and monitored if necessary. But, it is difficult because they may contact through e-mail or from their home after the work, it cannot be monitored”

(Interviewee 6). Some interviewees (e.g., Interviewee 13) thus believe that the influence of management control on the giving employee's transfer behaviour is not so effective as the loyalty to the giving company. The following are the relevant responses:

“Of course, as a company, it definitely has some regulations. Staff aren't permitted to do this, or to do that. However, it's difficult for the company to acquire some practical effects. The regulations have been written on papers, they're text. The real thing that's worthy of trying for a company is to establish good relationship between the boss and the employees. Then, the employees will have loyalty to their boss” (Interviewee 13).

According to these responses from the interviewees, it is easy to see that 'management control on the giving employee' is indeed an important means that has been used by a lot of SMEs to curb the leakage of knowledge, although it cannot completely prevent the leakage from happening. Of course, SMEs' performances on curbing the leakage would be better if both management control on the giving employee and the measures to induce the loyalty from the employee to his employer are used together.

The Duration of the KT

The duration of the KT refers to the time period that a KT project lasts. Just as Interviewee19's argument states, “the longer the duration of a KT is, the more likely the giving and receiving employees might trust or distrust each other”. If they distrust each other, the giving employee might not positively transfer what he should tell to the receiving employee. Thus, there is a possibility that the knowledge transaction between the giving and receiving companies may fail. The former cannot acquire expected benefits from the transaction. “If they trust each other, ... then there is [another] possibility that some important knowledge may be leaked” (Interviewee 13). From the giving company's perspective, it would not like to see that either of the possibilities becomes a reality, the duration of the KT is thus suggested as an important factor at the interaction stage. Eight of 16 interviewees

(Interviewees 7, 9, 10, 13, 15, 17, 19 and 20) are asked to evaluate this suggestion. Only one of them (Interviewee 15) says nothing about it. The others are generally aware of the two possibilities caused by the duration of KT (See the previous quotations from Interviewees 13 and 19). However, for most SMEs, “the duration of knowledge transfer is very short and informal” (Interviewee 10, and also Interviewee 9), although the duration may be “...19 months” (Interviewee 5) in some consultancy companies (Interviewees 5 and 19). So, the majority of SMEs would not worry about the two possibilities caused by the duration of the KT. This point could be confirmed by the following quotations:

“... the management wouldn't care if the knowledge transfer was short, but they would [care] if it was long. ... However, normally, the duration of knowledge transfer [with my customers] is very short and informal. Your talking anything less than an hour to maybe a few [minutes]” (Interviewee10).

“The longer the knowledge transfers, then the larger the risk of too much knowledge being given to someone outside the company, also to the customer. So, yes, if the duration of the project is very long, I would be a bit worried about some of the knowledge being transferred to another party that I did not authorise to hear about that knowledge. But it is very rare for that to happen and I am yet to come across this situation” (Interviewee 7).

“We don't need to worry about small business, easy business, they don't take a long time, you know” (Interviewee 17).

“In most cases, our knowledge exchanges with customers are very short” (Interviewee 20).

According to these comments, the duration of the KT has less chance to cause trust or distrust between the giving and receiving employees because it is short for most SMEs, and hence has less chance to cause the two possibilities to happen (i.e., the failure of the transfer, or the leakage of the knowledge). Therefore, ‘the duration of KT’ is an unimportant factor for SMEs, and should be removed from the factor list. However, it doesn't mean that SMEs should ignore these two possibilities, because they may be caused by other factors or situations.

The Difficulty of the KT

The difficulty of the KT means that, to what extent, the knowledge is difficult to transfer. Generally speaking, if the knowledge is very complex, its transfer may be very difficult, and may need more face-to-face communications and more time. Just as Interviewee 13 claims, “Some [knowledge] transfers are very easy, and may be completed just by e-mail or telephone. Others may be very difficult, and the [giving and receiving] employees would like to face-to-face communicate a lot of times. This may also lead to the two possibilities [i.e., the KT is failed or the leakage of knowledge happens]”. So, similarly, the difficulty of KT is also theoretically considered as an important factor at the interaction stage. To empirically verify this argument, Five SME managers (Interviewees 13, 15, 17, 18 and 19) are interviewed. All of them (See Interview 13’s argument) believe that the two possibilities may happen if the KT is really very complicated and difficult. However, they also argue that, for SMEs, particularly small businesses, “most of the time, knowledge or information exchange is simple, not so complicated” (Interviewee 18), and thus “not so difficult, doesn’t take a long time” (Interviewee 17). Further, “if the knowledge is really difficult to transfer, this guy is very clever, has good prior experience and expressiveness. He can be arranged for this transfer. Then the transfer may need less face-to-face communications, and be finished earlier” (Interviewee 17). So, “this [the difficulty of the KT] isn’t an important factor” (Interviewee 19). Therefore, ‘the difficulty of the KT’ should be removed from the factor list as well.

In summary, the empirical evidence from the interviewees demonstrates that ‘openness’, ‘trust with the receiving employee’, ‘the loyalty to the giving company’, ‘management control on the giving employee’ are indeed very important factors for the interaction stage, and thus should be kept in the factor list. But the ‘duration’ and ‘difficulty’ of the KT are not important factors for SMEs because in the most cases, their KTs are short, simple and informal, and are thus removed from the list.

7.2.4 Conclusions for the Verification on the Giving Side

Based on the verification results for the three stages (i.e., negotiation, selection and interaction) of the giving side, the conclusions can be drawn as follows:

- For the negotiation stage of the giving side, all factors listed in Figure 7.4 are verified as important ones for SMEs, and thus will be kept in the factor list.
- For the selection stage, only the factor ‘theoretical knowledge in the subject’ should be removed from the list; the others, such as the employee’s ‘prior experience’, ‘expressiveness’, ‘trust with the management’ and ‘social interaction skills’ are important for SMEs, and thus should be kept in the factor list of Figure 7.4.
- For the interaction stage of the giving side, the giving employee’s ‘openness’, ‘trust with the receiving employee’, ‘the loyalty to the giving company’, and ‘management control on the giving employee’ are indeed very important for SMEs, and thus should be kept in the factor list. But the ‘duration’ and ‘difficulty’ of the KT are not so important, and thus should be removed from the list in Figure 7.4.

7.3 The Verification Results on the Receiving Side

According to Section 4.5.1, the verification on the important factors will focus on three stages: negotiation, selection and interaction. So, this section will, from the receiving side’s perspective, present the verification results for the three stages. Furthermore, in accordance with Section 4.5.3, for the factors that commonly influence both receiving and giving sides (i.e., ‘trust between the giving and receiving companies’ at the negotiation stage, and ‘the duration of KT’ at the interaction stage), if they are verified as important or unimportant by the giving side, they should be treated as important or unimportant either by the receiving side. Therefore, there is no verification result for the common factors in this section. As to other factors, their verification results are described as follows.

7.3.1 The Negotiation Stage

At the negotiation stage, the factors to be verified for the receiving side are the importance of knowledge, business dependence, trust, the receiving company's ability to reciprocate, and the relevant influences from a third party (e.g., availability of alternative knowledge sources). Obviously, they are the same as the giving side. In other words, they are common factors that are believed to influence the behaviours of the management from both giving and receiving sides.

According to the verification on the giving side, it is known that all factors listed for the negotiation stage are verified as important ones. Based on the argument in Section 7.3, these factors are thus important for the receiving side, no further verification on them is needed.

7.3.2 The Selection Stage

At this stage, the management of the receiving company will decide what kind of employee should be selected to do the specific transfer work. In Figure 7.4, trust with the management (of the receiving side), prior experience in the subject, theoretical knowledge in the subject, absorptive capacity, motivation to learn, and social interaction skills are thought of as being important factors that the management should take into account when he makes the selection decision.

The selection of the receiving employee is an internal affair of the receiving company, and is thus different from both the negotiation and interaction stages that come about between both the giving and receiving sides. So, the verification on the important factors for the selection stage of the receiving side cannot be replaced by the verification for the giving side. Therefore, these factors still need to be verified one by one, although some similar factors (e.g., 'prior experience in the subject') have been verified at the selection stage of the giving side. The following evidence will demonstrate whether these factors are really important at this stage.

Trust with the Management

Trust here refers to the trust between the management and his receiving employee. When the management intends to select an employee as the receiving employee to acquire knowledge, particularly important knowledge from the giving side, he normally expects that the employee could positively interact with the giving employee on behalf of the receiving company so that the important or extra knowledge can be successfully acquired. So, he would like to arrange for a person who is able to behave as he expects (i.e., trusted by him) to do the job. Therefore, trust is believed to be an important factor that the management should consider when he makes a selection decision, particularly for an important knowledge acquisition. Nine of 16 interviewees (Interviewees 9, 11, 12, 13, 14, 18, 19, 20, 21) are requested to verify the belief. All of them generally agree on it, particularly as the transferred knowledge is important or critical. The following are some of their comments:

“Yes, I [owner] trust him more than others. He has a strong sense of responsibility. So I’d like to use him, and let him do important knowledge or information exchanges [with customers and suppliers]” (Interviewee 14).

“For small trading business like our size, valuable knowledge or information exchanges with other companies are our life. Obviously, I prefer to do them by myself or at least by someone [whom] I trust” (Interviewee 20).

“...if the knowledge isn’t so critical, the manager may have wider choices for the receiving employee, the requirement on trust may not be so strict ...” (Interviewee 21).

In addition, from a perspective of encouraging the receiving employee, some interviewees (e.g., Interviewee 19) believe that trust is very important and may positively influence the receiving employee’s behaviours. Here is her comment:

“If the receiving employee is different from the manager doing the negotiation, then the trust is very important, because often a lack of trust leads to de-motivation and questioning, and if you had trust in your receiving employee then it’s a positive cycle” (Interviewee 19).

Based on these comments, a conclusion can be drawn that the more critical the transferred knowledge is, the more important the trust with the management is for the employee to be selected as the receiving one.

Prior Experience in the Subject

The receiving employee's prior experience in the subject is thought of as being an important factor that affects the effectiveness of his knowledge acquisition from the giving employee (Wathne *et al.*, 1996; Albino *et al.*, 1999). So, it is naturally believed that an employee's prior experience should be taken into account when he is selected as the receiving employee. Nine of 16 interviewees (Interviewees 9, 11, 12, 13, 14, 15, 16, 18 and 19) respond to this issue. All of them generally agree that, "the more prior experience he [the receiving employee] has, the easier [it is] for him to carry out the work" (Interviewee 14). "The more experience you have, the more sensible for you to understand the feedback from your customer, ..." (Interviewee 18). So, three of them (Interviewees 9, 12 and 13) think that the prior experience is important for the selection of the receiving employee. But the others argue that the prior experience isn't necessary for the receiving employee although it has positive influence on the effectiveness of KT. Just as Interviewee 19 argues "... they [receiving employees] need to have an understanding of the subject, not necessarily prior experience for them, but they should be able to judge the quality of knowledge they're receiving". Interviewee 15 further claims that the importance of prior experience for the receiving employee depends on the specific situations. If the knowledge to be transferred is simple, the prior experience for the receiving employee is unimportant: "...not really, because the knowledge and experience can be picked up. You could look through a manual and teach yourself, it's so easy to use, it's not necessary for you to have experience and knowledge beforehand" (Interviewee 15). If the knowledge is complex, the prior experience may have a bit of importance for the employee. For example, "...if you were doing the tests, and research and development, then we might need you to have some experience and knowledge then" (Interviewee 15). Because, for most SMEs, "in the most time,

knowledge or information exchange is simple, not so complicated” (Interviewee 18). So, ‘prior experience’ is unimportant for the receiving employee, and should be removed from the factor list.

Theoretical Knowledge in the Subject

In Figure 7.4, theoretical knowledge in the subject is suggested to be an important factor that the management should consider when he selects one of his subordinates as the receiving employee. Five of 16 interviewees (Interviewees 12, 14, 15, 18 and 19) are invited to make comment on this issue. All of them strongly disagree on this point. They think that the theoretical knowledge can be picked up during the learning process, is unnecessarily known by the receiving employee beforehand, and is thus an unimportant factor for the management’s selection decision, although they agree that the importance of theoretical knowledge for the receiving employee depends on specific problems. The following are several examples:

“[Theoretical knowledge is not important for the receiving employees], no, not at all, we can teach them any way” (Interviewee 15).

