

**INTERACTION EFFECTS ON
PRODUCT DEVELOPMENT
NETWORKS IN CHINA**

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*A thesis submitted for partial fulfilment of the
requirements of the University of Greenwich for
the Degree of Doctor of Philosophy*

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DECLARATION

“I certify that this work has not been accepted in substance for any degree, and is not concurrently being submitted for any degree other than that of the degree of Doctor of Philosophy being studied at the University of Greenwich. I also declare that this work is the result of my own investigations except where otherwise identified by references and that I have not plagiarised another’s work”.

PhD Candidate Signature

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Date:

Date:

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ABSTRACT

The purpose of this research is to contribute to the understanding of product development processes within dispersed business-to-business networks that involve business actors in China. This research investigates how these processes initiate and evolve in a dynamic environment. More specifically, it examines the impact of culture in terms of interpersonal interactive relationships on the formation and development of product development processes. It investigates what is in the shadow of direct resource interface development and explains that an analysis of relationship processes in China can be inspirational for theoretical developments.

The Actors-Resources-Activities (ARA) model of interaction (Hakansson & Snehota 1995) of the business network paradigm is employed to analyse relationship patterns in low, medium and high-tech product development networks, in terms of actor bonds, resource ties and activity links. Although analyses of the case studies show that there seem to be difficulties for the ARA model to capture and interpret what is in the 'shadow' of direct business interaction processes in China, the main solution is drawn from acknowledging the significance of both the business network and the guanxi network approaches as parallel mechanisms or cross-cutting patterns of explaining evolution of business relationships.

This research highlights how an Industrial Marketing and Purchasing (IMP) approach can be useful to interpret interaction processes in China and argues that the business network approach and IMP thinking, in general, can be enriched by accounting for the empirical phenomenon of guanxi, which manifests in both business and non-business interactive processes. Guanxi networks take on a new perspective as they are viewed and analysed from a dynamic lens under product development contexts. In particular, the emergence and refinement of the concept of guanxi as 'process of interaction' or 'process of organization' has been a crucial element in the development of IMP thinking.

Managerial lessons are drawn by analysing how actors' interactions influence product and technology co-creation, and how business actors nurture, develop and maintain relationships in China. Findings show that non-business interactive processes at the interpersonal network level influence significantly the formation of activity links,

resource interfaces and actor bonds at the inter-organisational level. Hence, accounting for non-business interaction and the socio-cultural features in nurturing, developing and maintaining relationships offers a complimentary approach to contemporary business network research practice.

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To my grandfathers

Chapter I



INTRODUCTION

1.0 Research Problem

This thesis investigates the contemporary research problem of organising for interaction within globally dispersed product development networks involving business actors in China as well as Western business actors. It maintains that collaboration, an emergence of mutual adaptations and resource combining among network actors, is a complex and multifaceted phenomenon and is prerequisite as well as outcome of personal interactive processes.

This research places particular attention to the Chinese point of view of organising for interaction in networks with the aim to enhance understanding of interpersonal relationship formation, development and maintenance in China. This research endeavours to decipher how significant indirect and non-business interaction is and to what extent it influences business actors' relationships and knowledge resource combinations at the inter-organisational level. In other words, it investigates how socio-cultural aspects influence interpersonal interaction processes and to what extent they influence organising for interaction within inter-organisational networks. The study examines the indirect impact of interpersonal interaction to knowledge interface development, which in turn characterises evolution of network processes and change in network formations. Hence, this research aims to establish the conceptual link between interpersonal interaction and knowledge-based resource interaction, empirically.

The primary research questions that guide investigation are articulated as follows:

- ❖ How do Chinese business actors perceive their relationships in both upstream and downstream business networks?
- ❖ How do network processes operate differently in China and in networks involving Chinese business actors?
- ❖ Why and to what extent does the cultural context in China influence the characteristics of relationships in terms of relationship phases, such as relationship initiation, development, and maintenance?
- ❖ How significant the role of inter-personal interaction is to the development of knowledge-based resources in Chinese business networks?
- ❖ How could the interaction process in China be described and what are the theoretical and managerial implications of such a process?

1.1 Research Gap

A business actor usually relates beyond boundaries defined in competitive terms. Boundaries are created through an ever-changing process; ‘by including history and expectations in a variety of relationships, network thinking goes beyond structures, indicating that there is no natural network boundary’ (Huemer et al. 2004: 62). In the tradition of the Industrial Marketing and Purchasing (IMP) research group, a holistic and flexible approach that incorporates the above premises to analyse actors’ interactions and resource interdependences is employed; *the Industrial Network* or *the Business Network theory*, or simply, *the Interaction Approach*.

The primary assumption of IMP research is that any relationship consists of a combination of actor bonds, resource ties and activity links, which together provide its basic analytical framework: the Actors-Resources-Activities (ARA) model of interaction. The Western-based ARA model of interaction is used to analyse actor bonds, resource ties and activity links of any dyadic relationship within the network, by integrating the thinking and acting of *these specific others* (Huemer et al. 2004: 64). The ARA model of interaction was initially developed by Hakansson and Johanson (1992) and only focused on the analysis of dyadic relationships in terms of the three layers of the model. Hakansson and Snehota (1995) extended the focus of the model to incorporate indirect relationship effects to the analysis of direct dyadic relationships.

The ARA model of interaction ‘is framed at a high level of generality and its complexity derives from the conceptual interdependence and interaction between its constituent elements’ (Araujo & Easton 1996: 101). As an analytical tool, the ARA model not only can be used to analyse empirical phenomena but also can incorporate reflections from practice (e.g. Kriz & Fang 2000). In this regards, the second generation of the ARA model of interaction does not account for episodes of non-business interaction especially when these episodes are based on values of a highly distinct socio-cultural or institutional context, such as the Chinese, compared to that in the West. Given that the primary objective of this research to employ the interrelated layers of the ARA model to empirically analyse relationships and in particular how business actors in China nurture, develop, and maintain business relationships, the deficiencies of IMP research should be discussed and acknowledged here. Initially, it should be mentioned that this thesis maintains that any Western business model, theoretical approach or analytical device

used to analyse product development issues in China should be informed by Chinese socio-cultural characteristics. Therefore, it is important for the IMP-based business network approach to be contextualised if it is to be applied onto research examining business networks and interactive relationships in China. Interestingly, as contextualisation refers to localisation, this study shows that by enriching the interaction concept, the basic premise of the business network approach, with socio-cultural insights, the IMP paradigm is subsequently informed and hence appropriate to accommodate any network research problem in Chinese settings.

The indirect relationships refer to activity links, resource interfaces and actor bonds of other relationship patterns in the network, and this research clearly distinguishes indirect relationships from non-business interaction, which is directly associated with interpersonal networks, and which cannot be clearly captured by the ARA model. This research shows that this is due to the basic premise of the business network theory, that of interaction. Hence, the research gap can be eliminated by enriching the premise of interaction. This can be implemented through empirical investigation of the relationship aspects that characterize relationship initiation, development and maintenance in Chinese contexts. In other words, the interaction concept is taken out of the Western-based business network theory, and placed into the socio-economic context of *guanxi* networks, wherein is empirically developed.

Chinese social science research places great weight on the concept of *guanxi* ‘resources’ or ‘principles’ referring to relationship aspects, which are developed in interaction (Langenberg 2007). Yet, the operation of *guanxi* resources in Chinese networks is quite different compared to relationship resources or aspects of relationships in Western networks. In particular, the *guanxi* aspects of relationships, or ‘*guanxi* resources’, are primarily developed through interpersonal interaction. It is therefore particularly important to examine the complex socio-cultural aspects that characterise various interpersonal relationship contexts when studying Chinese business practices. As Boisot and Child (1999) note, business networks in China exhibit high levels of cognitive and relational complexity. According to the two authors, interpersonal networks in China ‘offer a greater potential for adaptation and renewal’ (ibid, p. 244); two characteristics necessary for product development sustainability. However, their research as well as previous research on *guanxi* networks (e.g. Langerberg 2007; Luo 2007), do not consider

the relationship between product development and interpersonal networks; quite the contrary. Numerous scholars have examined interpersonal relationships in China (e.g. Brenan & Wilson 2007; Luo 2007) and have associated guanxi with various lines of businesses, such as human resources, marketing and finance, as well as with access to governmental information and corruption.

Based both on current knowledge and new findings from case studies, this research tries to explain the link between the concept of interpersonal relationship resources and the concept of knowledge-based resources and aims to empirically establish that the development of interpersonal resources through social interaction significantly influences knowledge-based resource interaction. In other words, it aims to enhance understanding of the significance of the relational aspects to knowledge-based resource interaction and to offer explanations of process and change in inter-organisational networks. However, the degree to which guanxi aspects of relationships influence knowledge-based resource interaction and the formation of product development networks, in particular, varies. As the study empirically shows, this may depend on the level of the industrial sector, the complexity of the network, the absorptive capacity of the actors, the actors' networking capacity, and the relationship stage or the product development phase, among other influential factors.

Since knowledge is 'rooted in practice, action and social relationships' (Swan et al. 2002: 8), the development of knowledge resources in inter-organisational networks involves a process of continuous actors' interactions, which take into account existing and new interpersonal resource interfaces. Continuous social interaction may develop a shared understanding (Nonaka & Konno 1998); a common view, which in turn may be amplified to the whole network and beyond the project level to the whole organisational and/or inter-organisational level; whether the network is composed of Western and Chinese business actors or Chinese business actors alone. Although knowledge can develop without much networking and development of interpersonal relationships, this study views the development of knowledge as an activity of social interaction (Young & Denize 2000), and not merely as a negotiated resource interface. This view of knowledge has a strong interpersonal element that is central to product development network formation and change. Knowledge resources are developed in interaction and produce a working network structure. Hence, this research investigates how critically the power of

interpersonal relationships in China mediates the development of knowledge-based resources. In other words, guanxi or interpersonal relationships can be highly productive of knowledge resources in China, and this is established by viewing the guanxi interaction concept from a product development lens; as a process of organisation.

1.2 Theoretical Contribution

The value of the thesis draws from its focus, which lies upon the innovation and product development potential of Chinese partnerships in place of the prevailing cost efficiency focus. In other words, there is an opportunity for Western business actors to move from a view of China as a source of cost-cutting to a source of innovation; ‘From made-in-China to innovated-in-China’ is the new development strategy of mainland China reflecting a radical swift from labour-intensive manufacturing to innovation alongside rising local costs and wages (Fang et al. 2010; Jui 2010). However, to get advantage of the opportunities offered, business actors should develop their understanding of the significance of interpersonal relationships in China. Hence, this study makes a significant contribution to the theoretical knowledge of Chinese management with respect to guanxi or guanxiology by looking at the sociological concept of guanxi through different lenses than have previously been used. This research’s contribution lies in the consideration of guanxi as influential to knowledge-based inter-organisational resource interaction in China. Simply put, the way actors interact to nurture, develop, and maintain relationships in Chinese business settings will have effects on the nature of network links; basically what flows within relationships, such as knowledge and information as well as trust and commitment, among other resources. Hence, this research views guanxi in business networks as a process of social interaction and rejects conventional views of guanxi as something static based on hierarchical structures and power relations. Theoretically, the study aims to develop the concept of guanxi to a more holistic concept that reflects a process of organising for interaction that involves both business and non-business interaction and which is influenced directly and indirectly by other interactive processes in networks.

In this way, this research can enhance overall understanding of the concept of interaction and through an analysis of interaction in China can argue that interpersonal interaction influences evolving business relationships and it is a major source of change in network formations, in terms of product and technology development. Interpersonal interactive processes are considered to be highly important not only for nurturing high-order inter-organisational relationships but especially for relationships between first- and second-tier suppliers in product development networks that involve business actors based in China. Overall, there are various implications that can be drawn from a new representation of the

guanxi concept for business networks, supply network management, product development, and Chinese management, which are all elaborated throughout this study. Guanxi is a central constituent of interactive relationships and is associated with increased knowledge transfers, especially tacit, and access to others' resources and networks. The empirical investigation in business and supply networks in China shows how guanxi interaction can be associated to product development efficiency and success. In other words, it explains why guanxi can be seen as highly productive of knowledge resources in China. This research endeavours to examine guanxi's dynamism, which can be represented in multiple ways and critical episodes in different phases of business relationships. This research demonstrates to what extent guanxi is adaptable and renewable and how guanxi aspects of relationships influence product development collaboration and emergence.

The present study provides empirical evidence that guanxi can be considered as a process of interaction, through which relationship resources, such as trust, commitment, reciprocity and affection among others, are nurtured, developed and maintained. This research suggests that, in a Chinese context, product development within inter-organisational networks is primarily based on the interplay between socio-cultural and knowledge-based resources, which by definition are developed in interaction. However, in practice this interplay is even more complicated because culture is paradoxical in its nature; it is interactive culture (Fang 2005-6), with characteristics of new order and emergence (Capra 1997); an emergence of guanxi resources and access to new knowledge and networks.

The conceptual link between interpersonal guanxi aspects of relationships and tacit knowledge has not been the research subject in any studies to date. This research examines the link between interpersonal relationships and knowledge creation, development, or transformation, from a Chinese point of view by placing emphasis on the tacit nature of knowledge, which is considered as a vital source of resource co-development and co-creation. In order to understand how tacit knowledge is developed among individual business actors both social and interpersonal interaction levels should be taken into account. The study argues that interaction in both of the above mentioned levels triggers the development of knowledge-based resources and most importantly maintains that actors' interactions underpin the development of activity links as well as

the development of technical and organisational resource interfaces. On the other hand, it is also possible that tacit knowledge exchanges influence social interaction and the development of interpersonal relationships. Overall, a significant contribution to knowledge offered by this research is the analysis of possible ways of nurturing, developing, and maintaining interpersonal or guanxi resources through interactive relationships in the context of product development and supply network management in China.

1.3 Structure of the Thesis

This part of the introductory chapter briefly presents the structure of the thesis. Initially, the theoretical background and associated concepts to this research are thoroughly discussed in the literature review. The primary objective of a thorough literature review is to present existing knowledge on the subject matter; that of organising for interaction in product development networks involving Chinese business actors. Various relevant business network theories are discussed as well as studies on supply management, product development and studies on inter-organisational and interpersonal relationships. A separate section discusses the Chinese socio-cultural characteristics in the context of supply management and product development and offers a comparative discussion to Western-based relationships and networks. The literature review concludes with an integration of existing knowledge, taking into account the primary research questions and research gaps, into a proposed theoretical framework that is presented in the research implications section of the literature review.

Next, the philosophical background and methodological choices are elaborated. This study departs from mainstream approaches to the study of Chinese relationships and business practices in product development networks, as it is based on the premise that network, or systems thinking, is contextual and synthetic thinking. Capra (1997: 28) relates systemic thinking to an organismic worldview, the basis of Chinese thought¹. Reality is perceived as a network of relationships, and any descriptions of this reality should also form ‘an interconnected network of concepts and models in which there are no foundations’ (Capra 1997: 39). This implies a shift from objective to epistemic science (Capra 1997), exemplified by Lowe et al.’s (2007: 237) suggestion that ‘anything goes as long as it involves...epistemic consciousness²; namely [an] encouragement to employ bricolage in the context of local moralities, relationships and actionable outcomes’. A bricolage or polyvalent approach ‘accepts that there is no final understanding, model or knowledge form that corresponds to a totalising truth’ (Lowe et al. 2007: 244). Researchers ‘obtain approximate knowledge about an infinite web of interconnected patterns’ (Capra 1997: 41), by looking inside social relationships, in order to ‘discover

¹ Capra draws from Needham [1936], a leading historian of Chinese science.