“It [theoretical knowledge in the subject] depends on specific problems, depends on what knowledge you want to get. To be beneficial, to receive advice or knowledge from other organisations, you don’t necessarily need to know about it beforehand, you could learn about it” (Interviewee 18).

“... [theoretical knowledge in the subject] not so important. You know, the jobs in my newsagent are simple, and don’t need much theoretical knowledge. If the job is related to computer, maybe, it [theoretical knowledge] is important” (Interviewee 14).

According to Interviewee 14’s comment, theoretical knowledge seems to be important for the receiving employee in the knowledge intensive industries, such as IT. However, the IT consultant, Interviewee 12 even thinks that the receiving employee’s theoretical knowledge could be a big nuisance. Here is his comment:

“Theoretical knowledge depends on the person, but it can be a big nuisance because they think that they understand something and therefore do not listen to you” (Interviewee 12).

For most SMEs, “most of the time, knowledge or information exchange is simple, not so complicated” (Interviewee 18). So, based on these analyses, it can be concluded that ‘theoretical knowledge in the subject’ is unimportant for the receiving employee, and should be taken out from the factor list.

Absorptive Capacity

Evidence from the literature shows that the KT effectiveness is heavily affected by the receiving employee’s absorptive capacity (Cohen and Levinthal, 1990; Goh, 2002; Huber, 2001; Connell *et al.*, 2003). So, the ‘absorptive capacity’ is considered as an important factor that the management should take into account as he selects the receiving employee. Six of 16 interviewees (Interviewees 6, 9, 12, 13, 15 and 16) provide answers for this issue. All of them strongly support the argument. Some comments as examples are listed as follows:

“Yes, certainly, this [absorptive capacity] is very important. If the employee is not so clever, the giving employee teach him for one or two whole days, but he can’t understand the knowledge, can’t grasp the point, he can’t apply the knowledge into practice. No company would like to have the result as this” (Interviewee 13).

“Absorptive capacity is important, because if one thing goes in one ear and out the other, then you have wasted your time” (Interviewee 12).

“This [absorptive capacity] is important, because if they get a unit from us, they should fully understand how to use it, no more money for them to waste, so it is important for them to understand what we say so that they could do the jobs efficiently” (Interviewee 15).

Interviewee 12, the IT consultant, even argues that absorptive capacity should be on the top of the factor list for selecting the receiving employee. Here is his comment:

“Probably the absorptive capacity is on the top [of the factors for the selection stage in the receiving side], then trust. The only reason I say this is because if you know the employee doesn’t trust you, but his manager trusts you, then get the manager to tell him to do what you say” (Interviewee 12).

According to the interviewees’ responses, it is easy to know that ‘absorptive capacity’ is really important for the receiving employee, and should be taken into account by the management when he makes the selection decision.

Motivation to Learn

Motivation to learn here means that the receiving employee is motivated to seek or accept knowledge from the outside. A lack of motivation may result in procrastination, passivity, feigned acceptance, sabotage, or outright rejection in the implementation and use of new knowledge (Szulanski, 2000; Huber, 2001; Goh, 2002). Thus, in Figure 7.4, motivation to learn is suggested as an important factor that should be taken into account by the management as he selects the receiving employee. Five of 16 (Interviewees 6, 14, 18, 20 and 21) make comments on the suggestion. All of them strongly support it. The following are some examples taken from their empirical comments:

“... the willingness to learn is very important. Some people want to improve themselves, want to learn something, want to ask questions and get solutions for them. I think these are best people. Some people are not so good, they close their minds. So, the motivation is very important” (Interviewee 18).

“Yes, I [owner] trust him more than others. He has a strong sense of responsibility. So I’d like to use him, and let him do important knowledge or information exchanges [with customers and suppliers]” (Interviewee 14).

“Normally, the employees may be divided into two types. One of them just wants to finish his job, and then relax. The other type has good working attitude, and wants to learn more. As a manager, of course, I prefer to use the employees [that] have motivation to learn. So, this factor [motivation to learn] is very sensible (Interviewee 21).

Generally speaking, the giving side (i.e., giving company and giving employee) intuitively wants to protect its knowledge from diffusion, and is unwilling to provide knowledge to the receiving side (i.e., receiving company and receiving employee) or only hopes to contribute what it wants to transfer. If the receiving employee does not take positive actions to learn from the giving employee, he may lose opportunities to improve himself, and in turn, improve the receiving company's business performance. The company may lose its competitive edges if its performance cannot be timely improved. So, managers "prefer to use the employees [that] have motivation to learn" (Interviewee 21). All of the five interviewees (Interviewees 6, 14, 18, 20 and 21) believe that the 'motivation to learn' is very important for the receiving employee. Therefore, this factor should be kept in the factor list.

Social Interaction Skills

In Figure 7.4, social interaction skills are suggested as another factor that the management should consider when he intends to select an employee as the receiving employee. Do SMEs accept this suggestion or not? Seven of 16 interviewees (Interviewees 9, 11, 12, 13, 15, 16 and 18) provide answers for this question. All of them agree on it. The following are some examples:

"The person who is requesting the knowledge is usually in a weak position, the person who is giving the knowledge is usually in a strong position unless the receiver is a bigger customer, and you have to make a balance. ... If they [giving employees] don't like you they won't talk to you. ... social interaction skills are very important [for the receiving employee]" (Interviewee 9).

"Yes, it [social interaction skills] is [an] important factor. If a person has good skills in social interaction, he may easily develop personal relationships with other people, people would like to talk with him and tell him more" (Interviewee 18).

"Yes, I think it [social interaction skills] is important, because it may help you establish good relationship with the giving employee. If you need help for any reason you would hope that they would look after you. If you have better relationship with them, they may look after you better" (Interviewee 16).

“...if someone is nice to you, and easy to talk to, then you are more inclined to spend more time with him. So, yes, social interaction skills are important for the receiving employee. Because the interaction is always at a personal level, especially with a small company, whereas with a larger one, they just send a memo, you don't really face-to-face talk to anyone” (Interviewee 12).

According to these responses, it is known that as a SME, the receiving company has less chance to use business power to get its needed knowledge, and also known that the receiving employee is usually in a weak position, but the giving employee in a strong position (Interviewee 9). A wise choice for the receiving employee is that he should develop good relationship with the giving employee, otherwise, the latter would not like to talk with the former and tell him more (Interviewees 9 and 18). To develop personal relationship with the giving employee, social interaction skills are obviously very important for the receiving employee (Interviewees 12 and 16). Therefore, it is easy to find out that the interviewees strongly support the suggestion and agree that ‘social interaction skills’ certainly should be considered by the management as the receiving employee is selected.

In summary, for this selection stage of the receiving side, the factors, such as ‘absorptive capacity’, ‘motivation to learn’, ‘social interaction skills’ and ‘trust with the management’ are very important for the receiving employee, and thus should be kept in the factor list. However, the others such as ‘prior experience’, and ‘theoretical knowledge in the subject’ are not so important, and thus should be removed from the list.

7.3.3 The Interaction Stage

At this interaction stage, the receiving employee will interact with the giving employee, and acquire the knowledge from the latter. In Figure 7.4, the factors, such as ‘trust with the giving employee’, ‘management control on the receiving employee’, the ‘duration’ and ‘difficulty’ of the KT are suggested as important ones that the management of the receiving side should take into account.

For most SMEs, “Most of the time, knowledge or information exchange is simple, not so complicated” (Interviewee 18), and thus “not so difficult, doesn’t take a long time” (Interviewee 17). Interviewee 10 also claims that, “the duration of knowledge transfer is very short and informal”. So, the ‘difficulty’ and ‘duration’ of the KT are verified as unimportant for the giving side (See details in Section 7.2.3). Obviously, the both factors are common ones for both the giving and receiving sides. According to Section 7.3, the two factors should be unimportant for the receiving side either, and thus do not need to be verified further.

In addition, ‘trust between both the giving and receiving employees’ is also a common factor that will influence the employees from both sides. The factor has already been verified as important for the giving employee. Similarly, according to Section 7.3, it should be important for the receiving employee as well, and thus does not need to be verified further.

‘Management control on the receiving employee’ here means that the management guides or encourages the receiving employee to acquire knowledge from the giving employee by means of management regulations, rules, strategies, instructions or training. It is obviously an internal affair of the receiving side, and thus should be exclusively verified.

According to this analysis, this section will only present the verification result for one factor (i.e., management control on the receiving employee).

Management Control on the Receiving Employee

According to Section 3.4.4, in order to make sure that the receiving employee can acquire the needed knowledge from the giving employee, the receiving company may impose management control (e.g., rewarding, training and guidance) on the receiving employee to make him to behave as it wants. It thus seems that the

management control is important for the receiving side. Five of 16 interviewees (Interviewees 6, 14, 16, 20 and 21) verify the issue. Their responses are contrary. One of them (Interviewee 21) argues that the factor is very important, particularly the reward regulation may have very positive influence on the receiving employee's learning behaviour. But the others (Interviewees 6, 14, 16 and 20) think that the management control may be imposed on the receiving employee if the knowledge to be acquired is very critical, however, this case is very rare. Just as Interviewee 16 argues "Although my staff do have contact with the suppliers, on the whole, it's just everyday ordering and minor problems. ... big things tend to end up with me [owner]. Smaller things are just routine things, selling up stocks, putting in orders, etc".

"Management control on the receiving employee is very important. For example, if a company has a reward regulation, such as bonus, to encourage employees to acquire knowledge from outside, the receiving employee would have good motivation to learn" (Interviewee 21).

"It depends on the situation. For some critical knowledge, we may provide some guidance or training. But it is very rare" (Interviewee 20).

"No, not so important. We don't have reward regulation on this [i.e., knowledge acquisition]. You know, it is their [receiving employees] jobs. Maybe, other companies have such regulations. We don't have training or guidance for them [employees] either, because what they do are normally routine things" (Interviewee 14).

Based on these responses, it can be concluded that 'management control on the receiving employee' is not so important because the knowledge to be transferred is normally routine things for the employee, not so critical, and thus should be removed from the factor list.

7.3.4 Conclusions for the Verification on the Receiving Side

Based on the verification results for the three stages (i.e., negotiation, selection and interaction) of the receiving side, the conclusions can be drawn as follows.

- For the negotiation stage of the receiving side, all factors listed in Figure 7.4 are verified as important ones for SMEs, and thus will be kept in the factor list.
- For the selection stage, the factors such as ‘absorptive capacity’, ‘motivation to learn’, ‘social interaction skills’ and ‘trust with the management’ are very important for the receiving employee, and thus should be kept in the factor list. However, the others such as ‘prior experience’, and ‘theoretical knowledge in the subject’ are not so important, and thus should be removed from the list in Figure 7.4.
- For the interaction stage of the receiving side, ‘trust with the receiving employee’ is verified as an important factor, and thus should be kept in the factor list. But the ‘duration’ and ‘difficulty’ of the KT, ‘management control on the receiving employee’ are not so important, and are thus removed from the list in Figure 7.4.

7.4 The Verified Important Factors in the Frameworks

According to Section 7.1, it is known that the ground that relates the factors to particular stages in the final framework is the same as that in the initial framework, i.e., literature analysis (See details in Section 3.4). In the interviews, the interviewees are asked to make judgements on the importance of the factors to particular stages. They are actually given a chance to remove the factors that are considered by them as not being related to particular stages. For instance, if an interviewee thinks that the factor ‘business dependence’ has nothing to do with the negotiation stage, he may tell the interviewer that the factor is unimportant for the stage because they are not related to each other. Moreover, the interviewees are also requested to add extra factors that are believed by them to be important to particular stages. So, the interviewees have enough chances to express their opinions on whether they agree the attribution that relates the factors to particular stages in the framework.

Through the interviews, some factors (e.g., the difficulty of KT at the interaction stage) are removed from relevant stages. However, it doesn't mean that the former is not related to the latter. The factors do belong to relevant stages but are verified as unimportant. So the empirical evidence shows that none of the 16 interviewees disagree with the attribution that relates the factors to particular stages in the framework. Nevertheless, some interviewees suggest that some extra factors should be added to relevant stages. For instance, personality (by Interviewee 11) and confidence (by Interviewee 9) are suggested to be added to the selection stage. Because these factors are only suggested by one or two interviewees, also because they are more or less related to some existing factors (e.g., confidence is related to prior experience, absorptive capacity and social interaction skills), they are not put into the factor list. Based on this explanation, it can be concluded that the ground that relates the factors to particular stages in the framework has solid theoretical and empirical bases.

According to the conclusions for the verifications on both giving (See Section 7.2.4) and receiving (See Section 7.3.4) sides, the unimportant factors are removed from Figure 7.3. The important factors contained in the final framework are thus refined as Figure 7.5.

7.5 The Usefulness of the Important Factors

In both the first and second round of interviews, seven of 16 interviewees (Interviewees 9, 13, 14, 15, 19, 20 and 21) are invited to verify whether the factors highlighted in the framework are useful for SMEs. All of them give very positive answers for this question. The following are some examples:

“Very useful. You know, most managers in small companies, like me, took the [management] position when they were very young. I took the position at the age of 25. They don't have so much management knowledge and skills, and don't experience special training on management skills and knowledge that

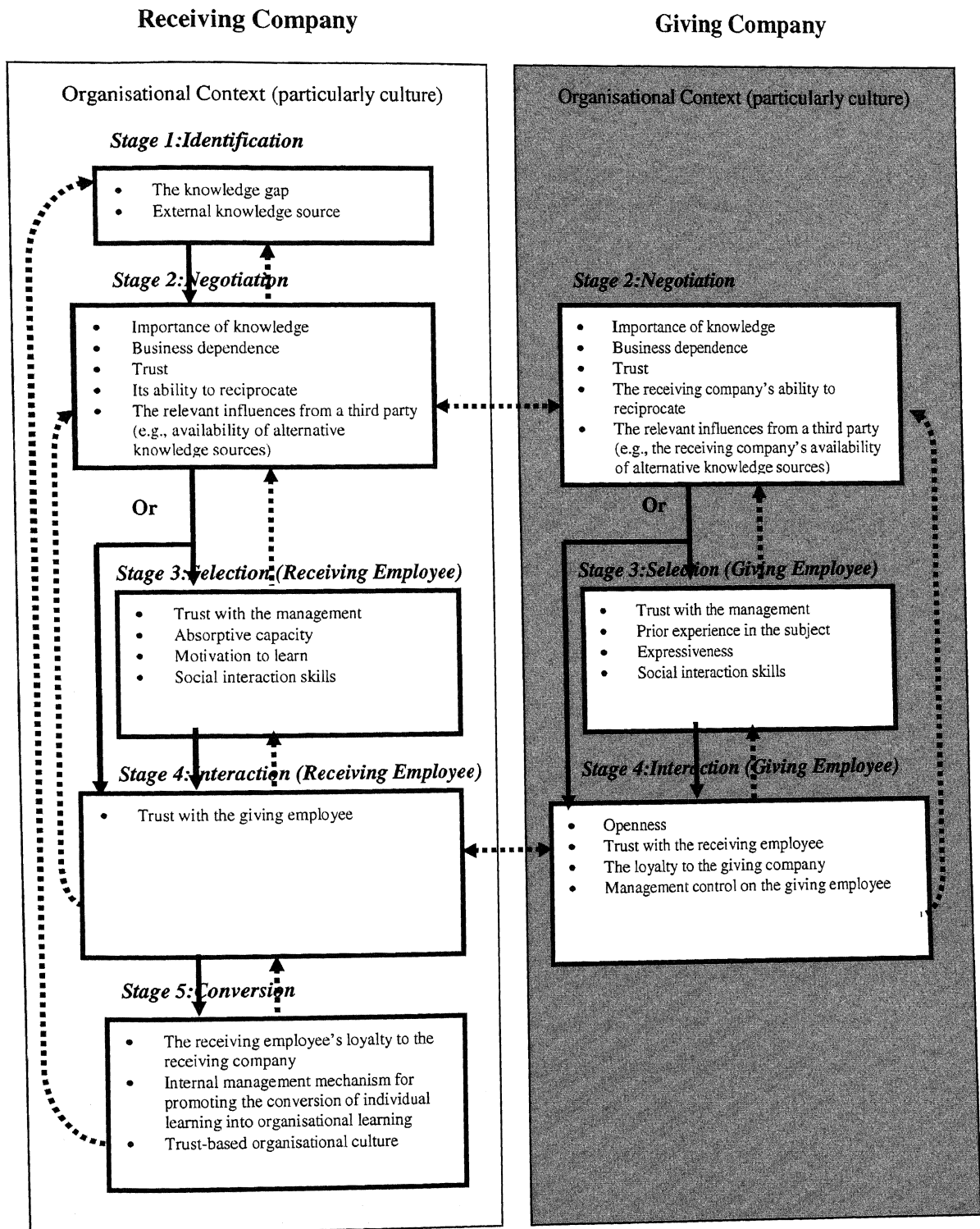


Figure 7.5 The Verified Important Factors and Final Framework

may be provided in large companies. These factors can help them pay attention to some important points, and be aware of what problems may happen, and improve their management skills and knowledge” (Interviewee 20).

“Very useful. They [the factors] provide guidance and a checklist, so [that] we know what factors we should think through” (Interviewee 21).

“Yes. The factors provide systematic clues that we may miss out, so, they are helpful [for us to involve the knowledge transfer]” (Interviewee 14).

“If we have this framework, we could know ... [at each stage] what important factors we should pay attention to, they [factors] will benefit our work” (Interviewee 15).

According to these comments, it may be generalised that the factors are very useful for SMEs. The factor list works as a checklist that can provide systematic clues for SMEs, remind them what factors should be considered at each stage, help them to cope with the ‘boundary paradox’, and thus improve their management skills and knowledge. Furthermore, these factors can further reflect the complexity and difficulty of inter-organisational KT.

7.6 Chapter Summary

In the final framework, the identification and conversion stages are well studied in the relevant literature (Szulanski, 2000; Goh, 2002; Argyris and Schon, 1996; Dodgson, 1993; Cohen *et al.*, 1990). However, the other stages (i.e., negotiation, selection and interaction) have received negligible attention, but will deeply involve or take into account inter-organisational relationship, and can strongly reflect the differences between KT within an organisation and between organisations. Therefore, this verification has focused on the important factors embedded at these three stages, but ignores those at other stages. Moreover, in most cases, it is the giving side that dominates the KT; the verification has been thus carried out from the giving side’s perspective first.

Two rounds (i.e., the first and second rounds) of interviews are carried out to verify the important factors embedded in the final framework. The empirical data collected from the interviews has been analysed. The conclusions can be summarised as follows:

- For the giving side of the final framework, only three factors (i.e., ‘theoretical knowledge in the subject’ at the selection stage; ‘the duration of KT’ and ‘the difficulty of KT’ at the interaction stage) are verified as unimportant and thus removed from the factor list; all others are confirmed as important and kept in the factor list (See Figure 7.5).
- For the receiving side of the final framework, five factors (i.e., ‘theoretical knowledge in the subject’ and ‘prior experience in the subject’ at the selection stage; ‘the duration of KT’, ‘the difficulty of KT’ and ‘management control on the receiving employee’ at the interaction stage) are verified as unimportant and are therefore removed from the factor list, but all others are evaluated as important and kept in the list (See Figure 7.5).
- The ground that relates the factors to particular stages in the final framework is based on literature analysis. The interviewees are given enough chances to express their opinions on whether they agree with the attribution between the factors and stages. Although the above mentioned factors are removed from the factor list, they are indeed related to relevant stages however verified as unimportant. The empirical evidence collected from the interviews demonstrates that the interviewees generally agree with the attribution, thus the ground has solid theoretical and empirical bases.
- The verified important factors in the framework are believed to be able to provide guidance and a checklist for SMEs, to remind them of what problems may happen, what factors should be considered at each stage, and to help SMEs to cope with the ‘boundary paradox’, and improve their management skills and knowledge. They are therefore thought of as being very useful for SMEs. Moreover, these factors can further reflect the complexity and difficulty of inter-organisational KT.

The next chapter will conclude on the contributions to knowledge of this study, and discuss its limitations and the areas for further research.

Chapter 8 Conclusions

8.1 Introduction

It is known that KM issues in SMEs is much neglected, which is not in line with the importance of SMEs in the UK national economy; moreover, compared to KT within an organisation, between organisations is more complicated, harder to understand, and has received less attention. Few attempts have been made to identify the inter-organisational KT needs in SMEs and to systematically study the KT process in the context of SMEs, KM, organisational learning, and social networks.

This research attempted to address these two neglected areas by means of KM, organisational learning and social networks, and thus aimed to develop and evaluate an inter-organisational KT framework for SMEs, to help them have better understanding of the process of the knowledge exchange between a SME and its customer (or supplier). This objective was achieved, firstly, by a review of background literature in the areas of KM/KT, organisational learning and social networks. Then, based on the review, the key issues related to SMEs' KT needs were analysed, an initial inter-organisational KT framework was developed, and the important factors involved in the KT process were identified. A mail questionnaire survey was used to collect empirical data for the key issues about the KT needs; its key findings were further verified by relevant interviews, and the triangulated answers provided more reliable understanding and knowledge on SMEs' KT needs, and also provided a very strong empirical underpinning for the development of the framework. The initial framework and identified important factors were also evaluated or verified by the face-to-face interviews with SME managers, their responses demonstrated that the evaluated framework could help SMEs have better understanding of the inter-organisational KT process, and the verified important factors could help SMEs to cope with the 'boundary paradox', and improve their management skills and knowledge. Both the framework and important factors were therefore believed to be very helpful for SMEs.

This chapter concludes the discussion of the study by, firstly, presenting its findings; then the ways in which it has contributed to knowledge; thirdly, managerial implications; fourthly, identifying some limitations of the research along with suggested areas for further research; and finally, drawing up conclusions.

8.2 Findings

The research findings fall into four categories as indicated below:

- The main research issues identified for this study;
- The findings from the review of relevant literature;
- The identification of the external knowledge needs and importance for SMEs;
- The development and evaluation of an inter-organisational KT framework for SMEs;
- The identification and verification of the important factors associated with the inter-organisational KT process.

Summarised findings within each of the categories are presented in the following sections.

8.2.1 The Main Research Issues Identified for this Study

Based on the overview of the history and current research of KM/KT, as well as SMEs' features, three research issues are identified as follows:

- Very little empirical research has attempted to look at the KM issues at the inter-organisational level in SMEs and to provide empirical evidence to confirm the belief that external knowledge is of prime importance for SMEs, although the analysis and deduction that lead to the belief sound rather reasonable. So, there is a big gap that exists in the empirical identification of

SMEs' perceptions on the importance of, and specific needs for, external knowledge (See details in Section 1.1.1).

- The current inter-organisational KT (or organisational learning) frameworks cannot effectively reflect upon the complexities and difficulties of the KT, and cannot validly help SMEs to cope with the 'boundary paradox' embedded in the transfer process. This point strongly implies that it would be of theoretical value if an inter-organisational KT framework can be developed to help organisations have better understanding of their KT process, and lay a good basis for them to cope with the 'boundary paradox' (See details in Section 1.1.2).
- The specific reasons for that KT between organisations is more complicated and difficult than within an organisation are that, compared to the latter, the former has to face the 'boundary paradox', and lacks a formal chain of authority to co-ordinate its transfer activities (Holmqvist, 2003). However, very little literature exclusively addresses the 'paradox' for SMEs, even less for the management-authorized type, and the relevant strategic issues have been largely neglected (See details in Section 1.1.3).

8.2.2 The Findings from the Review of Relevant Literature

In order to address the issues presented in Section 8.2.1, the literature on KT, organisational learning and social network is reviewed. The academic connections among these three areas are also established. The findings lay a good foundation for this research, and are thus listed as follows.

- Firstly, regardless of KT or organisational learning, most literature mainly focuses on within an organisation, few efforts have been made to study between organisations, even fewer attempts have been made to look at between organisations in SMEs. Furthermore, no literature has examined KT for SMEs in the context of inter-organisational learning and social networks (See details in Sections 2.2.6 and 2.5).