² Heisenberg (in Capra 1997:40) explains epistemic consciousness by arguing that ‘what we observe is not nature itself, but nature exposed to our method of questioning’.

their symbolic and emotional meaning for those involved and to investigate the way meanings are constructed and expressed' (Newton & Smith 2002: viii).

Informed by these approaches, the ontological and epistemological assumptions of this research imply that interactive and network-like approaches are appropriate for capturing the complexities of culture and society, and hence the complexity of interaction, whether it is interpersonal or inter-organisational interaction. These views are based on a pragmatist view of knowledge, consistent with American pragmatism and symbolic interactionism; the two disciplinary traditions that helped to inform grounded theory (Locke 2001). Methodologically, this approach privileges case study research and qualitative techniques. Although methodological triangulation is possible by supplementing qualitative with quantitative techniques, such as Social Network Analysis (SNA), which can be used to identify information flows in supply chains and current relationship patterns, it is shown that quantitative techniques cannot readily identify critical events, which are inherently subjectively defined. Thus, in order to understand interaction and change, in line with the metaphysics of change (Chia 1999) and works produced by IMP scholars, this study analyses evolving relationship patterns, subjective network perceptions and notions of key business actors primarily with qualitative methods.

Every theoretical approach draws on specific philosophical premises that in turn explain methodological choices. Although this view suggests a degree of consistency that is actually rarely found, a high degree of cohesion among the elements of the research process validates its contributions to both theory and policy. To develop a model or theory, a thorough comparative analysis of existing concepts and concepts developed from data collected is required. Although the line between induction and abduction is blurred, in line with Dubois and Gadde (2002), it is maintained that an abductive reasoning is most appropriate for grounded theory instead of an inductive one, as concepts and theories exist before data collection and analysis take place. Accordingly, the researcher commences each interview with open-mind; not an empty head. Abduction or retroduction is considered as closely related to semi-deduction, but what distinguishes the two is the systematic combining or network pattern of the 'phases' of the research process; in contrast to a more sequential semi-deductive approach to theory development.

This research begins with a literature review to produce an initial theoretical framework. However, following a systematic combining or network pattern of case study research, data collected from initial interviews inform and update the theoretical background in use, by expanding and narrowing its focus on various relevant concepts with regards to the research problem. The research focus in the beginning was to analyse both sides of Sino-Western relationships. However, what emerged from initial interviews and a pilot case study (Bassayannis & Cronin 2008), which tested methodological techniques as well as potential contributions, was the need to examine what happens in China and how business actors nurture and develop business relationships in the Chinese relationship-centred society. Simply put, the major phase of fieldwork is concerned with emergent questions raised from initial research. Hence, following Gadde and Dubois (2002), I call my reasoning for theory development ‘systematic combining’.

Based on the above, it is neither induction nor deduction that captures the process of theory development in case study research (e.g. Gadde & Dubois 2002; Welch et al. 2007). A systematic combining case study approach offers an open-ended approach (Welch et al. 2007). Easton (1995: 480; in Welch et al. 2007: 2) argues that case studies produce a rich picture and case study approaches are ‘suitable to handle the complexity of network links among actors and can be used to trace the development of network changes over time’. Also, Bohoma (1983; in Cepeda & Martin 2005: 852) notes that case study research is particularly appropriate for ‘sticky, practice-based problems where the experiences of the actors are important and the context of action is critical’. In order to understand how complex product development processes evolve and how network structures change overtime, a more transparent and polyvalent methodological approach is needed; one capable of analysing interactive relationship processes.

A theoretical or purposeful sampling method is used to generate in-depth insights, which in turn implies an interviewing method that does not involve a prefixed interview protocol. In order to understand interactive processes, an analysis of the inter-subjective accounts of actors is required, which allows for a contextualisation of phenomena and can explain relationship and network evolution in product development terms. Interviewing techniques used to generate data from participants, include those of ‘network mapping’ and a newly developed ‘supply network performance’ (SNP) matrix. The SNP matrix is an image tool, which is specifically used to elicit stories by participants, in terms of how

they understand and interpret various, yet relevant, business relationships in their networks as well as network initiation and evolution in the context of specific co-development projects. The narrative tool allows for a clear identification and analysis of actor's perceptions of critical events, which may well explain their network effects and in particular network evolution, before, during the period as well as after completion of each product development project under consideration. Network maps designed by participants provide understanding of their perceptions of associated relationship patterns in networks and allows for further exploration and analysis of an inter-subjective view of the network.

Data generation and analysis are intertwined and emergent questions guide discussion and analysis of the interpretations narrated by each interviewee. Following a systematic combining case study research approach (Dubois & Gadde 2002), the initial focus of the study was to analyse Sino-Western relationships. However, at an initial stage of this research, a pilot study was conducted, which suggested that it was necessary to analyse not only how business actors in China manage their business relationships with business actors in the West but also with their own buyers and suppliers. This shift of the research focus has provided in-depth insights into the latter issues, which in turn provide valuable feedback and solutions that inform the former research issues; how Western companies could more efficiently manage relationships within product development networks that increasingly involve business actors operating in China. Hence, case studies have been selected with the purpose to examine various types of inter-organisational network patterns, such as Western-Sino, Sino-Western and Sino-Sino relationship patterns, and not merely the usually researched "Western-Sino" relationship pattern type.

The primary aim of this exploratory research is to obtain an appreciation of the research problem under consideration. Hence, the sample size is small and convenient, which is usually the case for non-probability samples. As Mador et al. (2005) note, convenience sampling, a generic term that covers a wide variety of non-probability sampling procedures, implies that the sampling units selected were accessible, convenient, cooperative and articulate. More specifically, a snowball or multiplicity sampling procedure was used. This approach relies on previously identified participants providing referrals which helps to identify other specialised populations. Hence, snowball sampling tends to overstate connectivity. Another consequence of snowball sampling is that the

exact number of participants cannot be known in advance, which in turn introduces a bias as these are in some way related to the initial selection.

Following the chapter on philosophical and methodological choices and before the empirical findings, a detailed description of the contextual conditioning of the study takes place. General contextual information about the economy, trade and investigated industries (e.g. high tech/low-tech industry) is presented. The market size and industries involved are also specified. In practice, Western companies increasingly transfer their manufacturing bases into the Chinese region and/or outsource production of parts and components to suppliers located in China, such as indigenous private companies, family-owned, state-owned and foreign-owned companies. Once operations are outsourced the process of business and in particular the product development process still needs to be integrated always in relation to the buyers and suppliers involved and vice versa. This study uses a systemic, network approach to examine business relationships involving Western and Chinese actors as well as relationships among second- and third-tier actors, usually located in mainland China. The relationship patterns examined lie within networks of various product development projects. Hence, the unit of analysis is the relationship; not the supplier, buyer, group or department, which is usually seen as the hub of the network. The product development projects examined are taken as context issues (Johnsen & Ford 2002). In addition, the network participants as well as the types of relationship patterns are specified together with other relevant contextual parameters, such as the product development context in which interaction effects are investigated, and which is not treated as the subject matter of this research.

For this research, five case studies were conducted, in two European capitals, Hong Kong, and six cities in Southern and Eastern China (Shenzhen, Guangzhou, Zhejiang, Ningbo, Hangzhou, and Shanghai). Data was collected by conducting around forty face-to-face interview meetings. Overall, thirty in-depth interviews have been digitally recorded³; lasting on average approximately two hours. The choice of in-depth interviewing as a data collection method has a direct effect on the sampling process. The sampling method

³ As it is discussed in more detail in the methodology chapter, all participants, before the commencement of each interview, had to discuss the research purposes with the researcher and sign consent forms and participant information sheets, which had been approved by the University's Research Ethics Committee prior to the fieldwork.

employed depended, apart from the objectives of the study, on the researcher's personal network, the researcher's private funds and a relatively short time allocated to conduct the major phase of the fieldwork. Lastly, it should be emphasised that the researcher's interpersonal relationships with 'gatekeepers' was vital for securing access to company sites and assisting with the recruitment of specialised participants. In this study, interviewees are seen as participants, who can shape the course of the interview and aid its development as new questions emerge from previous responses.

The most significant part of this study following the empirical investigation is the discussion of findings. Here, the theoretical framework of this research, presented in the literature review, is aligned with a careful consideration of the data sources from multiple case studies. The concept of *guanxi* interaction emerges through the discussion of findings enhancing in turn the understanding of the interaction process in business networks. The thesis concludes with a discussion of its contributions indicating the areas where future research is possible.

Chapter II

LITERATURE REVIEW

2.0 Introduction

This review aims to investigate the multifaceted nature of the boundaries, cultures and processes that characterize inter-organisational product development networks and respond to theoretical and practical concerns with regards to the contemporary issue of managing interactive relationships in Chinese product development networks. The review pays attention to the institutional, socio-cultural environment that characterises business networks in China. In particular, it highlights the importance of the concept of guanxi in analysing business networks in China. Guanxi is a central concept in Chinese society. A common translation of guanxi is that of interpersonal relationships. However, this does not reflect the socio-cultural implications that the concept describes.

The domain of inter-organisational relationships and networks is complex and multidisciplinary. A common feature of inter-organisational networks is the co-development of resources and re-definition of processes. Within the IMP-based business network approach, co-development can only be analysed when emphasis is placed on interdependences and interactive relationships. Co-development implies close relationships that allow companies to rely on each other's resources. Close relationships imply interdependences, which may improve companies' product and technology development (Hakansson & Snehota 1995) as they involve the transfer of knowledge, which is 'a complex phenomenon and in practice, successful transfer is often not easy to achieve' (Easterby-Smith et al. 2008: 677), because it involves social interaction. This review thoroughly discusses network processes and network formations among other business and non-business issues that can be seen as elaborations or nuances of relational aspects of knowledge transfers and knowledge creation.

This study, in line with the IMP-based business network approach, incorporates the second generation model of interaction to analyse interactive relationships. The model analyses relationships under a network approach in terms of three interrelated dimensions; any single relationship is embedded within a system of interlinked activity patterns, resource constellations and actor bonds (Hakansson & Snehota 1995). Evolving relationship patterns in networks should be examined as they are seen as the main drivers of network evolution and transformation. Although network evolution and co-development might be the focus, the central outcome of this review, in terms of theoretical development, is that the nature of actor bonds in a Western-based IMP

perspective, such as commitment, trust, and tacit knowledge, among others, are similar in nature to the guanxi aspects of relationships long-developed by Chinese actors. However, the basic difference can be found by analysing indirect relationship effects that are strongly influenced by interpersonal business and non-business interaction as well as by the socio-cultural environment.

The literature review aims to identify and discuss studies on the problem of relationship and network management in product development contexts involving Chinese business actors and near it as well as studies supplemental to the problem, such as outsourcing and supplier relationship performance. A review of the key approaches aims to clarify gaps in the literature to date and pave the way for theoretical development to take place. Current literature (i.e. industrial networks, organisation studies, knowledge management, guanxiology or guanxi networks) lacks a universal approach with regards to product development within cross-boundary supply networks involving Western and Chinese business actors. This is due to the fact that different approaches for managing product development can be more or less effective, depending on the context and dynamics of each particular part of the networking process. This implies that the structure and posture of the supply or customer base of a company varies and that both weak and strong ties among business actors are actually utilized. Therefore, this review approaches the problems of collaboration and co-innovation from multiple perspectives.

Initially, it would be helpful to note that terms, such as ‘business network’, ‘supply network’, ‘guanxi network’ as well as ‘network management’, and ‘knowledge management’ are contested labels; they are not independent realities, but are narratives; language constructions, used to articulate a view or a vision of the world. Narratives symbolize somewhat different views of the world and different visions of what an organisation does or should do. Hence, definitions of knowledge and networks abound, as do definitions of closely associated concepts. This review suggests that knowledge and networks are best understood as complex, multi-layered, and multifaceted discourses. Nevertheless, it is argued that the two discourses have a common base under specific product development contexts.

Networking is focused on the ways in which business actors interact within networks (Ford & Hakansson 2005) and Jarvensivu and Moller (2009) associate network management with practices of knowing, influencing, mobilising and synthesising. Inter-

organisational networking may refer to ‘a number of different forms of cooperation and collaboration such as business networks, consortia, joint ventures, clusters and linkages’ (Fulop et al. 2004: 540). However, given the multifaceted nature of the above mentioned discourses, usually their best descriptions come by using various metaphors, such as learning networks or communities of practice, which enable a combination of different theoretical concepts and various descriptions of those concepts. In particular, metaphors are discussed in line with their implications to theory and practice. Although the review discusses various metaphors used to describe network and knowledge management, its initial aim is to critically evaluate existing network theories. As the review discusses later on, the IMP-based business network paradigm can be used to analyse product development processes as it ideally assumes systemic, cross-boundary change and continuous adaptation by recognising the significance of both weak and strong ties.

Product development processes involve exchanges of complex knowledge. Although knowledge is a contested discourse, a few definitions are provided, here, which may indicate a potential intersection of the knowledge and network concepts. Knowledge-based resource interaction refers to the ways in which organisations, through networking, mobilise their knowledge bases to innovate. Swan et al. (2002: 8) argue that knowledge is ‘rooted in practice, action and social relationships’, instead of being ‘a discrete cognitive entity’. Further, Swan et al. (2002: 151) suggest that ‘in order to understand the links between knowledge and innovation it is important to consider the networks through which knowledge is produced and communicated’. Indeed, it is argued that ‘the locus of innovation is no longer the individual or the firm but increasingly, the network in which a firm is embedded’ (Powell et al. 1996; in Pittaway et al. 2004: 144) and to make sense of any individual action or company strategy, one should look at the whole network and its relationship patterns through its resource interdependencies, activity links, and actor bonds. Knowledge-based resource interaction involves activities of knowledge such as ‘the transformational activities of structuring, assigning meaning and interpretation’ (Nonaka 1994; in Young & Denize 2000: 1), which clearly point towards the need to carefully consider the socio-cultural contexts. The concepts of knowledge and networks are interrelated epistemologically, and the methodological implications are significant. Above all, this study maintains that the ‘true’ existence of knowledge reflects a networked reality (Capra 1997).

The literature discusses the link between knowledge and network concepts as well as the conceptual link between culture and business networks, and thus offers valuable insights for the link between culture and knowledge. This research aims to enhance understanding on how the socio-cultural aspects of the Chinese system influence knowledge creation in the context of interactive relationships and networks. The former link, between knowledge and network concepts is well established in the literature, however as Easterby-Smith et al. (2008: 51) suggest, few studies look at the relationship between culture and knowledge. Although there are studies that have examined the link between knowledge and culture, there is a lack of empirical research that examines the link of knowledge and Chinese culture within product development network contexts. Having identified and exposed the research gap, an establishment of the link between *guanxi*, as a cultural phenomenon, and network concepts will contribute significantly to the establishment of the conceptual link between *guanxi*-as-cultural interaction and knowledge-based resource interaction.