- Secondly, Szulanski's (2000) framework is believed to be applicable for KT from individual to individual, although it is only empirically evaluated for between groups. The empirical results demonstrate that the process view advocated by Szulanski (2000) does help organisations gain a better understanding of the complexities and difficulties in KT (See details in Section 2.2.3).
- Thirdly, inter-organisational KT activities may be distinguished by three types: *management-authorised*; *one-side-management-authorised* and *non-management-authorised*. Informal know-how trading that belongs to the type of non-management-authorised, is relatively the subject of considerable attention in the literature. However formal know-how trading has received negligible research. This study thus tries to address the issues related to management-authorised inter-organisational KT that covers formal know-how trading (See details in Section 2.2.4).
- Fourthly, KT within an organisation is thought of as being complicated and difficult, but between organisations is even more complicated and difficult because of their 'boundary paradox'. To have better understanding of the complexities, difficulties and 'paradox', a framework should not only adopt the process view advocated by Szulanski (2000), and clearly set up the connections between different levels (i.e., individual, group, organisational and inter-organisational), but also benefit the organisations to address the 'paradox' from the two perspectives (i.e., how to learn from a partner, and teaching a partner how to learn) and at the two levels (i.e., inter-organisational level and inter-individual level) suggested by Mohr and Sengupta (2002). However, such a framework cannot be found in the current literature, and has to be developed in this research (See details in Section 2.2.4).
- Fifthly, the cultural distance between organisations increases the difficulties in their interactions, and thus increases the difficulty of performing their KT processes successfully. Therefore, the influences of the organisational

cultural differences on knowledge exchange between organisations will be taken into account in the framework to be developed (See details in Section 2.2.4).

- Sixthly, inter-organisational KT is actually a kind of inter-organisational learning. However, the current inter-organisational learning frameworks can effectively demonstrate the connections between different levels (i.e., individual, group, organisational and inter-organisational), but fail to help the organisations to strategically address the ‘boundary paradox’, therefore cannot be directly used as the frameworks for KT between organisations (See details in Section 2.3.5).
- Seventhly, from the social network perspective, this study will be carried out on the dyad level, not the network level, and by means of the ‘ego-centric’ approach. In addition, the relationship between individuals, or organisations, is considered as being maintained and co-ordinated by two mechanisms – trust and power (See details in Section 2.4.3).
- Finally, there is a trend that inter-organisational KT, inter-organisational learning and social networks draw mutually from each other. This trend inspires this study that the theories of both organisational learning and social network may be helpful for it. Specifically, the former’s strength at building up the connections between different levels, and the latter’s informative contribution on the study of relationship will be used for references for this research (See details in Section 2.2.5).

8.2.3 Identification of the External Knowledge Needs and Importance for SMEs

To identify SMEs’ perceptions on the importance of, and specific needs for, external knowledge, a mail questionnaire survey and some face-to-face interviews are carried out in SMEs. The main conclusions drawn from the survey and interviews are described below in detail.

- External knowledge is indeed of prime importance for SMEs. The customers may have the greatest influence on them, thus knowledge about the customers is perceived as most important (See details in Section 5.2.2).
- Nearly all SMEs (99%) demonstrate a need for some forms of inter-organisational KT. They have extensively involved in some activities such as regular meetings with main customers (or suppliers), getting advice from friends or counterparts in other organisations, and dealing with complaints. Some SMEs even share knowledge with competitors (See details in Section 5.2.4).
- Nearly half of SMEs have made costly errors or mistakes because of inadequate knowledge about customers. The important reasons are that the customers' needs are very difficult to identify, and the right knowledge about doing business with the customers is insufficient. To address these problems, effective engagement in social networks seems to be preferable to electronic networks (See details in Section 5.2.3).
- Social and electronic networks are both important channels for SMEs to acquire the needed external knowledge. Companies are obviously keen to join or establish the social networks that are very close to their businesses, such as the networks with key customers or buying groups (See details in Section 5.2.5).
- The empirical evidence reveals that only 56% of SMEs believe that they are very effective or effective in leveraging knowledge from other organisations to improve their business performance. Some important reasons have been identified. These include that knowledge gaps are very difficult to identify; key employees have no motivation to learn from business partners or switch to other companies once they acquire the needed knowledge; ineffectiveness in internal communication or mistakes in selecting a right communication channel, and lack of experience or ability in applying acquired knowledge into practice (See details in Section 5.2.6).

8.2.4 The Development and Evaluation of an Inter-organisational KT Framework for SMEs

Based on the findings in Section 8.2.2, this research focuses on management-authorized inter-organisational KT, i.e., the KT is authorised by both sides' management. The findings also suggest that organisational learning, social network and the process view advocated by Szulanski (2000) may be helpful for this research. Specifically, organisational learning is strong at building up the connections between different levels. Social network theory is good at the study of relationship. The process view advocated by Szulanski (2000) can effectively reflect the complexities and difficulties embedded in KT. These advantages should be used to develop the new framework so that it can help SMEs have better understanding of the complexities and difficulties of the KT, and lay a basis for them to effectively cope with the 'boundary paradox' embedded in the transfer process. This study thus firstly identified a co-ordinating mechanism (See Figure 3.4) for inter-organisational KT by means of organisational learning and social networks. Then a process model (See Figure 3.6) that consists of four stages: *initiation*, *selection*, *interaction* and *conversion*, was proposed by means of the process view (Szulanski, 2000). The co-ordinating mechanism and process model, together with the cultural difference between organisations, constituted an initial framework (See Figure 3.7) that contained four stages (i.e., initiation, selection, interaction and conversion), set up the connections between individual, organisational and inter-organisational levels, demonstrated the relationship between intra- and inter-organisational learning, and also reflected the complexities and difficulties of the inter-organisational KT process.

In order to evaluate whether the initial framework generally reflects the management-authorized inter-organisational KT practices in SMEs, and could help them have better understanding of inter-organisational KT process, 21 face-to-face interviews (See Table 6.1) that consisted of three rounds (i.e., pilot, first and second round of interviews) (See Figure 6.2) were carried out. The evaluation could further

clarify some particular areas that may have been unclear previously in SMEs, provide deeper knowledge about the complexities and difficulties of their inter-organisational KT practices, and thus refine the initial framework so that it can work as expected and be accepted by SMEs.

Through the pilot and two rounds of formal interviews, the initial framework is revised to become the final framework (See Figure 6.5). Based on the empirical evidence collected from the interviews, some important conclusions can be summarised as follows:

- The final framework not only identifies the important stages (i.e., identification, negotiation, selection, interaction and conversion) in inter-organisational KT process, but also shows the non-linear and dynamic interactions between involving organisations. More importantly, the framework emphasises the repetitive nature of the process among stages and demonstrates the necessity of iterative loops between some stages. The transfer process may, sometimes, not simply progress in the stage sequence, but in iterative loops, as it may be necessary to go back to the previous stage (See details in Sections 6.2 and 6.4).
- The framework shows that the management may select himself as a giving (or receiving) employee and directly jump from the negotiation stage to the interaction stage; or go through the selection stage to select one of his staff as the giving (or receiving) employee. The empirical evidence from SMEs demonstrates that the bigger the size of a company is, the more likely its management selects his staff as the giving (or receiving) employee; the smaller the size of the company is, the more likely the management selects himself as the employee (See details in Section 6.4).
- The interview results claim that the framework vividly describes the complexities, difficulties and dynamics of the inter-organisational KT. It generally reflects SMEs' KT practices, and is thus applicable for SMEs (See details in Sections 6.3 and 6.4).

- The feedback from SMEs indicates that the framework arranges ideas logically and systematically, step by step, like a flow chart, and are well structured and easy to understand. It is believed to be able to provide systematic clues about the relationships between the stages, the non-linear nature and dynamics of the KT process, and thus could help SMEs have better understanding of the KT process (See details in Section 6.5).

8.2.5 Identification and Verification of the Important Factors Associated with the Inter-organisational KT Process

With the help of the initial framework in Section 8.2.4, this research tried to discuss the strategic issues related to the 'paradox' through identification and verification of the important factors associated with the inter-organisational KT process.

This study systematically identified the important factors (See Figure 7.1) related to each stage of the framework by means of the co-ordinating mechanism and relevant literature, from the two perspectives and at the two levels. Then very minor modifications (See Figure 7.3) were made on the attribution of two factors (i.e., the knowledge gap and external knowledge source) to a particular stage in accordance with the revision from the initial framework to the final one.

The following step was to verify whether the identified important factors are really important for SMEs, and can help them address and have better understanding of the 'boundary paradox'. In the final framework, the identification and conversion stages are well studied in the relevant literature (Szulanski, 2000; Goh, 2002; Argyris and Schon, 1996; Dodgson, 1993; Cohen *et al.*, 1990). However, the other stages (i.e., negotiation, selection and interaction) have received negligible attention, but will deeply involve or take into account inter-organisational relationship, and can strongly reflect the differences between within an organisation and between organisations. Therefore, this verification has focused on the important factors embedded at these three stages, and ignores those at other stages. Moreover, in most

cases, it is the giving side that dominates the KT, the verification has been thus carried out from the giving side's perspective first.

The verification consisted of 16 face-to-face interviews (See Table 7.1) and experienced two rounds (i.e., first and second round of interviews). The conclusions for the verification of the important factors embedded in the final framework can be summarised as follows.

- For the giving side of the final framework, only three factors (i.e., 'theoretical knowledge in the subject' at the selection stage; 'the duration of KT' and 'the difficulty of KT' at the interaction stage) are verified as unimportant and thus removed from the factor list; all others are confirmed as important and kept in the factor list (See Figure 7.5 and details in Section 7.2.4).
- For the receiving side of the final framework, five factors (i.e., 'theoretical knowledge in the subject' and 'prior experience in the subject' at the selection stage; 'the duration of KT', 'the difficulty of KT' and 'management control on the receiving employee' at the interaction stage) are verified as unimportant and are therefore removed from the factor list, but all others are evaluated as important and kept in the list (See Figure 7.5 and details in Section 7.3.4).
- The ground that relates the factors to particular stages in the final framework is based on literature analysis. The interviewees are given enough chances to express their opinions on whether they agree with the attribution between the factors and stages. Although the above mentioned factors are removed from the factor list, they are indeed related to relevant stages however verified as unimportant. The empirical evidence collected from the interviews demonstrates that the interviewees generally agree with the attribution, thus the ground has solid theoretical and empirical bases (See details in Section 7.4).
- The verified important factors in the framework are believed to be able to provide guidance and a checklist for SMEs, to remind them of what problems may happen, what factors should be considered at each stage, and to help SMEs to cope with the 'boundary paradox', and improve their management skills and

knowledge. They are therefore thought of as being very useful for SMEs. Moreover, these factors can further reflect the complexity and difficulty of inter-organisational KT (See details in Section 7.5).

8.3 Main Contributions to Knowledge

It is possible to identify three distinct contributions to knowledge that have resulted from this research. These are:

- contribution 1 – identification of the external knowledge needs and importance for SMEs;
- contribution 2 – development and evaluation of an inter-organisational KT framework for SMEs;
- contribution 3 – identification and verification of the important factors associated with the inter-organisational KT process.

Each of these contributions will be described below in detail.

8.3.1 Contribution 1 – Identification of the External Knowledge Needs and Importance for SMEs

Based on Section 8.2.1, it is known that very little empirical research provides evidence to confirm the belief that external knowledge is of prime importance for SMEs. There is a big gap that exists in the empirical identification of SMEs' perceptions on the importance of, and specific needs for, external knowledge.

This study fills the gap by conducting a mail questionnaire survey and some face-to-face interviews in SMEs. The mail survey offers valuable insight into SMEs' current inter-organisational KT situations, and their managers' perceptions on various issues related to KT in the service sector. Key findings that have emerged from the survey are further validated and elaborated through the semi-structured face-to-face

interviews. Then the key findings and interview results have been triangulated and strengthened so as to provide a more reliable understanding and knowledge on SMEs' inter-organisational KT needs and practices in the service sector. The empirical evidence collected from the survey and interviews confirms the general belief that external knowledge is of prime importance for SMEs, and demonstrate that SMEs have very strong needs for external knowledge and inter-organisational KT (See details in Section 8.2.3), and thus provide very strong practical evidence to underpin the necessity of the development of the KT framework.

8.3.2 Contribution 2 – Development and Evaluation of an Inter-organisational KT Framework for SMEs

From a theoretical perspective, KT between organisations is even more complicated, harder to understand, and has received much less attention than within an organisation although the latter is often found to be laborious, time consuming, complicated and difficult to understand, and has also received negligible systematic attention (Szulanski, 2000). Evidence from literature shows that the current inter-organisational KT (or organisational learning) frameworks cannot effectively reflect upon the complexities and difficulties of the KT, and cannot validly help SMEs to cope with the 'boundary paradox' embedded in the transfer process. Therefore, it would be of theoretical value if an inter-organisational KT framework can be developed to help organisations have better understanding of their KT process, and lay a good basis for them to cope with the 'boundary paradox'.

In addition, from an empirical perspective, according to Section 8.2.3, the key findings from the mail questionnaire survey confirm that external knowledge is indeed of prime importance for SMEs, and they have very strong needs for external knowledge and inter-organisational KT. This conclusion provides very strong empirical underpinning for the necessity of the development of the KT framework. Due to SMEs' important role in UK national economy, the development of the

framework for SMEs would be of not only theoretical, but also practical value (See details in Section 8.4) if it can work as expected.

The findings in Section 8.2.4 demonstrate that the final framework developed and evaluated by the research indeed work as expected. It is believed to be able to help SMEs have better understanding of their KT process, and lay a good basis for them to cope with the 'boundary paradox' (See details in Section 8.2.4).

8.3.3 Contribution 3 – Identification and Verification of the Important Factors Associated with the KT Process

According to the third issue identified in Section 8.2.1, it is known that very little literature exclusively addresses the 'paradox' for SMEs, even less for the management-authorized type, and the relevant strategic issues have been largely neglected. The findings in Section 8.2.2 further suggest that the strategic issues related to the 'boundary paradox' should be explored from two perspectives (i.e., how to learn from a partner, and teaching a partner how to learn) and at two levels (i.e., inter-organisational level and inter-employee level). However, very few inter-organisational KT (or learning) frameworks validly build up the connections between the receiving and giving sides, and between inter-organisational and inter-employee levels, and thus cannot be used to explore the strategic issues from the two perspectives and at the two levels. Therefore, previous writing on this topic has dealt with the issues only in a fragmented way (Goh, 2002).

To fill this gap, this research has made positive development. Firstly, the final framework developed and evaluated by this study effectively set up the connections between the receiving and giving sides, and between inter-organisational and inter-employee levels. This lays such a good basis that it is feasible to explore the strategic issues from the two perspectives and at the two levels with the support of the framework. Secondly, from a strategic perspective, compared to KT within an organisation, the 'boundary paradox' inevitably causes many more factors to be

involved in the process of KT between organisations. Because the process is divided into five stages by the final framework, these factors are thus related to relevant stages of the framework. The identification of these important factors can remind SMEs what factors should be taken into account when they exchange knowledge with their customers (or suppliers), and thus help them address and have better understanding of the 'boundary paradox'. Moreover, they can further reflect the complexities and difficulties of inter-organisational KT. Therefore, these important factors will be very helpful for SMEs.

The findings in Section 8.2.5 show that the factors identified and evaluated by the study are really helpful for SMEs. They are believed to be able to work as a checklist for SMEs, remind them of what factors should be considered at each stage, and help them to cope with the 'boundary paradox' (See details in Section 8.2.5).

8.4 Managerial Implications

The findings from this research have several managerial implications.

Firstly, the key findings of the empirical investigation on SMEs' KT needs provide a chance for SME managers in the service sector to know their counterparts' perceptions on the importance of, and needs for, external knowledge, and current KT practices and performances of the whole sector. This may help the managers to benchmark their own perceptions and performances, and improve their KT practices.

Secondly, based on Section 8.2.4, the feedback from SMEs indicates that the final framework generally reflect their KT practices, and could help them have better understanding of the KT. So the framework can be used as reference guides for SME managers, or be used to facilitate workshops to train them so that they have better knowledge about the complexities, difficulties, non-linear nature and dynamics of the inter-organisational KT.

Finally, according to Section 8.2.5, the interviewees claim that the verified important factors in the framework are believed to be able to provide guidance and a checklist for SMEs, to remind them of what problems may happen, what factors should be considered at each stage, and to help SMEs to cope with the 'boundary paradox'. For instance, at the interaction stage, the factor 'openness' may remind management of the giving company that the giving employee should properly control his openness, and could not tell everything to the receiving employee, particularly important knowledge, otherwise, the company's advantage edge will be damaged. The factor 'trust with the receiving employee' tells the management that the giving employee's openness may be directly influenced by trust between the giving and receiving employees. The higher the trust, the more likely the giving employee is to raise his openness to the receiving employee. But as a business, it is impossible for management to advocate that the giving employee should not develop a good relationship with the receiving employee. The factor 'the giving employee's loyalty to the employer' implies that management should induce the giving employee's loyalty to the company through measures such as the creation of trust-based organisational culture, to contradict the influence of the trust between the giving and receiving employees. It sounds rather passive for management. However, the factor 'management control on the giving employee' suggests that management can positively take some measures such as regulations, guidance, training and even legal power (e.g., contracts) to restrict the giving employee's improper behaviours (e.g., leak important knowledge to the receiving employee). Because "... most managers in small companies, ...took the [management] position when they were very young. ... They don't have so much management knowledge and skills, and don't experience special training on management skills and knowledge that may be provided in large companies" (Interviewee 20). Therefore the verified important factors can also be used to train SME managers so that their management skills and knowledge can be improved. For instance, the factors can be used as reference guides for SME managers, or be used to facilitate workshops and develop advanced IT tools for KT readiness to train them. The factors can also inform NVQ (i.e.,

National Vocational Qualifications) Level 4/5 to take strategic issues related to the KT readiness into its strategic management examination. Which may direct relevant examinees, particularly those from SMEs to better understand and cope with the 'boundary paradox'.

8.5 Limitations of the Study and Future Research

8.5.1 Limitations of the Study

As with all research, this study inevitably has some limitations.

First of all, the sample selection for this research has limitations. The study targets UK SMEs, the results may not be applicable to micro-companies (i.e. less than 10 employees) or large companies (i.e. more than 249 employees), or SMEs in other countries. The samples for the questionnaire survey are taken from the FAME database, its information inaccuracy (for example, the number of employees does not seem to be entirely reliable) causes wrong samples to be selected and thus leads valid responses to be reduced (See details in Section 4.4.4). The empirical investigation on SMEs' inter-organisational KT needs is limited to the service sector; its results therefore may not be applicable to non-service sectors. In addition, the important factors are identified from a strategic perspective and aim to help or remind SME managers to address the 'boundary paradox'. It is thus undoubtedly a right choice that SME managers (or owners/general managers/MDs) are invited to verify these factors. However, it is employees who mainly do the specific transfer jobs at the interaction stage, particularly for the larger end of the medium sized companies. So, if employees from the larger medium sized companies can be invited to verify the important factors identified for this stage as well, strategic judgement on the factors, based on the responses from both the managers and employees, may offer more valuable insights.

Secondly, knowledge exchange between organisations is very complex and has different types (e.g., management-authorised, one-side-management-authorised, non-management-authorised). It is impossible to describe or explain all types just by means of this one framework. The framework focuses on the management-authorised inter-organisational KT, i.e., the cases where KT is authorised by the management of both giving and receiving sides. Even for these cases, the framework may sometimes need to be modified to adapt to some specific situations. For example, the interviewees (e.g., 12 and 19) from the consultancy companies argue that, “sometimes, I would like to find the knowledge gap for them [the receiving company] on their behalf, which in turn will bring chance for me to do business” (Interviewee 12). So, the identification may sometimes originate from the giving company. Therefore, the identification stage of the framework should be moved into the giving side to adapt this situation.

Finally, this study does not explore how the organisational cultural differences will influence the important factors highlighted in the framework or the whole KT process.

8.5.2 Future Research

The limitations discussed suggest an agenda for further research.

The Evaluation of the Framework and the Factors for Micro and Large Businesses

The final framework and associated important factors have not been empirically evaluated for micro and large businesses. So, the evaluation of the framework and the factors is suggested to be carried out for them. Moreover, for the large businesses, the important factors identified for the interaction stage should be verified not only by their MDs (or directors/managers) but also by employees.

The References for the Studies on Other Types of Inter-organisational KT

It seems that the final framework can be used as references for the studies on the non-management-authorised, and one-side-management-authorised KT, although it does not target these two types. At least, the combination of the process view (Szulanski, 2000), organisational learning and social network theories advocated by the framework can be used for the studies because this method has been proved to be very effective in reflecting the complexities and difficulties embedded in inter-organisational KTs.

Reverse Transfer

There is an issue of reverse transfer that has been largely overlooked in the literature (Edwards, 1998; Edwards and Ferner, 2004). Edwards (1998) presents this issue by means of a case study of a British multi-national company. The headquarters of the company diffuses to its overseas subsidiaries management practices which are characteristic of its country of origin. It is also probable that the headquarters will draw on management practices operating in its overseas subsidiaries. In other words, management practices will not only be diffused from home to host countries but also from host to home country. In fact, this issue may not only happen within a multi-national company, but also between SMEs. For instance, Interviewee 12 (a SME manager) argues that the giving company probably gets knowledge from the receiving company as well. However, very little literature has attempted to look at the reverse transfer issue in SMEs. In order to address this issue, the final framework may be further modified. For example, in the giving side of the final framework (See Figure 6.5), two extra stages could be added: identification and conversion (See Figure 8.1). The two stages are represented by dashed-rectangles, which mean that the main role of the giving company is still a knowledge provider. Of course, the proposed framework needs to be empirically evaluated.

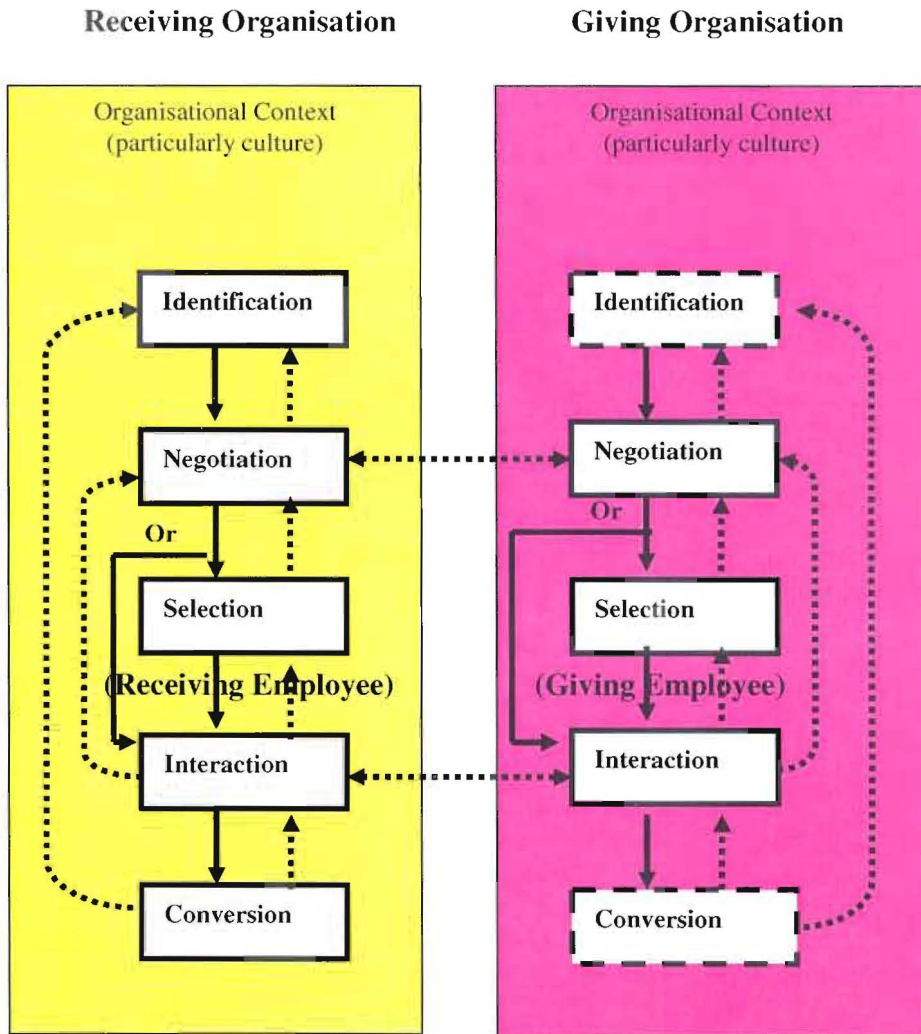


Figure 8.1 The Framework for Reverse Transfer between Organisations

Cross-cultural Influence on the Important Factors

Another direction is to explore how cross-cultural issue influences the important factors highlighted in the framework or the whole KT process. According to Section 2.2.3 (p.36), organisational (or national) culture may be defined as the set of values, beliefs, attitudes, aptitudes, ideas, aspirations, rationalities, norms and expectations, as well as practices, common to all or to the great majority of the members in an organisation (or country). Culture is tightly connected to members of the organisation (or country), embedded in the way they act, what they expect of each other and how they make sense of each other's actions. The culture guides the members' day-to-day working relationships and determines what kind of behaviour is acceptable and what is not, and how power and status are allocated. Often, it is not only unarticulated, but also taken-for-granted and invisible to members of the organisation (or country). According to this culture definition, it is impossible to find out two organisations (or countries) that have exactly the same culture. Due to cultural differences, inter-organisational KT partners may have different expectations of the same event, or different senses of the same action, and therefore could misunderstand each other, and even make contrary responses to the event or action. Their relationships (e.g., trust between management, and between employees of the both sides) and communications are further adversely affected. The giving employee's expressiveness, and the receiving employee's absorptive capacity and social interaction skills thus cannot be fully brought into play when the employees interact with each other. Therefore, inter-organisational KT partners suffer from their organisational culture differences, and also national culture differences if they are from different countries.