Drawing from Boisot and Child (1996; 1999), the socio-cultural environment in China involves a complex absorption mode, which is closely related to knowledge articulation, instead of knowledge codification; a characteristic of complexity reduction that is found in Western societies, characterised by market or hierarchical forms of organising. In the Chinese context, characterised by Boisot and Child as ‘network capitalism’, some learning mechanisms are more relevant than others in terms of building dynamic capabilities and the evolution of operating routines. Further, in heterogeneous cross-cultural networks close relationships should be developed between actors in order to lower existing structural and cultural barriers to absorptive capacity and knowledge sharing. Knowledge articulation or absorption in a Chinese context, by contrast, can be achieved through thicker interaction, which stems from the development and establishment of *guanxi*-based trust and reciprocity among other aspects of relationships in China. When *guanxi*-based resources are developed, knowledge sharing increases and this overtime increases the absorptive capacity and dynamic capabilities of business actors, or ‘*nengli*’; a term within *guanxiology*, which refers to capabilities and includes both economic, technical and/or organisational resources. All of the above mentioned concepts and theories are discussed in detail in the central parts of the literature review with the ultimate aim to critically evaluate existing Western and Eastern research on the topic of interaction effects in business networks in China.

The methods used for this literary compilation and its evolution through time are described in Appendix A, which can be found at the end of the thesis. Having briefly highlighted the interrelatedness of literary events, the literature review commences with a comparative discussion among market and network forms of organising. In the ‘business network paradigm’ section, a critical evaluation of various network theories is presented. Next, knowledge-based inter-organisational resource interaction is thoroughly elaborated within the contexts of inter-organisational learning and knowledge networks. This is followed by a discussion of existing literature on outsourcing and supply networks, which in turn is followed by a section that presents literature findings on the topic of business relationships. Here, the ARA model of interaction is discussed, as it was founded to analyse dyadic relationships under a network approach. The focus of the review moves to the Chinese context. Theoretical perspectives of relationships and networks in China are discussed and their uniqueness compared to Western business networks is explored. Lastly, there is a discussion based on the inter-linkages of all the literary elements presented in this review; a bricolage of theories, views and frameworks relevant to the topic of managing relationships in product development networks in China. In the research implications section, a theoretical framework is proposed for studying guanxi interaction in dynamic business network contexts.

2.1 The Business Network Paradigm

This part of the review discusses and compares various network approaches. Initially, it introduces and contrasts network forms of organising with market and hierarchical governance structures. It shows that network forms of organisation cannot be positioned alongside the traditional market-hierarchy continuum (Powell 1990; Grandori & Soda 1995). Instead, this study, as shown in Table 2.1, views markets, hierarchies and networks as three stylised forms of organising the same whole system; the economy (Powell 1990). These ‘are not perfectly descriptive of economic reality, but they enable us to make progress in understanding the diversity of economic arrangements found in the industrial world’ (ibid. p. 301). Powell (1990: 322) notes that:

‘Non-market, non-hierarchical modes of exchange represent a particular form of collective action, one in which cooperation can be sustained over the long run; networks create incentives for learning and the dissemination of information; the open-ended quality of networks is most useful when resources are variable and the environment uncertain; networks offer a highly feasible means of utilising and enhancing such intangible assets as tacit knowledge and technological innovation’.

Table 2.1: Comparison of Forms of Economic Organisation

<i>Key Features</i>	<i>MARKETS</i>	<i>HIERARCHIES</i>	<i>NETWORKS</i>
<i>Normative Basis</i>	Contract – Property Rights	Employment Relationship	Complementary Strengths
<i>Means of Communication</i>	Prices	Routines	Relational
<i>Methods of Conflict Resolution</i>	Haggling – Resort to courts for enforcement	Administrative fiat – Supervision	Norm of reciprocity – Reputational concerns
<i>Degree of Flexibility</i>	High	Low	Medium
<i>Amount of Commitment Among Parties</i>	Low	Medium to High	Medium to High
<i>Tone or Climate</i>	Precision and/or Suspicion	Formal, bureaucratic	Open-ended, mutual benefits
<i>Actor Preferences or Choices</i>	Independent	Dependent	Interdependent
<i>Mixing of Forms</i>	Repeat transactions Contracts as hierarchical documents	Informal organisation Market-like features: profit centres, transfer pricing	Status Hierarchies Multiple Partners Formal Rules

Source: Powell W. (1990: 300)

Although Powell does not specifically explain, in terms of theory, how his view of the network form of organising has evolved, IMP scholars agree that:

‘The genesis and evolution of the industrial network approach has to do [particularly] with the extension of dyadic studies to systemic level of analysis through the use of the concept of connectedness rather than the traditional market-hierarchy approach’ (Araujo & Easton 1996: 102).

Hakansson and Snehota (1995: 19) state that ‘generalized connectedness of business relationships implies the existence of an aggregated structure, a form of organisation we have chosen to qualify as a network’. The other major influence has been social exchange theory, which aims to ‘explain the emergence of various forms of social structures, departing from a clear conceptualization of the dyadic exchange relationships’ (ibid. p. 100). Axelsson and Easton (1992: 85; in Araujo & Easton 1996: 101) argue that ‘it is only with change that the network properties like connectedness and indirect relationships are manifest’.

IMP scholars emphasise that any business actor can be analysed from a network perspective, whether this is an organisation, a department, an individual or a network itself (e.g. Araujo & Easton 1996; Huemer et al. 2004). The network forms of organising industrial and economic systems imply undefined boundaries (e.g. Powell 1990; Castells 1996). This is also a valid interpretation of the premises of the IMP view of the business world; that ‘there is only a single infinite network *out there*’ (Huemer et al. 2004: 63). Drawing on the premise of undefined boundaries, industrial network theorists argue that ‘no business is an island’ (Hakansson & Snehota 1989). Furthermore, Hakansson (1987) argues that ‘network is the framework within which the interaction takes place but is also the result of the interaction... Thus it is affected by the exchanges between the actors’ (in Araujo & Easton 1996: 101). In other words, networks are ‘seen as interacted as well as enacted’ (Hakansson & Snehota 1989; in Araujo & Easton 1996: 101).

The network concept is in widespread use and can be perceived from different perspectives (e.g. Grandori & Soda 1995; Araujo & Easton 1996). Nohria and Eccles (1992; in Grandori & Soda 1995: 184) note that ‘as it is so widely used, the term network has lost precision’. Debates in the literature about epistemological and ontological issues of network theory itself are endless, basically because of its usage in a variety of sciences. Araujo and Easton’s critical review of networks, which presents ten different schools of network thought (see Table 2.2), provides us with an understanding of the different

paradigms that underpin studies of networks, ‘all of which at some level have research interests in common with marketing yet they differ in many ways’ (Araujo & Easton 1996: 63). In Araujo and Easton’s mapping of network theories the network concept has been used in terms of a variety of dimensions. These dimensions can be divided into two broad groups. The first group describes the content of the research fields and includes the research goals (descriptive and explanatory), the nature of the network links (what flows through links between actors: economic resources, information, texts, affect, friendship, power etc.) and actors (individuals, companies and/or networks). In terms of content, they argue that:

‘A business network marketing paradigm would have to be concerned with the research goal of explaining how b2b markets work... It would have to concentrate on business as actors, and links as exchanges of resources... It would be preferable if it espoused a process orientation given that markets are by definition dynamic’ (ibid. pp. 102-3).

The second group has to do with research process, which distinguishes between what might be called ‘the analytical and metaphorical methodologies’ (Araujo & Easton 1996: 102). Qualitative researchers use the term network as an illustrative metaphor, using mainly qualitative, case-oriented methodologies to describe and explain network structures and processes. Others have used the term network as a tool kit of quantitative, socio-metric techniques to elicit structural patterns of relationships in social and industrial settings (ibid.). For example, ‘social network analysis can be described as a set of mathematical, largely matrix-based techniques used to describe a whole variety of network phenomena’ (Araujo & Easton 1996: 106). However, a major limitation of the social network analysis for business network research is the limited access to relevant data. Besides, the collection of primary data is likely to be expensive and time consuming. The alternative methodologies are ‘largely case-based or qualitative, which at least have the potential to tease out network processes but cannot handle large data sets’ (ibid.). There are network studies using both types of methodologies and there are some studies combining both methodological approaches in the same research design (Araujo & Easton 1996: 67). Hence, the two approaches are by no means mutually exclusive. Araujo and Easton (1996 [1993]: 65) note that:

‘The network metaphor is characterized by high systematicity but relatively low clarity, allowing for a measure of constructive ambiguity under which research and theorizing can proceed without excessive constraint’.

A complementary dimension to methodology is the process versus structure dichotomy, but IMP scholars (e.g. Araujo & Easton 1996; Ford & Hakansson 2006) argue that the two basic challenges of network research are closely related and intertwined. The structure of business is viewed as a network of significant relationships between interdependent companies and challenges conventional ideas of hierarchical and market-based organisational forms, as it implies interdependencies. On the other hand, the process of business has been based on the idea of interaction between interdependent business actors (Ford 2005: 1). Hence, Araujo and Easton (1996: 105-6) argue that in the field of business networks, it is difficult to defend a purely structuralist approach;

‘Not only is change endemic in these markets, but the constant need by organisations to access and replenish resources through exchange and to maintain their structures against entropic drift suggests that any perspective that does not attempt to model process is doomed to failure... The most appealing and radical fields of study are precisely those in which process orientation is most obvious... This is not to argue that structure should be ignored... Rather, we would prefer to see a situation where the two elements coexist within a theory of network process with neither dominating’.

Table 2.2: Comparison of 10 Network Theories

Dimensions	Social Network	Inter-organisation Theory	Actor-Network Theory	Networks of Innovators	Network Organisations
<i>Research goals</i>	Uncover form and pattern of social relations	Description and explanation of inter-organisational relations with a view to determine best practice for network design	Description and explanation of the emergence and reproduction of socio-technical structures	Explain the processes underlying technological innovations and the governance forms of technological transactions	Use of network metaphors and methods to explain decentralized, non-hierarchical organisational forms
<i>Nature of actors</i>	Mainly individual but also organisations	Government agencies, non-profit organisations	Individuals and nonhuman artefacts as relational effects	Individuals and organisations	Individuals, groups
<i>Nature of links</i>	Friendship, information, resources, power	Resources, power, service delivery	Heterogeneous association of human and nonhuman elements	Communication, information, resources	Communication, information, resources, power, authority
<i>Disciplinary background</i>	Sociology	Sociology, social policy	Sociology and history of science and technology	Economics, geography, marketing	Organisation studies, international business
<i>Methodological orientation</i>	Sociometric techniques	Sociometric techniques, case studies	Ethnographic case studies, few sociometric type studies	Mainly case studies, some sociometric techniques	Mainly case studies
<i>Structure vs. Process</i>	Structure	Structure	Process	Process	Structure

Table 2.2: Comparison of 10 Network Theories (Continued)

Dimensions	Policy Networks	Networks in Economic Geography	Comparative Studies	Entrepreneurship Studies	Industrial Networks
<i>Research goals</i>	Use of network metaphors and methods to explain the patterns of interaction between government and societal groups	Use of network metaphor to explain the spatial dispersion of production structures and their linkages	Use of the network metaphor to explain market structures and organisational forms in mainly non-Western societies	Use of network metaphors and methods to explain how entrepreneurs build and sustain new organisations	<i>Use of network metaphors and methods to explain industrial/organisational market structures</i>
<i>Nature of actors</i>	Organisational in the European tradition and individuals in the American tradition	Organisations	Organisations, individual, families	Individuals	<i>Organisations</i>
<i>Nature of links</i>	Communication, power, influence	Resources, information	Information, resources, power, authority	Communication, power, influence, resources	<i>Resources, Information</i>
<i>Disciplinary background</i>	Political science	Economic geography, urban and regional studies	Sociology, organisation studies, international business	Entrepreneurship and small business economics	<i>Marketing and Purchasing (IMP)</i>
<i>Methodological orientation</i>	Case studies	Mainly case studies	Case studies, sociometric technique	Case studies, sociometric techniques	<i>Mainly case studies</i>
<i>Structure vs. Process</i>	Process	Structure	Structure	Structure and Process	<i>Structure and Process</i>

Source: Araujo L. and Easton G. (1996) 'Networks in Socioeconomic Systems: A Critical Review'; In: Iacobucci Dawn (eds.) (1996) *Networks in Marketing*, Sage, pp. 68-71

Based on a common acceptance that the field is far from homogeneous and coherent, Araujo and Easton (1996: 63) provide an ‘admittedly limited sketch of the various ways in which the term network has been used in different paradigms’. In social networks, ‘actors are regarded as embedded in concrete patterns of social relationships, which produce opportunities and constraints, and their behaviour can only be understood in relation to these structures’ (Araujo & Easton 1996: 72). In social network theory, networks are defined as ‘a set of nodes of some kind and the relations of specific types that occur among them’ (Alba 1982: 42; in Araujo & Easton 1996: 72). The nodes may be individuals, companies or both. However, social network analysis as a form of structural analysis is exposed to various limitations. Criticisms refer to the primacy of structure over agency, leading to an over socialised view of behaviour and the primacy of structure over process, neglecting how structures are instantiated, reproduced, and changed (Araujo & Easton 1996). Another limitation draws on the ‘tendency to conflate social structures with cultural order, leading to an unwarranted assumption of isomorphism between position in social structure and interests and belief systems’ (Araujo & Easton 1996: 74).

In the inter-organisational theory formulation, nodes in the network are non-profit organisations and public agencies, and the links are represented by resource flows. However, inter-organisation theory ‘has made significant rapprochement with network approaches focusing on [business] relations’ (Araujo & Easton 1996: 77). Pfeffer & Salancik (1978; in Araujo & Easton 1996: 77) argue that ‘the concern with resource flows and interdependence between organisations place inter-organisation theory in close contact with resource dependency theory’. Thus, inter-organisational network theory is concerned with network design, which basically ensures that ‘resources can be mobilised to provide efficiency in various business activities’ (Araujo & Easton 1996: 76).

Actor-network theory can be seen as a complementary approach to inter-organisational network theory in terms of its concern with process. Although, actor-network theory reserves the idea that ‘networks consist of links between well-established entities’, one of its premises lies to the assumption of ‘network processes as recursive or self-generating; the social is both the medium and the outcome’ (Araujo & Easton 1996: 78). Callon (1992) extends the domain of concern of actor-network theory, drawing on insights from sociology and economics, which assume that an actor’s identity is defined in terms of its

relationships. As Callon (1987: 93; in Araujo & Easton 1996: 78) explains, 'an actor-network is simultaneously an actor whose activity is networking heterogeneous elements and a network that is able to redefine and transform what it is made of'. In other words, 'actors define one another in interaction...in the intermediaries they put into circulation... These intermediaries constitute and order the networks they describe' (Callon 1992: 135; in Araujo & Easton 1996: 80).