From another perspective, knowledge is context-based; knowledge and culture are inextricably linked in organisations (De Long and Fahey, 2000; Abou-Zeid, 2002). Some best practices work very well in one company, but don't do so well in another company. So, at the conversion stage, one of the important reasons that such a

problem is caused is that the best practices are embedded in, and also only suitable for the giving company's organisational culture. The receiving company should create a similar culture if it wants to successfully learn the practices from the giving company. This discussion shows that the cross-cultural issue is indeed very important for inter-organisational KT. It is thus not strange that the issue is currently becoming a hot-point in KM academia (De Long and Fahey, 2000; Abou-Zeid, 2002; Edwards and Kidd, 2003; Ford and Chan, 2003; Zhu, 2004).

8.6 Concluding Remarks

This research has identified some significant gaps in the area of inter-organisational KT for SMEs. The study attempted to fill the gaps and made contribution to knowledge through the identification of the external knowledge needs and importance for SMEs; the development and evaluation of an inter-organisational KT framework for SMEs; and the identification and verification of the important factors highlighted in the framework. The findings suggest that external knowledge is indeed of prime importance for SMEs. They have very strong needs for external knowledge and inter-organisational KT. This point thus provides very strong practical underpinning for the necessity of the development of the KT framework. The final framework vividly describes the complexities, difficulties and dynamics of the inter-organisational KT, and provides systematic clues about the relationships between the stages. It is believed that the framework generally reflects SMEs' KT practices and is able to help SMEs have better understanding of the inter-organisational KT. The verified important factors in the framework are believed to be able to provide valuable guidance and a useful checklist for SMEs, to remind them of what problems may happen, what factors should be considered at each stage, and to help SMEs to cope with the 'boundary paradox'. Moreover, these factors can further reflect the complexities and difficulties of inter-organisational KT.

The key findings of the empirical investigation on SMEs' KT needs can help SME managers to benchmark their own perceptions and performances, and improve their KT practices. The final framework and the important factors can be used to train SME managers to improve their understanding of inter-organisational KT process, management skills and knowledge. All of them are thus thought of as being very useful for SMEs. Therefore, the key findings of the empirical investigation, the framework and the important factors have offered not only valuable theoretical insights but also practical value. It is hoped that benefits of this research can be extended beyond the targeted areas in the study. Therefore, the research sets up future agenda for the evaluation of the framework and the factors for micro and large businesses, cross-cultural influence on the important factors, reverse transfer and other types of inter-organisational KT.

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Appendices

Appendix A The Questionnaire for the Mail Questionnaire Survey

The Survey for Knowledge Transfer Needs in SMEs

The survey forms an important part of a research which aims to help SMEs to improve their competitiveness and performance by means of knowledge management. The survey attempts to gather information about SMEs' needs for knowledge exchange with their customers, suppliers or other organisations. Therefore, general opinions and practices on knowledge exchange between organisations will be investigated.

Knowledge management is the process of continually managing knowledge (and expertise) of all kinds to meet existing and emerging needs, to identify and exploit existing and acquired knowledge assets, to develop new opportunities and to enhance competitiveness.



1. What is the total number of employees in your company at all locations?
 <10; 10 – 49; 50 – 99; 100 – 249; > 249

2. What is your perception on the importance of adequate knowledge in the following areas to your company's success?

Please tick where appropriate	Very important	Important	Indifferent	Unimportant	Very unimportant	Unknown
1) Customers						
2) Competitors						
3) Suppliers						
4) Emerging market trends						
5) Own competencies and capabilities						
6) Own product/services						
7) Best practices/effective processes						
8) Others						

3. Are you personally aware of any situation of your company in last five years in which very costly errors or mistakes were made because of:

Please tick where appropriate	Yes	No
1) Insufficient knowledge about competitors		
2) Insufficient knowledge about customers		
3) Insufficient knowledge about suppliers		
4) Insufficient knowledge about other organisations		
5) Repeating same errors or mistakes		
6) Others		

4. Could you please check if your company has been involved in the following knowledge transfer activities? If not, are there any needs for doing them?

Please tick all boxes that appropriate	Yes	If not, then		
		need	no-need	unknown
1) Establish strategy to obtain information from customers, suppliers, competitors and other organisations.				
2) Use information from customers, suppliers, or other organisations to improve your business performance.				
3) Use information from competitors to improve your business performance.				
4) Send employees to relevant exhibitions/congresses.				
5) Send employees to universities or research institutes for further study.				
6) Hire know-how from advisors or consultants.				
7) Purchase license.				
8) Learning through joint ventures.				
9) Learning through R&D contract.				
10) Learning through joint development agreement.				
11) Learning through customer-supplier partnership.				
12) Others.				

5. How many business associations (e.g., customer-supplier partnership associations, industrial associations, BusinessLink) has your company joined?

_____ (if the answer is none, please go to question 10).

6. From an acquiring knowledge perspective, please list the name of the most important business association for your company.

_____.

7. How effective is your company in acquiring knowledge through the most important business association?

Very effective; Effective; Indifferent; Ineffective; Very ineffective

8. Does the most important business association have its own Intranet?

Yes, please go to question 9

No, please go to question 10

9. Is the most important business association effectively supported by its own Intranet (an internal computer network that operates using the same protocol as the Internet. It acts as a means of sharing knowledge among business association members)?

Yes No

10. Does your company have its own extranet (Extranet is an extension of a company's intranet that allows external users to access some parts of the Intranet)?

Yes No

11. Could your company access to other companies' extranets?

Yes No

12. Do you think whether the following routines are important for your company to obtain the needed knowledge (please tick all that appropriate)?

1) Social networks Yes No (please specify reason: _____).

2) Electronic networks Yes No (please specify reason: _____).

13. How effective is your company in leveraging knowledge from other companies to improve business performance?

Very effective; Effective; Indifferent; Ineffective; Very ineffective

14. Which of the following positions best describes your job (please tick where appropriate) ?

Owner/ Managing Director

Marketing Manager

IT Manager

Other Manager

Others (please specify): _____.

Please use the pre-paid envelope provided, or return to: **Mr Shizhong Chen**
Luton Business School
University of Luton
Park Square
Luton, LU1 3JU

Appendix B The Covering Letter for the Mail Survey

Luton Business School
University of Luton
Park Square
Luton, LU1 3JU

16 September, 2001

Dear Manager,

The Survey for Knowledge Transfer Needs in SMEs

The survey forms an important part of a research which aims to help SMEs to improve their competitiveness and performance by means of knowledge management. The survey attempts to gather information about SMEs' needs for knowledge exchange with their customers, suppliers or other organisations. Therefore, general opinions and practices on knowledge exchange between organisations will be investigated.

The survey can be influenced by your responses. Even if you feel that knowledge transfer/management does not particularly apply to your company, we are still interested to hear from you. It will only take you about ten minutes to complete.

We would be very grateful if you could return the completed questionnaire in the pre-paid envelope to us. All of your answers will be treated with strict confidentiality and will not be divulged in a disaggregated form, or used for other purposes except for this research. We look forward to hearing your views. If you would like to receive a free report of the survey, please attach your business card with the questionnaire. Thank you for your time and co-operation in advance.

Yours sincerely

Shizhong Chen
Research Student
E-mail: shizhong.chen@luton.ac.uk
Tel: 01582 743035

Appendix C The Interview Protocol

The protocol is referenced during the process of the semi-structured interviews: not all of them are asked, nor are asked questions all listed either. The sequence of the questions is not necessarily followed as they are listed here.

Introduction

Greeting

Explanation and reminder of the purpose and focus of the interview

Readdressing confidentiality of the interview

Asking permission to tape-record

The following are the details

Thank you very much for agreeing to be interviewed. This research aims to collect information about how a small or medium-sized company exchanges knowledge (for example, know-how, marketing intelligence, trade secret, patent licensing, and so on) with its customers, suppliers or other organisations. Some researches demonstrate that SMEs are very active in exchanging knowledge with their customers or suppliers. For example:

- some companies establish a customer complaints information system to ensure that all complaints are recorded and analysed, and make the summary information available to all staff in future dealings with the customer and for improving the operations of the business;
- some companies request their salespersons to collect information about the customers' requirements, and take some reward measures to encourage the salespersons' valuable contributions;
- some companies try to build up good relationships with their suppliers so as to get accurate information from the suppliers to control their own inventory level, or support manufacturing;

- some companies buy patents or technical equipment from suppliers, and arrange for staff to learn from the suppliers how to efficiently make use of the patents or technical equipment;
- some employees may seek practical technical information or advice from colleagues in different companies (e.g., customers, suppliers, even competitors) through their personal relationship network when they encounter some technical difficulties in their work.

We hope to collect some general information about how your company exchanges any valuable knowledge with your customers or suppliers, its process, key influential factors and your comments.

We further confirm that the information we collect will be treated with strict confidentiality and anonymity. It will not be divulged in a disaggregated form, or used for other purpose except for this research.

Would you have any objections to the interview being tape-recorded? This would help me to analyse interview result afterwards. It also helps to preserve the accuracy of the data collected.

Interview date and time:	
Interviewee:	Job title:
Firm:	Add:
Tel:	
Fax:	
E-mail:	
Background information	
Total number of the company's employees _____	
Main services/products offered _____	

Background Information

Based on the previous table, some questions may be asked, for example:

1. Could you please say how many employees your company has, and what main services/products are offered by your company?
2. Could you tell me your position in the company?

Part 1: The Validation of the Key Findings of the Mail Questionnaire Survey

1. Could you give a concrete example about knowledge exchange between your company and your customer (or supplier)? Could you further describe its specific exchange process?
2. What is your perception on the importance of external knowledge about customers, suppliers or competitors?
3. Has your company made costly errors or mistakes because of insufficient knowledge about customers? Could you give an example?
4. Do you think whether social networks, such as customer-supplier partnership association, and Business Link, are important for your company to obtain the needed knowledge? Could you give an example?
5. Do you think whether electronic networks, such as Internet and extranet, are important for your company to obtain the needed knowledge? Could you give an example?
6. How effective is your company in leveraging knowledge from other companies to improve business performance? Could you give an example?

Part 2: The Evaluation on the Framework

The explanation (See Appendix D) on the framework is provided for the interviewees first, then the following questions will be asked:

1. Do you think that the framework generally reflects the knowledge transfer practices in your company? Why?
2. Do you think there are any stages that need to be added? Why?
3. Do you think there are any stages that need to be deleted? Why?

4. Do you perceive there to be any feedback loops or lines needed to be modified or corrected? Why?
5. Do you think this framework may help your company have a better understanding of the exchange process between itself and its customers (or suppliers)? Why?

Part 3: The Evaluation on the Important Factors

From the Giving Side's Perspective

1. At the negotiation stage, do you think the importance of knowledge is a significant factor to influence the giving company's knowledge transfer decision or not? Why?
2. Could you make similar judgements on other factors for the giving company at the negotiation stage?
3. At the selection stage, do you think the trust between the giving company and employee is an important factor to influence the giving company's selection decision or not? Why?
4. Could you make similar judgements on other factors for the giving company at the selection stage?
5. At the interaction stage, do you think the loyalty to the employer is an important factor to influence the giving employee's knowledge transfer behaviour or not? Why?
6. Could you make similar judgements on other factors for the giving employee at the interaction stage?
7. At these stages, for the giving side, are there any other factors that have not been included? Why?

From the Receiving Side's Perspective

8. At the selection stage, for the receiving company, do you think the absorptive capacity is an important factor to influence the receiving company's selection for a receiving employee or not? Why?
9. Could you make similar judgements on other factors for the receiving company and employee at the selection stage?
10. At the interaction stage, for the receiving company, do you think management control on the receiving employee is an important factor or not? Why?