The proponents of the network form of organising, Miles and Snow (1992; in Araujo & Easton 1996: 84) note that 'as environments change, traditional organisational forms' deficiencies become increasingly exposed and new organisational forms emerge, better suited to cope with environmental demands'. Network organisations appear to be particularly suited to 'unique customized projects, close customer and supplier involvement in the production process, and complex turbulent environments' (Araujo & Easton 1996: 85). However, Araujo and Easton comment on Miles and Snow's (1992) differentiation between stable, internal, and dynamic networks that 'is indicative of the problems plaguing the relative lack of terminological clarity prevalent in this literature' (Araujo & Easton 1996: 84). An emergent problem with the network concept is the way its proponents use it for explaining internal processes within an organisation, such as the introduction of flat structures and decentralised decision-making and the vertical disaggregation of the firm through outsourcing and the establishment of usually relational forms of contracting with suppliers (Araujo & Easton 1996). The two authors suggest that the two network organisation concepts - 'vertical disintegration and outsourcing leading to the formation of relatively stable constellations of core-ring arrangements - violate quite clearly the market-hierarchy dichotomy and join the broad church of network forms' (Araujo & Easton 1996: 86).

A closely associated concept to the network organisation and network forms of organising (Powell 1990; Miles & Snow 1992) is that of the network enterprise. According to Castells (1996: 187), 'a new organisational form has emerged as characteristic of the informational, global economy: the network enterprise'. Castells (1996: 168) based his analysis of the concept on the:

'Movement from the rigid mass production system to the flexible production system; the crisis of the large corporation; and resilience of SMEs as agents of innovation... This kind of network model is a horizontal network, but based on a set of core-periphery relationships, both on the supply and the demand side of the process... Cooperation and networking offer the only possibility of sharing costs,

and risks, as well as keeping up with constantly renewed information... Yet networks also act as gate-keepers... Inside networks, new possibilities are relentlessly created... outside the networks, survival is increasingly difficult' (Castells 1996: 174-187).

For the innovation network theory, Freeman suggests that:

'One of the common themes uniting researchers in this area is dissatisfaction with market versus hierarchy dichotomy and the notion of transaction costs... Instead, other factors such as collective learning, technological complementarity, and sociological factors such as trust, interpersonal relationships, and information exchange networks are used to explain innovation behaviour' (Freeman 1991: 512; in Araujo & Easton 1996: 83).

Within the IMP group, one of the first to use a network approach to innovation studies was Hakansson (1987). Innovation is viewed as 'the product of a network of interacting actors' (Hakansson 1987: 3; in Araujo & Easton 1996: 81). Hakansson's innovation studies have largely helped to shift the focus from social information networks in innovation to the study of innovation as an inter-organisational phenomenon (Araujo & Easton 1996: 102). This view is in line with that of Castells (1996) who notes that each product development project has its own network of suppliers and buyers and that networks, not firms, are the actual operating units.

A distinct but relevant to the innovation networks approach is that of regional networks. For example, in particular regions, such as Silicon Valley and the various industrial districts and software parks found in China today, small firm networks are concentrated:

'With geographical proximity fostering a climate of mutual trust and socializing risk, which are seen as alternatives to the large scale, specialized production process, vertically integrated, Chandlerian firms that appear to have dominated Western economies for so long' (Araujo & Easton 1996: 89).

Capecchi (1989; in Araujo & Easton 1996) describes the industrial system in the Emilia-Romagna area of Northern Italy as a regional network which comprised of a large number of small, geographically concentrated firms, among which there was a mixture of competition and cooperation. Regional networks are inherently flexible and meet the needs of markets that are characterised by both fragmentation and rapid change. Such regional networks provide

'An alternative to the major corporation, trading on economies of scope instead of economies of scale, and flexibility and innovation instead of standardization and low costs... Implicit in this view is the notion that flexibility lies in the network of relationships between firms and their ability to change configurations in response to demand heterogeneity over time rather than in the structure or manufacturing flexibility of individual firms' (Capecchi 1989; in Araujo & Easton 1996: 91).

In the context of investigating Asian business systems, Araujo and Easton (1996: 96) note that ‘different authors seem to struggle with traditional notions of market and firm, and often resort to cultural and institutional factors to account for otherwise unexplainable economic phenomena’. Hence, a network approach highly relevant to studies examining networks in different socio-cultural contexts than Western is referred as comparative studies of economic systems. The differences can be neatly encapsulated in the phrase ‘whereas in the West laws regulate the actions of people, norms in Asia regulate the relations among roles’ (Hamilton 1994: 198; in Araujo & Easton 1996: 93). For example, Oliver and Wilkinson (1988; in Araujo & Easton 1996: 95) argue that for the process of transferring Japanese managerial practices to the UK, ‘relational forms of contracting are far more prevalent in Japan than Britain’. Furthermore, previous studies of Chinese companies stress ‘the embeddedness of economic activity in social networks’ (Redding 1990; in Araujo & Easton 1996: 95). Thus, the key insight from comparative studies is that:

‘Reinforcing Granovetter’s (1985) embeddedness argument, economic life is inextricably bound with a society’s culture and institutions, and that sharp differences exist from one society to another. Notions, such as market hierarchy, vary from society to society, and in particular, the nature of inter-firm relationships and networks is a key ingredient in explaining patterns of business organisation in some economic systems’ (Redding 1990; in Araujo & Easton 1996: 96).

The industrial networks approach to industrial systems represents a different tradition of research from most of the ones discussed above. Authors agree that although there are cross-references to other network approaches, such as social exchange theory, the development of the industrial networks lies in empirical studies of dyadic relationships in industrial markets and internationalization of the firm, and is classified under the interaction approach (e.g. Hakansson 1982; Araujo and Easton 1996). The concept of connectedness of exchange relationships allows us ‘to move away from dyadic analysis and understand the impact of indirect relationships and system wide effects on individual relationships’ (Easton 1992; in Araujo & Easton 1996: 100). The interaction approach demonstrates:

‘The existence of complex and multilevel patterns of exchange surrounding each transaction episode in a buyer-supplier relationship... The embeddedness of transaction episodes in a history of prior transaction episodes creates a relationship atmosphere, a set of local rules and norms characterized by variables such as conflict, cooperation, power, and dependence that affect and are affected by each transaction episode’ (Hakansson 1982; in Araujo & Easton 1996: 100).

In business networks, ‘the network structure is continuously being reproduced or changed through interaction episodes between situated actors’ (ibid.). Hence, Araujo and Easton (1996: 102) argue that the industrial network approach adopts a view of ‘network structures as instantiated in the sets of constraints and opportunities enacted in individual interaction episodes’.

The industrial network approach is ‘a novel approach without a clear disciplinary home and with its descriptive and explanatory rather than prescriptive and managerial focus’ (Araujo & Easton 1996: 99). It has been developed in parallel with, rather than in response to, other approaches such as transaction cost economics, relational contracting, and inter-organisation theory (Araujo & Easton 1996: 99). In business networks, business firms should be identified as actors, but ‘the concept of a network organisation... might lead us to the conclusion that the level of actor aggregation is problematic’ (Araujo & Easton 1996: 104). The identification of a business actor with a company should not be taken for granted and the answer surely depends on the research problem (ibid.). Whatever it could be - the individual, the department, the organisation, the net or the network - according to actor-network theory, ‘actors are the nexus of a whole series of material and social relationships and are themselves understood by their effects’ (Araujo & Easton 1996: 104). In this sense, ‘actor-network theory stands network thinking on its head by placing emphasis on actors as the products of relationships rather than actors’ relationships’ (ibid.).

Araujo and Easton (1996: 91) conclude that networks are a higher level concept than either market or hierarchy, and both market and hierarchy should be seen as variants of networks. A network is different from a hierarchical or market structure, because the links between those involved are neither fixed, nor subject to ownership or overall control. Powell (1990: 303) argues that ‘networks are lighter on their feet than hierarchies’, but networks can be complex as they do not involve the explicit criteria of the market (ibid.). Further, Powell (1990: 304) argues that ‘the open-ended, relational features of networks with their relative absence of explicit quid pro quo behaviour greatly enhance the ability to transmit and learn new knowledge and skills’. Ford et al. (1998: 270) argue that:

‘[A business network] is not something that is imposed on the companies in it, nor is it something that can be designed or managed by one of them... No-one manages the network, but many have to try to manage in it... A network is a peculiar

organisational form because it does not have a centre or any clear boundaries... Its characteristics are determined by what happens in and between the relationships that comprise it’.

Powell notes (1990: 303) that ‘as networks evolve, it becomes more economically sensible to exercise voice rather than exit’. The latter implies stable yet dynamic asymmetric inter-organisational relationships, characterised by both competition and cooperation. These views have important implications for network management practices. Jarvensivu and Moller (2009) argue that network management practices, such as knowing, influencing, mobilising and synthesising are in sharp contrast with the managerial practices of planning, implementing and controlling, found in market-based settings. In general, scholars suggest that:

‘An actor’s understanding of its role in a network is not best achieved by regarding the world as a set of competitors, suppliers and customers... Instead, a company should interact to try to understand how the network functions *from the perspective of these specific others*’ (Hakansson & Ford 2002: 138; in Huemer et al. 2004: 64).

The above section, that is based on Powell (1990), Grandori and Soda (1995), Castells (1996), and Araujo and Easton’s (1996) exemplary works, discussed the most relevant antecedents of network theory formulation. Although each of the network theories produces a differential contribution to the general field of business networks, it seems that all network theories discussed are more or less relevant and therefore are included in this research agenda as they are considered to be the prime antecedents of the knowledge networks, supply networks and interpersonal and guanxi networks discussed in the following sections of the literature review.

The above mentioned points clearly imply that a network approach should necessarily recognise that market exchanges may not be the only form of business interaction. Rather emphasis should be placed on the importance of socio-cultural influences on interpersonal relationship development and interaction effects to collaboration and innovation. In this regard, works by Sinologists, such as Luo (2000), Langenberg (2007) and Fang (2005-6) among others, are discussed under the theme of ‘guanxi networks’. The guanxi network section also discusses a comparative network study by Boisot and Child (1996; 1999), which analyses the distinct institutional form of network capitalism that characterises the Chinese context. To conclude, this research views business networks as modes of organising activities and combining resources through actors’

interactions. The next section discusses interaction processes in knowledge networks and product development contexts.

2.2 Product Development and the Knowledge Network

The complexity of actors' interactions and the interdependences that exist in business relationships are major issues in product development research. Product development is comprised of continuing and interrelated processes. These processes involve both the sharing of knowledge and the synthesis of a common view (Nonaka & Takeuchi 1995). In different networks or specific parts of the networking process, 'different manifestations of knowledge may predominate, which in turn requires different ways of managing knowledge' (Scarborough et al. 1999: 29). Further, when network members are heterogeneous knowledge is hard to share effectively, and this in turn implies that each side's socio-cultural context should be taken into account. Hence, Swan et al. (2002: 98) suggest that knowledge management should be 'conducted in organic and informal settings, with egalitarian cultures and where horizontal communication dominates'.

All companies are indeed 'knowledge organisations' (Castells 1996; Brown & Duguid 1998; Gadde & Hakansson 2001). Tsoukas (1996) argues that an organisation is fundamentally a distributed system of knowledge, in which knowledge is embedded within particular contexts and communities. Organisations in the knowledge 'era' are shifting towards flexible, fluid, networked, integrated processes. Tsoukas (2000; in Mouzas et al. 2005: 11) states that 'the organisational problem firms face is the utilisation of knowledge which is not and cannot be known by a single agent'. In line with the network organisation form (Powell 1990) and the network enterprise concept (Castells 1996), Swan et al. (2002: 14) argue that 'the emerging organisational system tends to resemble a federation or a constellation of business units that are interdependent, relying on one another for critical skills and knowledge'. In other words, organisations can be seen as knowledge networks, which are a means to accumulate knowledge from units that cross defined organisational boundaries. Swan et al. (2002: 151) suggest that in order to understand the links between knowledge and innovation it is important to consider the networks through which knowledge in specific fields is produced and communicated. Social relationships and networks, through which relevant knowledge can be acquired, shared and developed and through which support for innovation can be mobilised are critical to innovation (Von Hippel 1988; Swan et al. 2002).

In line with a process perspective of innovation, Swan and Clark (1992; in Swan et al. 2002), note two distinct approaches to the management of knowledge. The first, referred

as the network approach, concerns primarily knowledge acquisition, that is, initial acquisition of new ideas from external sources. The second, referred to as the community approach involves a process, where knowledge acquired through networks can be further developed, shared internally and blended with locally-situated, often tacit, knowledge about practices and processes. Hansen (1999; in Swan et al. 2002) concludes that the community approach to networks implies that strong ties are important for the sharing of tacit knowledge, while the network approach implies that weak ties are more important for exploration and access to more explicit forms of knowledge in other parts, external to the firm.

Communities of practice (CoP) are a vital ingredient in both knowledge acquisition and knowledge sharing, making knowledge a collective resource for organisation, rather than the property of a particular individual (Swan et al. 2002: 121). Weick (1979; in Swan et al. 2002: 5-6) defines a community of practice as 'a group of individuals who regularly work together, developing collective knowledge and shared sense-making of what the community does, how it does it and its relationship with others'. Although there is much evidence for the value of a community approach, it seems to be more difficult for organisations to develop this approach. Swan et al. (2002: 32) argue that 'when firms organise predominantly around self-formed and self-managed specialised teams, it can be very difficult to develop and manage efficiency criteria even when the team remains small'. Communities of practice 'are typically informal; they do not represent a part of the formal organisation structure' (Hislop 2005: 58), and thus, they do not appear in organisation charts or in the different business processes designed by management (Brown & Duguid 2001; Hislop 2005). Therefore, they cannot be managed in conventional ways. Any attempts to manage knowledge should consider the social context within which knowledge is deployed (e.g. Tsoukas 1996; Swan et al. 2002; Gourlay 2006). Brown and Duguid (2001: 209) suggest that 'a firm's knowledge base is not a property that falls within its boundaries, but one that in part draws on its embeddedness in broader structures'.

CoPs are 'communities of knowing'; that is, the knowledge of the different groups involved is not only socially embedded within informal networks but is also cognitively embedded (Boland & Tenkasi 1995). Swan et al. (2002: 120) note that the reflection on social practices is facilitated by the norms of reciprocity and the levels of trust generated

within the community. Boland and Tenkasi (1995: 39) suggest that the problem of knowledge integration or combination 'is a problem of perspective taking in which the unique thought worlds of different communities of knowing are made visible and accessible to others'. The community perspective highlights the importance of relationships, shared understandings or shared sense of identity and common values, such as attitudes to knowledge sharing (Kofman & Senge 1993; in Hislop 2005). Under the community approach, knowledge is embedded in and constructed from and through social interactive relationships. Hence, an emergent view is that knowledge, unlike information, cannot be processed; rather it is continuously recreated through dynamic and interactive social networking processes. However, Swan et al. (2002) suggest that in the case of heterogeneous networks knowledge sharing is hard to be effective, and knowledge accessibility may be hampered. This is because heterogeneous networking activities may involve networks with different appreciation of the 'world-view', which underpin the insights and knowledge generated by their particular communities. Thus, it is suggested that in heterogeneous networks strong ties must be developed between network partners in order to lower existing structural and cultural barriers to absorptive capacity and knowledge sharing. As Von Krogh et al. conclude:

'You cannot manage knowledge itself' -... [in an indirect way]... - 'through utilizing [and] shaping people-centred processes, management has the ability to persuade workers to manage their knowledge towards the achievement of organisational objectives' (Von Krogh et al. 2000: 17; in Hislop 2005: 239).

An interesting finding is that story-telling is considered as a more important way of communicating knowledge than codifying it in ICT systems, and this has methodological implications. Knowledge is disseminated through stories, jokes and anecdotes, which enlighten a shared experience (Swan et al. 2002: 131). Swan et al. (2002: 121) argue that stories 'give us a sense of the context in which experience has been developed and help us to grasp the tacit nature of some of the knowledge being communicated'. Further, they argue that storytelling exposes the limits of technology and information platforms in managing knowledge. The authors argue that:

'ICT systems can support and sustain the development of communities and social relationships, but not replace the importance of social networks by allowing them to develop and exchange shared socio-cultural 'objects', such as texts, stories and images, which help to reinforce the meaning and purpose of a particular community' (Swan et al. 2002: 131).

Swan and Newell (2000), among others, suggest that different approaches to managing knowledge will be more or less useful for different episodes of the innovation process. For example, for the first stage of the innovation process, that of knowledge acquisition, the network approach is more appropriate. This approach emphasizes the importance of weak ties, while strong ties should be developed for the second stage of the innovation process, which is concerned with knowledge creation and is underpinned by the community approach. Swan et al. (2002: 182) note that:

‘In many cases what is considered to be a best practice in one context may be deemed unworkable in another, because the sense-making in these other social contexts remains bounded by traditions and assumptions that are anchored in history’.

Tsoukas (1996) argues that knowledge is not developed in isolation from the social context and culture. Scarbrough et al. (1999) suggest that a more ‘pluralist’ approach to managing knowledge is needed; ‘an approach that recognizes the importance of diverse cultures, understandings and *logic of action* and develops a social context where these can both coexist and learn from one another’. Methodologically speaking, the above imply that a postmodernist approach is consistent with an emergence of pluralism and acceptance of multiple ‘truths’, and relative rather than absolute objectivity. Under a postmodern approach, knowledge is socially constructed, invented, or ‘made’, rather than found.

The social construction of knowledge refers to the transfer of tacit knowledge, which involves a critical mechanism, that of a knowledge network. Although it is clear that there is no universal definition for tacit knowledge, it is here elaborated to some extent. Tacit or *slender* knowledge is contrary to explicit or *certain* knowledge (Schumacher 1978). St Thomas Aquinas, ‘following Aristotle, taught that the slenderest knowledge that may be obtained of the highest things is more desirable than the most certain knowledge obtained of lesser things’ (in Schumacher 1978: 13). Also, Schumacher notes that ‘if I limit myself to knowledge that I consider true beyond doubt, I minimize the risk of error but I maximize at the same time the risk of missing out on what may be the most rewarding things in life’ (ibid. p. 13). To enhance the understanding of Schumacher’s thinking, it is important to introduce to this discussion and briefly explain, his work, ‘*The Level of Being*’.

‘Man has powers of life like the plant, powers of consciousness like the animal, and evidently something more: the mysterious power of self-awareness... The power of

self-awareness has undoubtedly a great deal to do with the fact that man is not only able to think but also able to be aware of his own thinking' (Schumacher 1978: 27).

Schumacher (ibid.) insists that 'this power, consciousness recoiling upon itself, opens up unlimited possibilities of purposeful learning, investigating, exploring, formulating and accumulating knowledge'. Polanyi (1966: 4), an epistemologist, simply suggests that 'we know more than we can articulate'. Hence, two basic types of knowledge emerge: tacit and explicit. 'Tacit knowledge is distinguishable from explicit knowledge in terms of its relative incommunicability, because it resides *in our heads* and in our practical skills and actions' (Swan et al. 2002: 104), and is often referred to as 'know-how' (Swan et al. 2002: 3). Gourlay (2006: 60) in his review of studies on tacit knowledge suggests that 'tacit knowledge appears due to, both, experience with the particular objects it is applied to, and to general experiences'. Tsoukas (1996) notes that the distinction between tacit and explicit knowledge while useful, is also overly simplistic, that is, the two are 'mutually constituted'.

Nonaka and Takeuchi (1995; in Gourlay 2006: 60) regard 'tacit knowledge as the root of all organisational knowledge'. Further, Nonaka (1994; in Swan et al. 2002: 5) argues that 'knowledge creation can only occur at the level of the individual and through a socialization process'. Nonaka's view suggests that 'organisational knowledge that has the same meaning for everyone cannot exist' (ibid.). Spender's framework complements that of Nonaka, by his 'notion of *collective knowledge*, highly situated and embedded within the organisation, which supports Brown and Duguid's (1991) notion of *communities of practice*' (in Swan et al. 2002: 5). Levinson and Asahi (1995; in Tidd et al. 2005: 337) believe that 'through a process of dialogue, experience-sharing and observation, individual knowledge is amplified at the group and organisational level... This creates [a] knowledge network'. Spender's framework, which is rooted in the structural perspective, 'does not highlight what Nonaka's framework makes explicit, that the processes promote knowledge creation' (in Swan et al. 2002: 6). However, Spender recognized the limitations of his own framework, when he stated:

'Knowledge comprises theoretical statements whose meanings and practical implications depend on their use and on the framework in which they are deployed... These days knowledge is less about truth and reason and more about the practice of intervening knowledgeably and purposefully in the world' (Spender 1996: 64; in Swan et al. 2002).

Spender's definition of knowledge avoids the notion of truth and instead emphasizes context and defines knowledge in dynamic terms, regarding it as a practice of doing – '*knowing*', rather than something static or objective – *knowledge*, which a person possesses (Swan et al. 2002: 7). However, Cook and Brown (1999) highlight that processes of knowing and knowledge are inextricably linked. Further, the two authors argue that a substantial part of individuals' tacit knowledge will always remain tacit; resistant to articulation or codification. Therefore, tacit knowledge only exists as conscious experience and behaviour which are rooted and manifest in processes of knowing and action (Cook & Brown 1999).

The above views of both the processual and the structural perspectives of innovation assume that knowledge creation is a product of the organisation, and is not amplified at inter-organisational and network levels. Nevertheless, the study in line with Swan et al. (2002: 48), maintains that knowledge creation has to be seen as an interactive process involving 'a diverse range of actors with different backgrounds, cutting across organisational boundaries, and combining skills, artefacts, knowledge and experiences in new ways'. But this view of diversity implies weak ties, and that knowledge creation is a product of a network by itself. Without neglecting the importance of weak ties, knowledge is created when strong bonds and social ties are established and developed within such a 'network'. As has been noted in the previous section, product innovation is a function of interactive relationships of actors in networks (Hakansson 1987; in Araujo & Easton 1996). Further, 'knowledge sharing generally occurs on the basis of informal, personal social networks (Cross et al. 2001; Hakansson 1990) and face-to-face communication facilitates normative alignment across the connections' (Cronin 2007: 4). Hence, knowledge creation and especially co-creation cannot be separated from network and interaction processes and can be analysed at the relationship level among individual actors.

Once more, the transfer of tacit knowledge involves a critical mechanism, a knowledge network, which underlies the link between individual and inter-organisational learning. Hence, managing knowledge is more about the management of people, typically organised in teams and networks. As organisations are re-organised along process lines and restructured around virtual teams and networks, they also inevitably lose opportunities for casual sharing of knowledge and learning induced by physical proximity (Swan et al. 2002: 15). Hence, 'managing tacit knowledge requires high trust from

managers who do not actually know what their subordinates are doing' (Gourlay 2006: 66). Hislop (2005: 75) stresses that 'the level of trust and mutual understanding between people in this context is also likely to be conducive to effective knowledge-sharing'. In the case of cross-cultural inter-organisational networks, Hislop (2005) note that a lack of common knowledge or shared identity and the existence of major differences in value systems among actors will 'impede the transfer of complex knowledge; knowledge that is highly tacit, and which has a high level of interdependence with other knowledge' (Hislop 2005: 76).

The above views explain why knowledge management practices that encourage the development of trust, shared understandings and shared sense of identity are crucial, especially for cross-cultural and inter-organisational knowledge-based resource interaction. Strong ties, are especially important, as these generate the redundancy necessary for members of heterogeneous social groups to understand and build from what each other knows (Hansen et al. 1999). Hansen et al. (1999) differentiate between codification and personalization as two opposing knowledge strategies and argue that 'the personalization strategy is most relevant for companies whose competitive advantage is derived from processes of knowledge creation' (in Hislop 2005: 125).

Hence, it is hard for globally distributed networks, where heterogeneous beliefs and understandings exist, to adopt a personalization strategy to knowledge, or in other words create a shared mental space. At this point, it is necessary to look at two important factors that might affect the creation of a shared mental system. The first is transparency, which refers to 'the openness or knowability' (Tidd et al. 2005). According to the authors (2005: 335) 'transparency will depend on the penetrability of the social context, attitudes towards outsiders, i.e. clannishness', and therefore the potential for knowledge sharing. A second factor is 'receptivity or absorptiveness' (ibid.), which refers to the partner's capacity to acquire new knowledge. Further, Tidd et al. (ibid.) argue that 'organisational inheritance will determine attitudes towards knowledge acquisition'. The absorptive capacity of an organisation depends on 'the fit with the partner's knowledge base, organisational structures and processes, such as the degree of management formalization and centralization of decision-making and research' (Nonaka & Takeuchi 1995; in Tidd et al. 2005: 336). Although, these views are based on an organisational perspective, Tidd et al. (2005: 311) note that 'business relationships and social interactions both restrict and provide opportunities for innovation'.

Knowledge can be seen as ‘multifaceted and complex, being both situated and abstract, implicit and explicit, distributed and individual, physical and mental, developing and static, verbal and encoded’ (Blackler 1995; in Scarbrough et al. 1999: 29). Swan et al. (2002: 107) argue that knowledge is ‘continuously recreated and reconstituted through a dynamic, interactive and social networking activity’. For Nonaka and Konno (1998), *ba* is the enabling context within which social relationships and interaction take place. *Ba* is seen as

‘A physical space where face-to-face interaction can occur, but can also involve virtual space (for example, e-mails, intranets, video conferencing) and most importantly it involves developing a shared mental space, such as shared experiences, emotions and ideas’ (in Swan et al. 2002: 49).

Inspired from the meaning of the word ‘*ba*’ used in ancient Egypt, a shared mental system can metaphorically represent the ‘soul’ of the relationship, the community or the network. Shared mental models among team members allow the team to construct a shared understanding of their situation. Nonaka and Konno (1998) argue that this is dependent on the team members working closely together over a prolonged period and has been referred to as knowledge redundancy. It is useful to note here that knowledge redundancy affects a team’s absorptive capacity (e.g. Cohen & Levinthal 1990). Further, absorptive capacity or differential learning significantly affects the bargaining power of partners. Lei (1997: 217) argues that ‘disparities in organisational receptivity to learning, knowledge embeddedness and strategic intent will work to favour one partner’s ‘outlearning’ the other’. In their literature review of studies on knowledge management, Scarbrough et al. (1999) note that most studies on ‘learning organisation’ are underpinned by the notion of strategic management, that of core competences, and they suggest that this strategic notion should not underpin studies on knowledge management. Instead, it is suggested that future studies on knowledge management and product development should be underpinned by the notion of networks, or that of ‘inter-communities of practice’.

Welch and Wilkinson (2004: 216) argue that ‘relationships and networks that extend across borders are key explanatory factors for development of foreign markets’ and subsequently can explain product and technology development within globally dispersed supply and production networks. Companies in the West, increasingly nowadays interact with innovative companies in emerging markets, such as China and India, and vice versa. Their mutual purpose is to make the most of these relationships and differentiate their product offerings. But from a commercial or hierarchical market-based perspective alone,

it is hard to explain co-evolution of relationships, and co-design, or co-creation, of products and technologies. Seen from an industrial network perspective, business relationships ‘transcend the actions and characteristics of individual companies, in both time and space’ (Ford & Hakansson, 2005: 5), and through an ‘interdependency’ and ‘interactive’ lens co-development is possible to be analysed. Interdependences are an inherent characteristic of interacted structures, and in line with Araujo et al. (2003; in Mason & Leek 2008: 777) ‘the organisational and network structures need to interact in order to operate as part of the network’. Companies seek dependence because they are unable to be technologically independent. In practice, purchasing managers do not like to depend on suppliers, and vice versa. But interdependence means that they can use each other’s resources to innovate. Through outsourcing, previous in-house operations from different parts of the value chain, buying companies have opportunities to improve their offerings (Gadde & Jonsson 2007). Therefore, when suppliers ‘contribute systems, sub-systems and components’ (Chiesa et al. 2000; in Karlsson 2003: 47), a company’s in-house activities should focus on system integration, network operation and product characteristics (Karlsson 2003).

Gadde and Jonsson (2007: 9) argue that outsourcing sometimes ‘tends to contradict the ambitions of buying companies when it comes to strategic aims concerning supplier involvement and the features of the supply base’ and suggest that ‘teaching suppliers is an important managerial issue of the buying company’ (ibid. p.19). However, teaching, as learning, is a two-way process (e.g. Gadde & Hakansson 2008). This is due to the fact that once operations are outsourced the process of business still needs to be integrated. This integration calls for interactive relationships, which, in turn, when managed well may produce positive outcomes, such as the establishment of strong social ties and bonds between the actors involved. In this way, business relationships might reach an intensifying stage, where processes are fully integrated. Nonaka and Konno (1998) call this ‘ba’, meaning space in Japanese; a shared space for emerging relationships and a necessary context for knowledge creation (Nonaka & Konno 1998; Nonaka et al. 2006). But their view is based on new knowledge, where the unit of analysis is the organisation, and it is not amplified to inter-organisational network levels.

In a learning network, close and high-involvement relationships among network actors, are considered to be outcomes as well as prerequisites of adaptations and knowledge exchanges, which ‘are the key mechanisms in what is considered systematic combining

of resources in order to enhance productivity and innovation' (Gadde & Hakansson 2008; Gadde & Jonsson 2007: 12). Systematic combining of resources also implies that a newly negotiated resource interface should comply with existing resource interfaces of both or multiple actors. However, the idea of systematic combination of resources implies an intention of planning that contradicts the idiosyncratic chance implicit in Ba; the value of tacit knowledge is that it cannot be made explicit. Hence, more vital than the negotiated allocation of resources are the relationship ties and actor bonds, which indirectly promote mutual adaptations and call for managing within networks. Put it more naturally, interactive relationships will breed network processes and increase the complexity of knowledge exchanges, enhancing efficiency and effectiveness with regards to product development. Usually organisations try to manage product development processes in contexts where network actors are heterogeneous and where relationship redefinition may not always have positive outcomes, due to socio-cultural resistances to change. IMP scholars suggest that in order to be able to find possible ways of managing these processes emphasis should be placed on interactive relationships (e.g. Johnsen & Ford 2007), and in practice management should rely on softer and more flexible knowledge transfer mechanisms (e.g. Thompson 2005) in order to encourage social interaction.