11. At these stages, for the receiving side, are there any other factors that have not been included? Why?
12. Do you think the factors listed in the framework are useful or not? Why?

The End of the Interview

Express thanks for the interviewee's comments and opinions.

Appendix D An Example for the Explanation of the Framework

The following explanation is made for the first revised framework (See Figure 6.3). The explanations for other frameworks can be easily derived from this one.

Knowledge transfer between two companies has three types: management-authorised, one-side-management-authorised, and non-management-authorised. Non-management-authorised knowledge transfer between two companies means that employees from different organisations exchange knowledge through their private channels, without the authorities of their management. The one-side-management-authorised means that the transfer is authorised by one side's management, but not by the other side, the employee himself on the other side makes the transfer decision. The management-authorised means that employees from different organisations are authorised by their management, on behalf of their organisations, to exchange knowledge. This research will focus on the management-authorised knowledge transfer between two companies.

Of the two companies, one is called a giving company, the other one is called a receiving company. The receiving company will acquire knowledge from the giving company. Because the specific works related to the knowledge transfer will be done by employees from both the receiving and giving companies respectively, an employee from the receiving company will be correspondingly called a receiving employee, an employee from the giving company will be called a giving employee. So, there are four actors involved in the knowledge transfer between two companies, i.e., giving company and giving employee, receiving company and receiving employee. The two different background colours mean that the two companies have different contextual backgrounds, particularly the cultural difference. The cross-cultural difference will influence the four actors' knowledge transfer behaviours, however, this interview will ignore this issue, and focus on the knowledge transfer process between the two companies.

The knowledge transfer process is divided into five stages: identification, negotiation, selection, interaction and conversion. Identification is the stage that the receiving company internally finds its knowledge gap, identifies its needs for acquiring external knowledge and the external knowledge source. Negotiation is the stage that the receiving company iteratively negotiates (or discusses) with the giving company on the knowledge transaction, or some problems occur in the transfer process, to reach an agreement or oral commitment. Selection is a stage in which a giving (or receiving) employee is selected by the giving (or receiving) company to give (or receive) the agreed knowledge to (or from) a receiving (or giving) employee. Interaction is a stage in which both the giving and receiving employees iteratively contact each other to transfer the agreed knowledge. The following stage is conversion in which the receiving employee will contribute his acquired knowledge to the receiving company; the individual learning will be converted into organisational learning to successfully improve the receiving company's business.

There are no clear-cut divisions between the stages. Sometimes, the transfer process may not simply progress in the stage sequence, but in circles, so that some stages are iteratively used. For example, once it initially identifies its needs for acquiring external knowledge and the external knowledge source (i.e., the giving company), the receiving company will negotiate or discuss the potential knowledge transaction with the giving company. Sometimes, it may be found that the needs initially identified by the receiving company are not what it exactly wants. The receiving company may bring the comments or inquiries made by the giving company back to the identification stage to further internally clarify its needs. Then it will negotiate or discuss with the giving company again. This loop may iteratively run until the true needs for the receiving company are found out. Although the selection of a receiving employee is the receiving company's internal task, sometimes, the receiving company may inform or consult the giving company about its arrangement of the receiving employee. So, there is a feedback loop that goes from the selection stage to the negotiation stage. The loop may continually run until the receiving employee is finally selected. Similar things may happen to the giving side as well. At the interaction stage, the receiving employee may feedback some information about his co-operative situation with the giving employee to his employer – the receiving

company. Based on the specific situations, the receiving company may take the following actions: feedback some instructions to guide the receiving employee's cooperation with the giving employee; or select another employee to replace the current receiving employee; or negotiate with the giving company so that the latter could influence or even change the current giving employee. So there are feedback loops between interaction and selection stages, and between interaction and negotiation stages on the receiving side. Similarly, the giving side also has these kinds of loops. At the conversion stage, the receiving employee will apply his acquired knowledge into the receiving company's business. The receiving employee may still need the giving employee's help because he may not completely understand the acquired knowledge or not fully absorb the knowledge needed for the application, which will initiate a feedback loop from the conversion stage to the interaction stage, then back to the conversion stage again. Furthermore, different companies have different environments; the application of the knowledge in the new environment may trigger some new problems, which may cause the receiving company to identify its new needs for knowledge acquisition. Some of them may be internally met at the conversion stage. Some of them may cause the receiving company to seek a new external knowledge source and begin a new round of inter-organisational knowledge transfer. So, there is a feedback loop from the conversion stage to the identification stage, which may in turn go back to the conversion stage or begin a new round of external knowledge acquisition. All loops may iteratively progress.

Now, you are welcome to make some comments or corrections on the framework. Would you like to answer the following questions?

Appendix E The Transcript of Interview 9

Could you tell me your job and position in your company?

I work for a telecommunication distributions company in XXX. I am the company's administrative manager. I take care of all the support sites.

How many employees are there in your company?

25

Could you give a concrete example about how your company exchanges knowledge with your customers (or suppliers)?

You have to understand that knowledge and information are two different things. There are four levels: data, information, knowledge and wisdom. So most times it's information but at other times it isn't. We have people on our systems and we have suppliers, it's networked to all stations.

We firstly get all the data from that, we find out what is selling and what isn't. That is very important. So when something is not selling we do not buy it, if it is selling then we buy it. We have to find out what we sell through the network and data, we know who is buying and how regularly. Also we have to find out what is coming back, we have a terrific customer service department, they check everything and then they give the customer a replacement. The faulty goods go back to the manufacturer. We have to find out why the goods are faulty and why they are coming back.

What sometimes happens is that our retailers tell us what is good and what is bad, and then we tell the supplier. Because this way there is no point in selling what is bad as it will cost money and time. It costs time and money to send the customer a new one in replacement, and it also costs money to send it back to the supplier.

We don't manufacture, we just distribute goods to wholesales and retailers. So, our customers are wholesalers and retailers. We have to be very careful to give them good services. We try to deal with them on a same day or next day principle. Because some customers are very big, it is very dangerous if you cannot treat them very well. You have to keep the customers happy, if you don't keep them happy they could go to someone else, it could cost the company money.

We exchange knowledge or information through telephone. Telephone is very convenient, but the best method is through face-to-face meeting. That is always

better, because you are focusing on the customer and his needs directly, it is more personal. Once you get to know the person the easier it is to talk to him over the phone. Customer relationship is very important. Personal relationship is very important. If you have strong relationship with your customers then it helps everybody. We have a good relationship with our customers, where some of them will contact us and tell us of goods that are coming down in price in a few months time, be careful, don't buy too much. Or they may tell us other valuable information or knowledge that we would be interested in. All this helps our business, as we have inside knowledge of goods.

When we buy some goods, every product has a little certification sheet that gives you information on that product that you've bought. You can read it; from there you can find out what functions it has, what materials it uses, and the telephone number and address of the manufacturer. But sometimes it doesn't and you have to actually look at the product to find out what it can do or offer.

Based on your examples, do you think knowledge transfer with your customers (or suppliers) is successful or not?

Sometimes it is and sometimes it is not. With the company we like to know what to buy and what not to buy. Sometimes it [knowledge from partners] is helpful, but sometimes it is difficult to tell you. They don't always know. How could they explain to you? They don't know! They may need more time to answer you. Sometimes, you ask the supplier, 'some goods are selling very well, could I get more?' he may say 'the goods ran out, I don't know the exact time when we could give you more'. For example, some goods are produced by Japanese manufacturers, and are delivered from overseas. Just several months, all the goods are gone. If you want more, they don't know when new goods will be delivered here. The future things are sometimes difficult to expect, very hard.

Do you think knowledge about competitors is important or not?

Very important. Good knowledge about them is helpful for our businesses.

Do you think it is easy for your company to acquire and use external knowledge to successfully improve your business?

Not so easy. It depends on if it's [knowledge transfer] worthwhile. If the company thinks the job [knowledge transfer] is worthwhile, then they will do it. They wouldn't if they thought the job was not worthwhile. This is a problem. It all comes down to money; if they think it will help the company financially, then they will do the job.

Sometimes it is not easy to acquire knowledge. Because nobody knows, and sometimes they won't tell you. Sometimes they won't be allowed to tell you. You can sometimes get the information but at other times you can't. It depends. If the information will help to improve business in both ways then they will sometimes give you information. They will do cost analysis, benefit analysis, and make balance between the benefits and costs, then decide if the knowledge is given or not.

Have you got knowledge through your private relationships?

We do get advice or information from our friends. There is in our computer system a little notebook where we can put some information about our customers on. This gives us some information on our customers that we can take to our meetings/discussions with them. We also put in who is helpful and who isn't.

However, if someone gave me information/knowledge in confidence then I wouldn't put it down, as the notebook is open to everybody in the company. So if it was given to me in confidence, then that is how the information would stay. I would use the information if it was beneficial to the company, but I wouldn't say where the information came from, as I wouldn't want to break the trust. That would cost the company money.

Do you think social networks are important channels for you to get knowledge or not?

Yes, very important.

(The interviewer explains the framework to the interviewee, then asks the latter the following questions)

Does the framework generally reflect the knowledge transfer practices in your company?

It's excellent. I like it very much.

Why?

Because every knowledge transfer starts from a knowledge gap. In this framework, you first identify the knowledge gap, this is absolutely right. What is it you want to know? What is it you need to know? What is it you've already known? You may have internal knowledge, if you have internal knowledge then you won't need all of that [the framework], you can go straight down. Sometimes you may not need to go outside to gain knowledge, someone you work with may know. Therefore, you need to identify the knowledge gap first to see if you need external knowledge. Secondly, this framework looks like a flow chart in project management, [is] easy to understand, easy to remember. Further, the feedback loops between the stages exactly reflect the iterative and circulating characteristics of the knowledge transfer.

Do you think whether there are any modifications needed on the framework?

No. It's fine.

Do you think whether it is helpful for improving SMEs' understanding of the knowledge transfer process? Why?

It's very simple, its stages, factors and map are easy to follow. It arranges ideas logically and systematically, step by step, like a flow chart. It shows what to do,

what factors should be considered at each stage, therefore, it can improve the understanding, and is very helpful for anybody, not just me.

Now, let's look at the factors. At each stage, several factors are listed, and suggested as important ones that a SME should take into account when it exchanges knowledge with its customer (or supplier). We hope you, based on your experiences, could comment on whether they are really important for SMEs. Assuming that your company is the giving company, we may start from the negotiation stage first.

At the negotiation stage, do you think the importance of knowledge is a significant factor to influence your knowledge transfer decision or not? What's its meaning?

For example, if your company is the giving company, your customer, as the receiving company, wants to get knowledge from you, but the knowledge is very important for your company, would you give the knowledge to it or not?

Companies that share knowledge may face threats, can put themselves in danger. If they feel it [knowledge transfer] is a big risk, they will not do it. If it is a little risk, they wouldn't mind. If they feel that it is important to you and that there is no risk then they will talk to you, but only if there is no risk. Always remember that knowledge transfer is a two-way flow.

If the knowledge is very important for the company, it will not give it out. Nobody wants to put himself in danger. For example, if somebody asks you if you are making a product, and how much about its profit margin, then I don't think you would help [him].

At the negotiation stage, do you think business dependence is an important factor to influence your knowledge transfer decision or not?

If it's not putting the company at risk, then it is not a problem, but if it is putting the company at risk then it becomes a problem. You have to evaluate each customer's request for knowledge individually and assess whether or not to take that risk and pass on the knowledge or information. Sometimes, for a big customer's request, you may have to take the risk, you have to do that [transfer] even if you're not so happy. So, this is an important factor.

Could you make similar judgements on other factors at the negotiation stage? Alternative knowledge sources?

This is a very important factor as the customer is asking for your help and you have to help them, because if you don't, someone else will. If the customer doesn't have any other choices, then you have no problem. If the customer has a choice, then that puts you in a difficult position. This is another risk. If you don't give the knowledge to him, he may go to someone else. Because you want them to buy and so you have

to assess the risk involved in telling the customer the information and knowledge that they want to know.

If the knowledge that they want is very simple, you have the knowledge and you know that they could get it from somewhere else, then you must tell them in order for them not to look elsewhere for the information. You make them rely on you in order for them to keep coming back, because this makes a good relationship with them, and for you to gain information in return in order for you to sell your own products to them.

Another example about influence from a third party: if I'm your customer, and want to get knowledge from you, and another customer, my competitor, requests you don't give the knowledge to me. How will you make your decision?

In this case, I have to make adjudgement.

Have you encountered this situation?