Based on the above discussion, this research focuses more upon practices of knowing and ways in which these practices might be managed rather than the management of knowledge as a discrete, objective, entity. Emphasis should be given on managing knowledge through breeding network processes and acknowledging the value of interactive relationships among individual actors (Swan et al. 2002; Waluszewski 2005). However, the community perspective on innovation, which emphasises that knowledge has to be continuously negotiated through interactive social networking processes, may face limitations and difficulties in its effort to establish a shared meaning of the worldview. A major challenge for inter-organisational networks is the development and maintenance of trust among network actors. It is a common belief that 'trust provides the conditions for collaboration and for the sharing of knowledge and is thus indispensable to the use of knowledge management systems' (Scarborough et al. 1999: 52). Cross et al. (2001: 111) note that the central actors involved in a project must develop 'an appreciation of each other's unique skills and knowledge' through working together in various projects, and this facilitates the interaction process and assists in developing stronger bonds. Moreover, inter-subjective appreciation and understanding of knowledge

and skills of others ‘creates a natural reason for meeting and developing the needed norms of reciprocity and trust that make engagement and sharing of expertise a natural process’ (Cross et al. 2001: 111).

In the final paragraphs of the ‘knowledge network’ section, it is important to distinguish among three streams of research in the field of new product development, and to understand differential assumptions of knowledge, as a resource, among these. The most reductionist approach views the new product development process as a rational plan, which aims at reducing complexity and increasing predictability. This is a positivist stream of research (e.g. Brown & Eisenhardt 1995; Cooper 1998), which assumes that a knowledge-based resource is something that a firm owns, or aims to have. In contrast, the resource-based view of the firm, assumes that resources, including knowledge, are distributed across companies and different resources persist over time (Penrose 1959; in Olsen 2006). Although the resource-based view of the firm is a theory, which significantly enhances the understanding of resources, its focal point of interest is the firm. A different school of thought is the IMP, which unlike the above views and works of scholars discussed in this section (e.g. Teece 1998; Brown & Duguid 1998; Nonaka & Takeuchi 1995), takes the relationships of actors within networks, as its basic unit of analysis, and instead of assuming knowledge as a resource, IMP scholars assume knowledge as an activity, which is developed through interactive processes among actors (Young & Denise 2000; Olsen 2006).

As Gadde and Hakansson (2001: 39) suggest, ‘the general notion of a company as a production unit needs to be supplemented with other perspectives, such as the company as a knowledge unit’. This is because ‘companies strive to be used as sources of knowledge by their counterparts in the networks in which they are involved’ (ibid. p. 40). Concepts related to knowledge, such as ‘resources’, ‘competences’, ‘capabilities’ and ‘learning’, among others, affect both the demand and the supply side of companies. These concepts are related directly to which type of knowledge the company develops internally and what is made available from other firms (Gadde & Hakansson 2001: 45). For Baraldi and Wedin (2005), the value of a resource derives from its combination with other resources in the network and a combination of different resources, such as organisational competences, technological capabilities, and knowledge resources, such as networking capacity, is known as a resource interface. A resource interface is basically an outcome of

interactive processes of adaptation and development; both of which are principles of an interaction approach. Resource interfaces are '*meeting places* where resources interplay and affect each other' (Baraldi & Wedin 2005: 5). The authors distinguish between '*physical meetings* wherein resources are physically transformed and moulded together [and] *social meetings* involving units and relationships matter for the emergence of resource interfaces' (2005: 5).

To sum up, this research maintains that business networks are knowledge networks where various kinds of resources are transformed and moulded together in interaction and shows that social meetings, involving interpersonal relationships that cross organisational borders, heavily influence the physical meetings that involve direct business resource interaction. Further, it should be noted with regards to knowledge networks that the use of agents causes knowledge hoarding problems, isolating the buying company away from suppliers, which may increase the risk of nepotism. Such nepotism that may 'occur in a network setting will always occur as an *economic nepotism*' (Waluszewski 2005: 80). Next, the review extends its focus and explores supply networks. In line with Gadde and Hakansson (2001: 46-7), next section maintains that suppliers of products 'might also be producers of knowledge' and that 'in order to influence the knowledge processes of suppliers it is important to move the focus from the products of the suppliers to the suppliers themselves'.

2.3 Outsourcing and the Supply Network

Every business is dependent for its survival and growth on its direct relationships with customers and suppliers of products and services (Ford et al. 1998). No business is an island (Hakansson & Snehota 1989). In other words, a company's position in the network and its business relationships are affected, indirectly, by what happens in other relationships (Ford et al. 1998). Based on the discussion about the genesis and evolution of industrial networks, the term 'supply network' basically reflects a shift in emphasis from 'supply chain' in which much attention is placed to dyadic relationships, to the wider system concepts embraced by the supply network concept (Morgan 2007: 255). Hakansson and Persson (2004: 11) argue that change and innovation issues in supply systems, where flexibility, adaptability and intelligence are the basic features, cannot easily be analysed from a supply chain perspective. However, 'there are still many grey areas where the distinctions between supply network and supply chain are blurred' (Morgan 2007: 255). A major challenge, thus, is to understand what the concept of the supply network embraces.

Lambert et al. (1998) broadly define supply chain management as the integration of key business processes from end users to suppliers that provide products, components, services and information that add value to customers. Gadde and Hakansson (2001: 23) define a supply chain as 'a connected series of organisations, resources, and activities involved in the creation and delivery of value'. Further, they argue (2001: 33) that 'the conditions for efficiency and effectiveness in single chains are determined by the way activities and resources are related to those in other supply chains'. A related concept is outsourcing⁴, which actually involves 'a wider interpretation of supply chain management' (Gadde & Hakansson 2001: 124). Altering the scope of supply through outsourcing is 'more than a straightforward re-allocation of activities from the buying company to its suppliers', and may involve changes to 'a company's connected relationships with other suppliers' (Hakansson & Snehota 2001: 123). The benefits in increasing the scope of a company's supplies through outsourcing, depends on the structure of the supply base, such as the number and type of its suppliers, and on the nature of its relationships with suppliers, such as the ability to handle relationships with

⁴ Gadde and Hakansson (2001: 22) loosely define outsourcing as 'the taking of an operation or function traditionally performed in-house and jobbing it out to a contract manufacturer or third-party service provider'.

suppliers (Gadde & Hakansson 2001). The two authors argue that ‘variety in supply structure is not only inevitable, but beneficial’ (2001: 144) and that the focus should be on managing interdependencies within the supply base and organising for interaction with suppliers (ibid.).

A critical issue in supply management is the mobilisation of suppliers. Achieving cost and revenue benefits from mutual investments, such as adjustment in equipment, joint logistics and control systems and working methods, requires that buyer and supplier have a shared view of one another and what they can gain from cooperation (Gadde & Hakansson 2001: 7). Further, a company can obtain even more benefits by promoting knowledge and technological resource combinations among different suppliers (Gadde & Hakansson 2001). In this way, a company, by co-aligning suppliers’ behaviour, can establish ‘activity links or resource ties among its suppliers and not only in its own relationships’ (Gadde & Hakansson 2001: 146). However, the above views of integrating the supply base refer mostly to medium and large-sized buying companies (network hubs or bottlenecks), as it is considered hard for small businesses to intervene or influence other businesses’ strategies and ways of operating. A realistic approach for all companies is to try to achieve indirect control over some of their activities by developing effective relationships with suppliers (Gadde & Hakansson 2001: 127). Relationships when they are close and integrated can be a mechanism to exercise some degree of control or influence over resources held and controlled by others (ibid.).

There have been various efforts by researchers in the supply management field to offer categorisations of supply networks. Mills et al. (2004) suggest four research streams on supply networks: downstream, upstream, static and dynamic. They argue that the dynamic perspective is the most strategic as it continuously seeks possible ways to change the position of the company in its existing networks and to create new relationship patterns to access new networks. Harland et al. (2001: 26) offer a taxonomy, which enhances understanding of ‘network contingencies surrounding creation and operation of supply networks’. Their empirical endeavour presents a matrix of four types of supply networks based on two dimensions: supply network dynamism and focal firm’s influence. Each type involves different patterns of networking activities. For example, when the focal firm’s direct network value is high, due to its perceived innovative capability, networking activities involve partner selection and top-down decision making

in the supply chain. In dynamic environments where the market is characterised by high frequency of new product launches or demand heterogeneity and there is a need for continuous innovation, human resource integration and knowledge capture is placed on top of equipment integration and information processing; networking activities related to more static and routinized supply networks.

Recent trends on the supply side of companies are enhanced specialisation and subdivision of activities in combination with developments in information technology. This means that the resources available in a network become increasingly scattered, implying that firms are dependent on access to the resources of other firms (Gadde & Hakansson 2001: 17). Despite the importance of innovation for a buyer and a supplier, it is difficult to assess the effect on the innovation potential of a company of its mutual adaptations of resources and adjustments in its products, processes and routines (Gadde & Hakansson 2001: 117). In measuring supply network performance, authors usually incorporate supply chain measurement methods, which focus on dyadic ideas. In contrast, Gadde and Hakansson (2001) argue that ‘within a supply network, relationship handling costs can often be traced to some total structural cost and can sometimes be attributed to a particular supplier relationship’ (Gadde & Hakansson 2001: 126). On the other hand, relationship benefits, such as shortening lead times or access to innovative and high quality second-tier suppliers, are likely to be both more complicated and diffused and it is often difficult to allocate them to a specific supplier (Gadde & Hakansson 2001: 116). A general conclusion, here, is that costs and benefits are difficult to assess, but more difficult seems to be the case of supplier network performance measurement, as different elements of the supply network require different priorities in their performance measurement (Morgan 2007: 262).

Morgan (2007: 268) notes that ‘most articles in the literature were heavily biased towards quantitative performance measures’. In general, total costs of the supply base cannot be measured by only using quantitative approaches and dyadic ideas for development. It is suggested that supply performance measurement systems ‘should be extended beyond the dyadic perspective’ (ibid. p. 266) and should have a supply network focus for strategy and operations management. Further, in terms of addressing total supply network costs an unprecedented level of cooperation between organisations is required, especially in the area of negotiating upon measurement standards (Morgan 2007). Overall, the systematic

study of supply network performance measurement is a relatively recent phenomenon (Morgan 2007: 257), and especially ‘the cultural issues that surround performance measurement are poorly explored and even more poorly understood’ (ibid.).

In supply networks what is significant is the rate of change that takes place, in terms of the scope of the supply side, its structure and its size (Gadde & Johnsson 2007). Gadde and Hakansson (2001) note that the supply base of buying companies has been reduced, because developing collaborative relationships is resource demanding, and it is not possible to have close relationships with many suppliers. The basic reasons to reduce the supply base lie to the need for integration and consolidation, which represents the ‘ability of firms to globalise purchasing, sourcing and supply management’ (Monczka & Morgan 2000: 52; in Gadde & Hakansson 2001: 32). In particular, the two authors (2001: 123) argue that ‘outsourcing some activities and concentrating on few suppliers can create conditions for economies of scale and scope, not only in manufacturing activities, but also in R&D’.

Suppliers are better considered as strategic business partners, vital in the development of new products and technologies (Gadde & Hakansson 2001: 13), due to their capability in mobilising other resources and relationships, and thus ‘other actors’ resources existing within them and within their networks’ (2001: 123). Another example of the changing nature of companies’ supply bases is the scramble to locate and exploit cheap labour in the manufacturing and services environments (Clott 2004; in Morgan 2007). However, cheap labour is not the only factor to be considered in relocation or outsourcing. Van Hoek et al. (2002; in Morgan 2007: 264) list some important factors, which include: ‘proximity of warehouses or factories of foreign suppliers; availability of local suppliers and manufacturers; availability of local logistics suppliers; and availability of qualified labour’. About the future of the supply network environment, Morgan (2007: 270) interestingly assumes that ‘as manufacturing and trade shifts to non-Western areas of the world, the issue of cultural assimilation or flexibility will gain in importance throughout the supply networks of the world’. Overall, it is clear that ‘measuring cultural interactions in supply networks is still in its infancy and will undoubtedly require some new approaches that are as yet undefined’ (Morgan 2007: 270).

Companies are ‘increasingly dependent on the technologies of their suppliers. Some are getting close to becoming a ‘virtual company’ that relies more or less completely on sub-

contracting traditional activities such as design, manufacturing, logistics and order handling to others' (Ford et al. 1998: 109). Therefore, there is no one best supply strategy for all circumstances. A balanced but inevitably complex, analytical and holistic approach is needed to supplier relationships (Gadde & Hakansson 2001). Drawing from the work of Deffe and Stank (2005), Morgan (2007: 262) concludes that supplier network effectiveness should be analysed using a soft systems and relational approach. Gadde and Hakansson (2001) argue that it is possible to present three dimensions along which a company's supply strategy can be analysed as a basis for developing strategy. The scope of a company's supplier relationships, the structure of its supply base and the posture of its supplier relationships; these provide the basis for defining and analysing the concept of supply networks. Although the scope and the structure of the supply base, which have been elaborated in this section, are associated directly with outsourcing and the discussion of the supply network concept, the posture, nature or substance of inter-organisational relationships in supply networks, although interrelated with supply base scope and structure, is primarily associated with interaction and it is discussed in the next section.

To wrap-up, here, the most significant development in the supply side has been formulated as 'a change from product-based acting toward supplier-based acting' (Gadde & Hakansson 2001: 54). This shift in attention includes a major change of focus: a shift from a focus on structures toward a focus on processes. The two authors argue that:

'When suppliers are considered as resources the focus shifts and interesting issues deal with learning, communication and development, with a focus on processes, where the company is successively becoming a very active node in a supply network...the process is organic by nature and the closer the relationship the more dense the interaction and the greater the interdependence' (ibid. p. 120).

However, a major criticism of the works of Gadde and Hakansson (2001) and Morgan (2007), among others (e.g. Harland et al. 2001), comes from the fact that although they recognise that managing and measuring performance of supplier relationships and networks requires a relational approach that takes into account cultural interactions, they seem to overemphasise suppliers' dependence on buyers. The assumption of supplier dependence on buyers implies a focus on cost reduction and economies of scale, rather than economies of scope that is the basis of high-involvement and dynamic relationships for product co-development and innovation sustainability. Yet, suppliers, especially when they are located in foreign markets, such as China, where they have local knowledge, and

local network capacity, also try to manage buyers through the establishment of close relationships.

2.4 The Interactive Nature of Relationships

Relationships exist in business, knowledge or supply networks ‘whether or not those relationships are close, complex, productive, troublesome, calm or stormy’ (Ford et al. 1998: 8). As IMP scholars (e.g. Gadde & Hakansson 2001) argue, business relationships are outcomes of interaction processes; a product of actors’ interactions. Each of these actors’ interactions is ‘an episode in the total relationship between them’ (Ford et al. 1998: 6) and together ‘all these episodes make up the relationship’ (ibid. p.7). Each episode is influenced by both actors’ previous experience in that relationship and in others and future episodes might be affected by actions, attitudes, or experiences from before (ibid.). Past experience of a relationship will affect an actor’s approach to others, such as an actor’s expectations of a supplier’s product quality, price and delivery performance or even an actor’s level of trust and commitment to the relationship (Ford et al. 1998). Undoubtedly, technical and operational attributes alongside behavioural and socio-cultural attributes are successively adapted through interactive processes over time.