Yes, I have. I don't worry about this. I try to keep customers, try to keep both of you. But sometimes, if I have to choose which customers I would like to keep, I would choose the bigger customer, especially if they bring in big profits. For example, if you spend £100 a month, and he only spends £10 a month, I would like to meet your request and keep you. It's not a nice thing to do, but sometimes you have to do it in order to keep your business going.

Receiving company's ability to reciprocate?

Yes, it's important.

Do you think all factors listed (for the giving company) at the negotiation stage are important?

Yes, they are very important. You also need to deal with relationships. Trust, trust, trust, it's always very important.

Do you think any more factors need to be put in to this stage (negotiation)?

You put everything in there, it's fine. But, at the negotiation stage, managers need to have communication skills and social skills. If they don't like you, they won't talk to you. So you need social skills and communication skills. Staff need to know how to interact with their customers. If you don't have these two skills, then they won't talk to you. It all helps with employee and customer relationships. So these two skills are important for managers. At the interaction stage, similar to the managers, the two employees also need to have these two skills, the same things. Managers even need to have communication skills and social skills in their own companies. If they have the two skills, employees may think 'the manager is a gentleman, not a bully', and would like to listen to them, and are happy to carry out works arranged by them.

At the interaction stage, do you think if there are different requirements on the behaviours of both giving and receiving employees?

The person who is requesting the knowledge is usually in a weak position; the person who is giving the knowledge is usually in a strong position unless the receiver is a bigger customer, and you have to make a balance.

At the interaction stage, do you think the duration of knowledge transfer is an important factor for both giving and receiving employees?

No. Knowledge transfer between customer and supplier is usually very specific, very short.

At the interaction stage, for the giving company, do you think management control on the giving employee is an important factor or not?

What happens is sometimes managers like to have control, so the managers here have to ask the managers there; they may sometimes need help, but normally they will find out [answer] by themselves, as they like to have control of the knowledge. They will tell you what you can tell and how much you can tell.

Sometimes, no bridge here [i.e., the interaction between receiving and giving employees]. The managers do not like that bridge, because if I have good relationship with a person, I may exchange more knowledge with him, if I trust you, I can tell you more. So, at this stage, once the employees have very good relationship, it's hard for the managers to control; they don't know what knowledge the employees have, what knowledge the employees will exchange. However, if they are busy and have to use the bridge, they would like to use employees they trust to do it. If the managers trust you, then it's not too bad, they don't worry too much about the knowledge that you tell [the receiving employee] as they trust that you will use good judgement on the risks for your company.

At the interaction stage, for the giving company, do you think the giving employee's loyalty to the employer is an important factor or not?

Yes, it is. There is always some loyalty to the employer; also there has to be trust and a good relationship between the employees and managers, otherwise, the employees may tell more [knowledge to the employees from other companies].

At the selection stage, as a manager of the receiving company, you will select a receiving employee to do specific knowledge transfer work. Do you think trust between you and the employee is an important factor to influence your selection decision or not?

Trust is important, but not everything. You can trust someone on one thing, but cannot trust him on other thing. You can't put people onto everything. Some people are good at one thing whereas they may not be good at another. I wouldn't give a job to someone who doesn't know how to do it. It is all part of the selection process, which you must have. They must be competent and have the ability to do various jobs.

Other factors: prior experience, absorptive ability, social interaction skills, are fine, very important. You may also put 'confidence' at here [the selection stage on the receiving side]. In everywhere, in everything, you need confidence.

At these stages, are there any other factors that have not been included?
No.

Appendix F Coding Scheme Sheet

Please see details in the following six pages

Note:

Y1 ----- Marked by Staff 1

Y2 ----- Marked by Staff 2

Y3 ----- Marked by Shizhong Chen

Coding of Raw Data of the Interviews (Examples for Part 1)						
Quotes from the Interviews		Categories (Please type "Y" in appropriate cells)				
		Importance of external knowledge about customers, competitors and suppliers	Costly errors or mistakes because of insufficient knowledge about customers	Inter-organisational KT activities	Importance of social networks	Importance of electronic networks
1	... we have to have good understanding of the weaknesses ... of the competitors (Interviewee 20)	Y1, Y2, Y3				
2	... the most important thing is not necessarily your customer, but your supplier (Interviewee 6)	Y1, Y2, Y3				
3	... if you haven't had good understanding about ... customers, ... you wouldn't exist (Interviewee 18)	Y1, Y2, Y3				
4	... it is technical managers who decide which material should be used. We didn't know this point, and conventionally contacted ... salespeople (Interviewee 20)		Y1, Y2, Y3			
5	[Missed the tender], we are ... ineffective in selecting a right channel to deliver important knowledge ... (Interviewee 5)		Y1, Y2, Y3			
6	To get a good understanding of customers' complaints, we could ask ... customers to fill a questionnaire ... to find out exactly which complaints are prior types (Interviewee 3)	Y2	Y1	Y2, Y3		
7	... knowledge is there, but not always easy to put it into practise ... (Interviewee 16)					Y1, Y2, Y3
8	We negotiate with our supplier, and reach an agreement on transferring the innovation idea ... (Interviewee 1)			Y1, Y2, Y3		
9	One of the great things now is the Internet, it is fantastic for finding information (Interviewee 19)				Y1, Y2, Y3	
10	... the most important link to us is the buying group [an association] (Interviewee 16)				Y1, Y2, Y3	
11	... we use consultancy company to do market research for us ... (Interviewee 3)			Y1, Y2, Y3		
12	It has to hurt them [customers] before they take notice of any advice that has been given to them (Interviewee 12)					Y1, Y2, Y3

Coding of Raw Data of the Interviews (Examples for Part 2)					
Quotes from the Interviews		Categories (Please type "Y" in appropriate cells)			
		Reflecting the KT practices	Stages to be added	Stages to be deleted	Modification on lines or feedback loops
1	...but another stage 'identification' needs to be added at the top of the model (Interviewee 4)		Y1, Y2, Y3		
2	What is nervous is the straight lines ... Because ... nothing is on the straight line, everything is circular (Interviewee 5)			Y1, Y2, Y3	
3	The knowledge exchange between companies does progress in circles. ... it [the framework] works for our company (Interviewee 7)	Y3		Y1, Y2	
4	The frameworks ... provide systematic clues that we may miss out, so, they are helpful (Interviewee 14)				Y1, Y2, Y3
5	...the selection stage should be deleted, both the negotiation and interaction stages should be combined together into one stage ... (Interviewee 10)			Y1, Y2, Y3	
6	...the feedback loops between the stages exactly reflect the iterative and circulating characteristics of the knowledge transfer (Interviewee 9)	Y1, Y2, Y3			
7	This more or less presents a typical transfer of ideas and knowledge between companies (Interviewee 7)	Y1, Y2, Y3			
8	...it [framework] can improve the understanding, and is very helpful for anybody, not just me (Interviewee 9)				Y1, Y2, Y3
9	This framework is fine, ... the major elements are reflected in the model (Interviewee 6)	Y1, Y2, Y3			
10	The frameworks are fantastic, ... they will benefit our work (Interviewee 15)				Y1, Y2, Y3

Coding of Raw Data of the Interviews (Examples for Part 3, Negotiation Stage in the Giving Side)						
Quotes from the Interviews		Categories (Please type "Y" in appropriate cells)				
		Importance of knowledge	Business dependence	Trust	Receiving company's ability to reciprocate	Influences from a third party
1	The more critical the knowledge [is], the more I would worry about the knowledge getting outside our own company (Interviewee 7)	Y1, Y2, Y3				
2	If the knowledge is very important for the company, I will not give it out (Interviewee 9)	Y1, Y2, Y3				
3	... for a big customer's request, ... you have to do that [transfer] even if you're not so happy (Interviewee 9)		Y1, Y2, Y3			
4	We'd like to give knowledge to customers that more likely bring benefits for us (Interviewee 17)		Y1		Y2, Y3	
5	... for small businesses, if you lose trust, you lose business (Interviewee 12)			Y1, Y2, Y3		
6	... if they have other knowledge sources, we have to be careful to keep them stay with us (Interviewee 15)					Y1, Y2, Y3
7	The whole thing is about do we get benefits both ways or not, or is it a one way street (Interviewee 10)				Y1, Y2, Y3	
8	... trust is the most important because without it we have lost everything (Interviewee 15).			Y1, Y2, Y3		

Coding of Raw Data of the Interviews (Examples for Part 3, Selection Stage in the Giving Side)						
Quotes from the Interviews		Categories (Please type "Y" in appropriate cells)				
		Trust with management	Prior experience in the subject	Theoretical knowledge in the subject	Expressiveness	Social interaction skills
1	You need to have someone who is good at listening, good at talking and very logical in his protocol and making any notes (Interviewee 19)					Y1, Y2, Y3
2	... there has to be trust and a good relationship between the employees and managers, otherwise, the employees may tell more (Interviewee 9)	Y1, Y2, Y3				
3	... it is important that the employee can effectively explain knowledge and information to the customer (Interviewee 7)				Y1, Y2, Y3	
4	Theoretical knowledge in subject, in most cases, ... may help the employee to have good understanding of the subject (Interviewee 18)			Y1, Y2, Y3		
5	... If I had to go and select someone, it had to be the person with the most experience or enough experience to be confident in the subject matter (Interviewee 19)		Y1, Y2, Y3			
6	If I am speaking to you in jargon, don't express it properly, then you can't understand me, and you can't get your job done efficiently (Interviewee 15)				Y1, Y2, Y3	
7	I'd like to select an employee who has good social skills to introduce our businesses to the customers (Interviewee 20)					Y1, Y2, Y3
8	... if the knowledge is critical, ... I should select an employee whom I know very well, to prevent some critical expertise, and secret from being leaked (Interviewee 7)	Y1, Y2, Y3				

Coding of Raw Data of the Interviews (Examples for Part 3, Interaction Stage in the Giving Side)						
Quotes from the Interviews		Categories (Please type "Y" in appropriate cells)				
		Open-ness	Trust with receiving employ-ee	Loyalty to the employer	Manage-ment control on the giving employee	Dura-tion of KT
1	If the transferred knowledge is very important, the giving employee may need to have a very clear training by managers ... (Interviewee 6)				Y1, Y2, Y3	
2	The giving employee cannot tell everything [to the receiving employee] (Interviewee 21)	Y1, Y2, Y3				
3	... normally, duration of knowledge transfer [with my customers] is very short and informal (Interviewee 10)					Y1, Y2, Y3
4	... in any exchange of knowledge you represent your company, and in that way, you have to be loyal to your company (Interviewee 19)			Y1, Y2, Y3		
5	... the giving employee should be aware of what can be told, and what cannot, and protect our edges (Interviewee 17)	Y1, Y2, Y3				
6	... I will chose an employee that I can trust to give the correct amount of knowledge as well as the right knowledge, I will offer some guidance as well (Interviewee 7)				Y1, Y2, Y3	
7	The giving employee should set up good relationship with the receiving employee, try to make him happy, so that his company may do business with us again (Interviewee 17)			Y1, Y2, Y3		
8	... most of the time, knowledge or information exchange is simple, not so complicated (Interviewee 18)					Y1, Y2, Y3

Coding of Raw Data of the Interviews (Examples for Part 3, the Receiving Side)		Categories (Please type "Y" in appropriate cells)						
Quotes from the Interviews		Trust with the management	Prior experience in the subject	Theoretical knowledge in the subject	Absorptive capacity	Motivation to learn	Social interaction skills	Management control on the receiving employee
1	I [owner] trust him more than others. ... I'd like to use him, and let him do important knowledge or information exchanges (Interviewee 14)	Y1, Y2, Y3						
2	For some critical knowledge, we may provide some guidance or training. But it is very rare to happen (Interviewee 20)							Y1, Y2, Y3
3	Some people want to improve themselves, want to learn something, want to ask questions and get solutions for them, I think these are the best people (Interviewee 18)					Y1, Y2, Y3		
4	If a person has good skills in social interaction, he may easily develop personal relationships with other people, people would like to talk with him and tell him more (Interviewee 18)						Y1, Y2, Y3	
5	[Theoretical knowledge is not important ...], no, not at all, we can teach them any way (Interviewee 15)			Y1, Y2, Y3				
6	... if one thing goes in one ear and out the other, then you have wasted your time (Interviewee 12)				Y1, Y2, Y3	Y2		
7	... they [receiving employees] need to have an understanding of the subject, not necessarily prior experience for them (Interviewee 19)		Y1, Y2, Y3					