Ford et al. (1998) simply assess dyadic business relationships in terms of the distance separating two business actors. The distance in a business relationship can be separated into social, cultural and technological distance. Social distance is ‘a measure of the extent to which the individuals in the two organisations are familiar with each others’ ways of thinking and working and are at ease with them’ (Ford et al. 1998: 30). Cultural distance is ‘the degree to which the norms and values of the two companies differ of their place of origin’ (ibid.). Technological distance refers to ‘the differences between the product and production technologies of the two companies and hence the degree of “fit” between them’ (ibid.). IMP scholars agree that the extent of the distances between two or more parties depends, among other things, on what level or stage the relationship is in.

In supplier relationships some broadly defined stages can be distinguished. Initially, the pre-relationship stage is characterised by high distance between those involved, which reduces the understanding of each other. At the exploratory stage, business actors ‘are engaged in serious discussion or negotiation, and there is an overt exchange of information and mutual learning about such things as product and service requirements’ (Ford et al. 1998: 34). Following the exploratory stage, the developing stage is also characterised by intensive mutual learning. It additionally involves adaptations, which can include major investment to develop a product or leverage the process or pattern of

interaction between companies. In particular, at the development stage, a willingness to adapt, or demonstrate commitment to the development of the relationship, is necessary (Ford et al. 1998: 35). Lastly, the stable stage of a relationship has positive advantages for the companies, as it may lead to the establishment of standard operating procedures, norms of conduct and high levels of trust (Ford et al. 1998: 37). However, ‘there is no certainty that adaptations and commitment will increase smoothly in any relationship, or that the distance between the companies will reduce’ (Ford et al. 1998: 39).

In order to achieve a stable or even developing stage in a business relationship, people should interact, and this social interaction, will, in turn, tend to *glue* them together (Gadde & Hakansson 2001: 54). Interaction is seen by IMP scholars (e.g. Hakansson & Snehota 1995: 25) as ‘a series of acts and counteracts creating interdependencies and affecting their behaviours’. Mutual commitment and interdependencies among companies constraint companies’ behaviour but also creates opportunities (ibid.). Hakansson and Snehota (1995) consider interactive relationships as a prerequisite as well as an emergence of adaptations and resource combining and conclude that although there are no two relationships alike, ‘there is a certain pattern in the effects they produce’ (ibid. p.25). In particular, the two authors look at ‘the elements being connected in a relationship and the effects the connections produce’ (ibid. 26). In other words, they describe business relationships in line with two dimensions: the substance of business relationships and the functions of business relationships. The former regards what is affected and the latter who is affected by the relationships.

The three layers that comprise the substance of interactive relationships refer to activity links, resource ties and actor bonds. These dimensions can be taken as ‘three different effect parameters that are determinants of the values involved in a relationship and thus of its outcome’ (Hakansson & Snehota 1995: 26). The three layers of the model are explained separately, although there is an interplay between the activity links, resource ties and actor bonds; the three are not independent. However, a business relationship might be closely integrated in all three aspects and others in only one or two (Gadde & Hakansson 2001: 132).

■ **Activity links** refer to technical, commercial and other activities of a company that can be connected to those of another company (Hakansson & Snehota 1995). Activity links allow companies to rationalise operations beyond their boundaries and within their

business partners (Ford et al. 1998). As Hakansson and Snehota (1995: 29) note, by linking activities ‘a company's performance is affected because of the effects either on its own activity structure or on the activity structure of the counterpart’.

■ **Resource ties** connect different resources (technological, knowledge, and other intangibles) of companies in a business relationship. Resources can be adapted to the requirements of the relationship (Gadde & Hakansson 2001). A company's resources are of little real value until they activated through interaction with other companies’ (Ford et al. 1998: 42), and this differentiates this approach from the resource-based view of the firm.

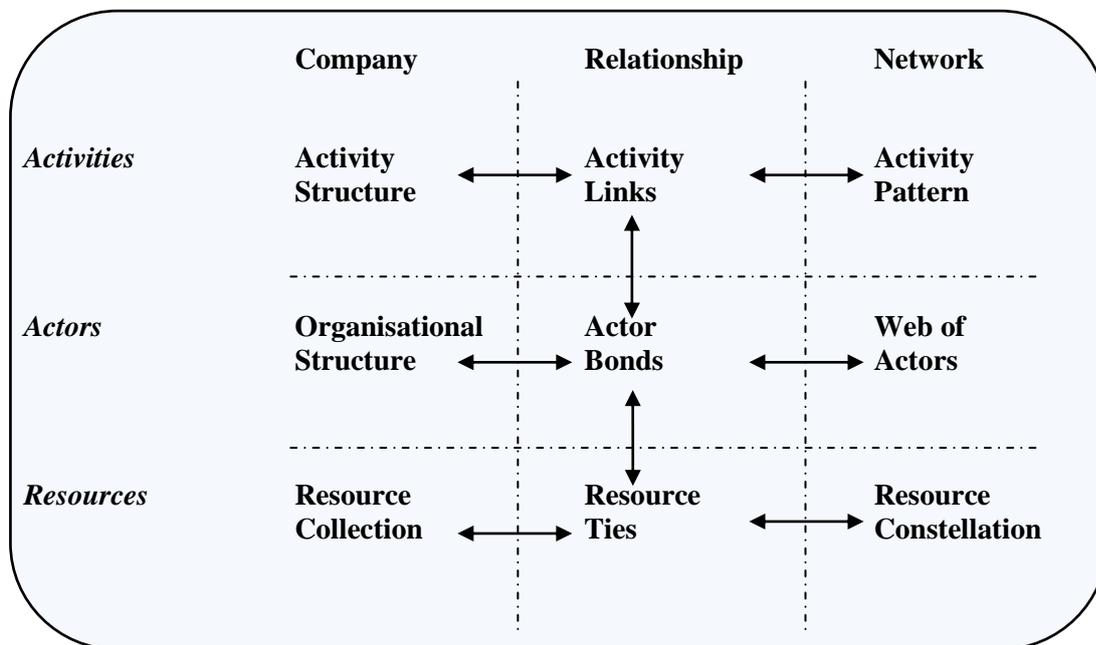
■ **Actor bonds** developed between companies ‘affect their behaviour and identities’ (Hakansson & Snehota 1995: 34). Actor bonds influence how the two actors perceive each other (ibid.). The individual actors may interact intensely, so that the choices they make are interdependent. Scholars agree that interaction is crucial for ‘learning-by-doing’ and ‘teaching’. Through a learning process, companies gain knowledge of the operations of their counterparts and knowledge transfers take place, benefiting the co-creation and co-development aspects of business networks.

Bringing back into the discussion Hakansson and Snehota's (1995) two-dimensional description of business relationships, it should be noted that although the first dimension – the substance of a business relationship of two connected companies – manifests the activity links, resource ties and actor bonds, the second dimension regards the effects of a business relationship to other business actors. Thus, the functions of a relationship ‘can be conceived in terms of the effects a relationship between two companies produces for the dyad, for each of the involved parties and for third parties’ (Hakansson & Snehota 1995: 28). In other words, ‘the effects of a business relationship originate in activity links, resource ties and actor bonds and affect the dyad, the individual company and the network’ (ibid. p.41). By putting together the two dimensions, Hakansson and Snehota (1995: 45) outline ‘a broad analytical scheme to identify where and what effects are likely to occur as a relationship evolves’. Although, the two authors called it ‘a scheme of analysis of development effects of business relationships’, it became popular as the ARA model of interaction (Figure 2.1).

The interaction model of the industrial network approach, offers a unique way to understand what closeness really means in a relationship. Closeness and the extent of

integration between companies can be analysed using the above three dimensions (Gadde & Hakansson 2001: 131), which consist of the amount of co-ordination of the two companies' activities, the extent of adaptation of their resources to each other and the level of interaction between the individuals involved (Gadde & Hakansson 2001: 132). The original ARA model (Hakansson & Johanson 1992) is framed at a high level of generality and its complexity derives from the conceptual interdependence and interaction between its constituent elements (Araujo & Easton 1996: 101). Hakansson and Snehota (1995) further developed the interaction model by specifying the evolution of networks as a result of the dynamic interplay between actor bonds, activity links, and resource ties (Araujo & Easton 1996: 101). As has been discussed in the section of the network paradigm, an interaction approach 'marks a willingness to move from model building explanations to the managerial implications of a network approach' (ibid.).

Figure 2.1: The ARA Model of Interaction

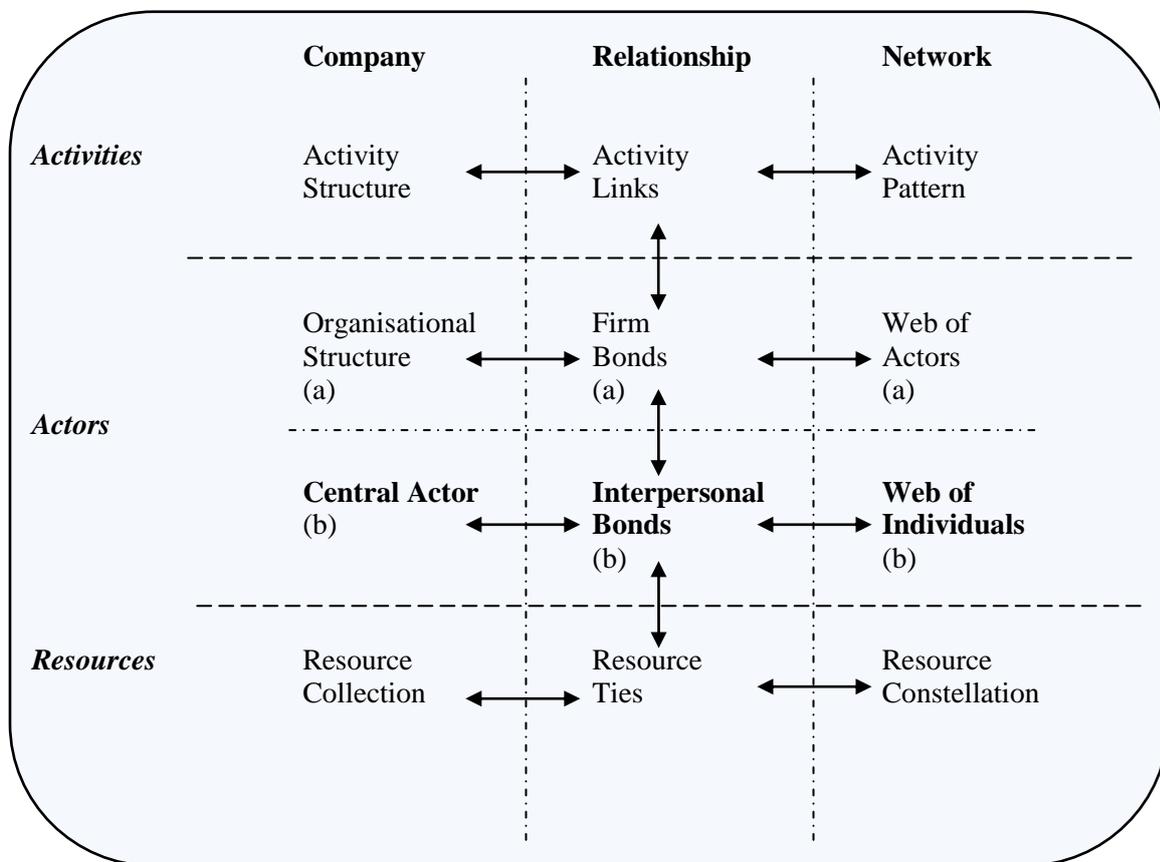


Source: Hakansson H. and Snehota I. (1995: 45)

Fang and Kriz's (2000) cross-cultural research emphasises the significance of interpersonal relationships and how they influence the formation of firm bonds, activity links and resources ties. As the two authors note, in the IMP-based business network paradigm, over time, the level of interpersonal relationships seems to have been usurped

by simplifying individual actors' interaction under the more holistic heading of firm bonds. The authors argue that although the addition of individual bonds may be a moderate change to the existing model (Figure 2.2) it shows a cultural awareness more cognisant of all cultures (ibid.). Their views are based on the assumption of cultural convergence (e.g. Fang 2007; Tung 2008), strongly supported by their empirical research. Having noted the significant modifications to the ARA model by Fang and Kriz, the following paragraphs place their focus on showing that although the original ARA model concerns both process and structure elements there seem to be limitations in terms of its ability to be applied to capture and analyse business relationships in various socio-cultural contexts.

Figure 2.2: The ARA model – ‘Modified’



Source: A modification of the ARA model by Fang T. and Kriz A. (2000: 14)

In IMP literature and beyond, various concepts, such as distance, adaptations, and trust, are used to examine the evolution of business relationships. Relationships will vary depending on the extent to which companies feel that they need to learn, on their

willingness to learn and on their ability to learn (Ford et al. 1998: 27). However, the evolution of interactive relationships also depends on ‘the process of learning how to live with some uncertainties that cannot be reduced’ (ibid. p.26). The development of business relationships involves investment of tangible and intangible resources by both parties (Ford et al. 1998: 27). Adaptations are likely to be expensive and companies especially need to manage their informal adaptations carefully. The level of trust in a relationship can vary widely (Gadde & Hakansson 2001: 54). Ford et al. (1998: 14) note that adaptations imply interdependences, which mean that any relationship between two companies may evolve over time and create an identity of their own, that goes beyond the characteristics and resources of the two parties involved in it. This view involves an analysis of the company’s position in the network; how it sees itself and is seen by those around it (Ford et al. 1998: 49).

Network position is developed through interaction with others and is ‘the basis of a company’s reputation, rights, limitations on behaviour and obligations in the network’ (Ford et al. 1998: 49-50). Network position is ‘a resource that influences the way that the company deals with others around it’ (Ford et al. 1998: 49). The company network position consists of its ‘portfolio of relationships and the activity links, resource ties and actor bonds that arise from them’ (ibid.). Ford et al. (1998: 280) further argue that ‘competitive advantage can be achieved through changes in network position and more effective use and integration of its own and its suppliers’ technology’. Network position, alongside similar concepts, such as network pictures (Henneberg et al. 2004), network identity (Gadde & Hakansson 2001; Huemer et al. 2004) and network insight (Mouzas et al. 2005), are considered as ‘more static ways to analyse actors’ views of their networks and those of others’ (Ford et al. 1998: 49).

Gadde and Hakansson (2001: 130) argue that ‘different individuals might have a different idea of the best way to approach their counterparts and this will affect the overall posture that the company adopts in the relationship’. According to Ford et al. (1998: 1) a business actor should ‘handle interdependencies by relating the actions and resources of his own company to those of its suppliers and others in the complex network that surrounds it’ (Ford et al. 1998: 1). The effects and importance of a particular supplier relationship depend on how it relates to the company’s internal operations and on its interdependencies with other supplier relationships. In line with Easton (1992), Ford et al.

(1998: 112) note that ‘some of these effects are easy to explore and measure; others are more difficult to identify because they are qualitative’. Relationship handling costs include the costs of adapting the company’s internal processes to accommodate that supplier, the costs of supplier training and development, inward inspection and problem solving in the relationship. On the whole, the level of relationship handling costs tends to be a function of the number of relationships rather than of the number of transactions (Ford et al. 1998: 114). Gadde and Hakansson (2001: 121) suggest that ‘if the company is seeking revenue benefits by using its suppliers to assist its product development then there are likely to be extensive contacts and negotiations’. Supplier relationships provide access for companies to major sources of both technical and commercial skills that are held by suppliers and in general, supplier relationships, when handled well, can dramatically enhance companies’ resources and capabilities (Ford et al. 1998: 114), improving a company’s network position.

Interactive relationships are the basic research unit of analysis. Hence, the focus lies on the network links, basically what flows within relationships, which reflect the characteristics of relationship patterns in business networks. Borrowing from Johnsen et al. (2010), Table 2.3 presents a framework that can be used to enhance understanding of supplier relationships and their performance evaluation. The table specifically shows the different nature of relationship characteristics in different phases of business relationships. The ‘model’ has been chosen because it is an outcome of recent research, which examined both sides of relationships between high-tech Taiwanese companies. However, Johnsen et al.’s (2010) research process is not clearly shown and there are no in-depth insights about how relationship resources have been influenced by actors’ interactive relationships or what has caused evolution and change in relationship resources.

Table 2.3: A Model for Supplier Relationship Evaluation

	<i>Exploratory & Tactical</i>	<i>Developing</i>	<i>Stable & Strategic</i>
Mutuality	<ul style="list-style-type: none"> - Goals differ for each party: no strategic alignment - Win-lose strategy 	<ul style="list-style-type: none"> - Current goals aligned to achieve profitability for both parties - Partial strategic alignment 	<ul style="list-style-type: none"> - Goals for future developed in tandem - Strategic alignment - Win-win: shared risks & rewards
Exclusivity	<ul style="list-style-type: none"> - Limited adaptation of each party - Limited relative commitment to relationship 	<ul style="list-style-type: none"> - Concessions made by each party for mutual benefit - Security sought through commitment to relationship 	<ul style="list-style-type: none"> - Long-term investment, adaptation & commitment over & above that of other relationships
Co-operation	<ul style="list-style-type: none"> - Initial ideas for cooperation explored - Cooperation depends on performance evidence - Limited information sharing: knowledge is power 	<ul style="list-style-type: none"> - Joint projects & plans established to achieve improved capabilities for each party - Parties becoming more open with each other, but still guarded 	<ul style="list-style-type: none"> - Long-term projects for enhancement & achievement of capability development e.g. supplier development programme - Transparency: high level of information sharing
Conflict	<ul style="list-style-type: none"> - Conflicts arise through lack of knowledge of other party's systems, processes and responsibilities: destructive conflicts - One-way conflict resolution/ blaming 	<ul style="list-style-type: none"> - Disagreements arise over integration of roles, responsibilities & targets - Partial moves towards joint problem-solving 	<ul style="list-style-type: none"> - Experience of conflict & its resolution enhance debate and depth of understanding: constructive conflicts - Joint problem-solving
Intensity	<ul style="list-style-type: none"> - No commitment to regular interaction between individuals and teams - Single-interface - Low level operational Involvement 	<ul style="list-style-type: none"> - Regular pattern of interaction established with clearly defined roles & routines - More functions involved in relationship - Middle-management Involvement 	<ul style="list-style-type: none"> - Friendships and close professional ties underpin long-term interaction & patterns of behaviour/responses - Multi-interface & corporate involvement
Inconsistency	<ul style="list-style-type: none"> - Different approaches to relationship within each party, e.g. across functions - Different approaches to relationship over time creating inconsistent communication 	<ul style="list-style-type: none"> - Common approaches to relationship begin to be defined - Communication patterns become established 	<ul style="list-style-type: none"> - Both parties work to shared principles & patterns for communication - Behaviour & communication consistent over time & across functions

Power/ Dependence	<ul style="list-style-type: none"> - One-sided relationship - Stronger party controls strategic and tactical decisions, e.g. ordering process, quality and prices - Weaker party concerned with proving capability/ attractiveness 	<ul style="list-style-type: none"> - Domains of expertise becoming defined and separate - Inter-dependent relationship strategy developing 	<ul style="list-style-type: none"> - Commonly understood & firmly established distribution of power & expertise in different areas - Inter-dependent relationship strategy established
Trust	<ul style="list-style-type: none"> - Ensuring contractual compliance - Controlling performance through tight measures 	<ul style="list-style-type: none"> - Focus on competence-based trust in defined areas for each party 	<ul style="list-style-type: none"> - Focus on goodwill trust: helping each other out when necessary - Equal commitment to long term health & growth of relationship

Source: Johnsen Th., Johnsen E.R., and Lee Chiajung (2010: 14)

Furthermore, although Johnsen et al. (2010) claim that the model could be used universally for supplier relationship evaluation; the authors do not seem to take into account any socio-cultural aspects that characterise Taiwanese networks. Hence, the model could be questioned with regards to how it considers cultural complexities and thus how culture impacts the characteristics of network links as business relationships evolve. Nevertheless, their research explores both sides of dyadic relationships with a particular focus on product development aspects of relationships. Therefore, it is included in the literature and most importantly, its limitations as a standardised ‘model’ when it is applied to analyse interaction processes and network change and evolution in Chinese business contexts are exposed.

The literature distinguishes between loose and close relationship or low- and high-involvement relationships. ‘A company’s choice about the extent of its involvement in a relationship with a supplier is really a choice about the amount of integration between the two companies’ (Ford et al. 1998: 137). However, all supplier relationships, whether loose or close, are characterised by a mixture of co-operation and conflict. Ford et al. (1998: 138) argue that ‘close relationships will not necessarily have less conflict than loose ones’ (Ford et al. 1998: 138), and in product development networks business actors exercise voice over exit (Powell 1990). As has been noted, with regards to the supply base structure and size, a buying company can handle only a limited number of close relationships with suppliers. Ford et al. (1998: 140) suggest that ‘a blend of both loose and close relationships is needed in a company’s relationship posture and choices on this

are a major aspect of its overall supply strategy'. Similarly, Gadde and Hakansson (2001: 131) conclude that 'a company will need to adopt a variety of postures for different relationships and there is no single optimal relationship approach that should be used in all cases'.

Actors usually have different ideas about the value of the relationship. Hence, the commitment that they are prepared to make to the relationship might also be different. In general, literature findings suggest that every single relationship should be analysed both from the actor's own perspective and from the perspective of its counterparts. Ford et al. (1998: 268) argue that possible ways to manage supplier relationships include 'a combination of co-operation, confrontation, guile and the pursuit of mutual and self-interest'. Regarding value creation in supplier relationships, Bartlett et al. (1999; in Huemer et al. 2004) suggest that it can only be generated where a sense of shared destiny prevails. In line with the above, Ford et al. (1998: 274) argue for an optimal view of supply strategy that it 'is not just about the company acting against others, but also often acting with, or through them'. Overall, a company's supply management should be both proactive and re-active or, better put it, interactive, in managing its supplier scope, structure and posture. To conclude:

'Short-term success in business markets is achieved by managing current relationships [whereas] future success is built by developing relationships and attempting to change the company's position in the wider network' (Ford et al. 1998: 296).

Awareness of the different skills and technologies of each company and the ability to integrate, use, and develop these in different ways is required. Through a process of interaction, adaptation and integration can lead to the establishment of high involvement relationships and strong social ties between business actors. However, as the history of previous interaction matters, adaptation and integration depend basically on the resources or aspects of relationships developed through interaction. As it is argued next, relationship resources, such as trust, commitment and long-term orientation operate differently in Western and Chinese socio-cultural contexts. Thus, the theoretical significance and background of the *guanxi* network and interaction processes in China to the IMP-based business network approach are discussed. Relationship resources or *guanxi* resources developed by business actors in China are analysed as they are considered of substantial value to management and organising for interactive relationships in Chinese networks.

2.5 Guanxi Relationships and the Guanxi Network

The preceding parts of the literature show that relationship patterns among business actors in networks are the locus of effectiveness and efficiency in product development as they constitute the main source for the creation and development of resource interfaces. This part discusses the nature of social relationships in China, involving both business and non-business interaction, under the umbrella of guanxi networks and the concept of guanxi as interaction, which adds a second currency to the IMP-based network approach and its interaction concept. The aim of the discussion is to enhance our understanding of the significance of the guanxi concept and its mediating features in assisting the Western-based IMP network theorising to be applied into the Chinese environment. The study maintains throughout that the concept of guanxi should be taken into account when analysing any supply management and product development issue in China's relationship-based world. Thus, guanxi, broadly meaning interpersonal relations is thoroughly analysed, as this is a broad concept that incorporates the Chinese version of trust, commitment and long-term orientation among other relationship characteristics.

China's prime sociologist Fei Xiaotong, (1992 [1947]: 66; in Langenberg 2007: 1) has argued that guanxi is 'the fundamental organisational principle of Chinese society, irrespective of social strata: for some people, survival is a matter of it...Outside the network they have a feeling of discomfort'. Luo (2007: v) more recently notes that guanxi 'is one of the major dynamics of Chinese society... heavily influencing Chinese social behaviour and business practice'. Although guanxi was not found in the Confucian classics the word lun (伦) was used, meaning moral behaviour and it was granted with eight principles, which provide a foundation of Chinese human relations and social networks: zhong 忠 (loyalty), xiao 孝 (respect), ren 仁 (kindness), ai 爱 (love), xin 信 (trust), yi 义 (justice), he 和 (harmony) and ping 平 (peace) (Luo 2007: 13). Luo (2007: 13) suggests that 'an actor in the network should follow these principles in order to maintain guanxi'.

Langenberg (2007: 1) argues that business interaction in China takes place under a special context combining guanxi-based and market-based systems, although 'recent research has not been capable of integrating guanxi and business, mainly due to methodological flaws'. Consequently, this section of the review combines findings from various academic disciplines, with a focus on relationship development and network

management in China. As perhaps the first systematic effort to explore guanxi from a product development perspective, the following discussion serves as a conceptual, theoretical and practical foundation, upon which this research might be built.

Sinologists argue that ‘guanxi networks permeate all aspects of society and are particularly important in the business context’ (e.g. Gurthie 1998; Lovett et al. 1999; in Watkins-Mathys 2001: 74). Reviewing previous work on guanxi, Watkins-Mathys (2001: 74) notes that

‘Guanxi is focused on personal relationships, which are built on long-term trust, involving reciprocity by those in the relationship...By emphasizing these traits, guanxi remains a continuous dynamic and flexible process of interaction between individuals within a network’.

Luo (2007: vii) argues that ‘knowing how to construct, maintain, and reinforce guanxi relations is imperative for any business in China [and] this knowledge has a favourable impact on both the effectiveness and efficiency of operations’. However, Yi and Ellis (2000) believe that ‘building guanxi networks is time-intensive and requires regular social contact and interaction’ (in Watkins-Mathys 2001: 77). In contrast to arm’s length relationships, which are dictated by purely economic motives, guanxi affiliations entail ‘affection, face, gifts and favours’ (Yang MH 1989: 67ff.; in Langenberg 2007: 2).

Boisot and Child (1996: 623) argue that ‘the roots of networking as an institutionalised practice are ancient and extensively developed in China’. Boisot and Child (1996) identify ‘network capitalism’, as a distinctive institutional form, which is based on the limited extent of codification of information in China, in terms of ownership and transacting, and the significance of relationships and interpersonal actor bonds; simply guanxi. China’s distinctive political, institutional and cultural characteristics give rise to different modes of economic organisation, not consonant with market capitalism and hierarchical modes. Chinese networks, are based on personal power, commitment and trust, and the two authors refer to this tendency as ‘the iron law of fiefs’ (1996: 604). However, they argue that modernisation in China is

‘Reinforcing the system by removing some of the constraints on the diffusion of personalised transacting previously imposed by low levels of codification...[facilitating] the extension of economic fiefs into clan-type networks that achieve a measure of market coverage through relatively uncoded, personal means’ (ibid. p.613).

The authors conclude that a relatively *uncodified system* of networked transactions ‘does not fit with Western analyses, nor is there reason to suppose that the Chinese system is merely in transition to a Western model; quite the contrary’ (ibid.). Here, it could be claimed that such a conclusion has been strengthened nowadays with the dramatic rise of the Chinese economy and the current economic crisis in developed countries due to the failure of the Western market capitalist system, which together with its decoupling effects has caused the whole economic globe to enter into a long phase of instability. However, economic systems are interlinked and interrelated with political and social systems, and thus cannot be analysed as an isolated dimension to explain the recent economic crisis (e.g. Douglas North 2005; Manuel Castells 2008).

According to Boisot and Child (1999), clan-type networks exhibit higher levels of cognitive and relational complexity than market or hierarchical transaction structures.

They argue that:

‘Clans are higher in entropy production than the ordered regime of bureaucracies or the complex regimes of markets or fiefs – that is, they consume more time and social resources in order to maintain themselves in a state of dynamic equilibrium – but in compensation they offer a greater potential for adaptation and renewal’ (1999: 244).

The two authors further note that ‘historically, the Chinese have sought to adapt to these contingencies by forming relational networks with lower numbers but denser interpersonal links than those typical of Western countries’ (1999: 246). In other words, ‘by keeping the numbers down to what can be managed in face-to-face situations’, relational complexity is reduced (1999: 244). Here, it could be noted that the above solution to reduce relational complexity seems rather difficult to implement in China’s socioeconomic system today, which is increasingly comprised of multiple business systems (state-owned, collective and private – indigenous and foreign) with varying governance structures and many regions with different cultures, languages, and negotiation styles. Further, the high level of cognitive complexity and uncertainty in China poses potential difficulties not only for foreign companies trying to manage their relationships in mainland China, but also for local Chinese business actors.

To begin with, according to Luo (2007) and Langenberg (2007), the *guanxi* system adds a ‘second currency’ to the market-based system and is especially important in the Chinese context, where it is unlikely that one-dimensional supply management strategies

appropriate in the Western context will succeed. But before discussing the premises and principles upon which the guanxi system is established, it is useful to look at some of the definitions that surround guanxi. ‘Guanxi’ is ‘a relatively new term in the Chinese language; it is included in neither the 1915 Ci Yuan (辞源) nor the 1940 Ci Hai (辞海) dictionaries of the Chinese language’ (Langenberg 2007: 3). For some scholars, however, guanxi is an ‘ancient system based on personal relationships’ (e.g. Lovett et al. 1999: 231; Standifird & Marshall 2000: 29; in Langenberg 2007) and this view implies that analysis should not deny its cultural embeddedness. Initially, it is appropriate to take a look at its two characters, guan (关) and xi (系), both of which have a different etymology. Guan originally meant ‘wooden crossbar for doors’ as a noun and as a verb, it signified ‘relate’, ‘receive’ or ‘be concerned’ (Ci Yuan 1994; in Langenberg 2007: 5). Luo stresses that metaphorically thinking, inside the door you may be ‘one of us’, but outside your existence is barely recognised (Luo 2007: 2). Furthermore, guan refers to ‘looking after or supporting someone’ (guan zhao) and ‘showing loving care for’ (guan huai) (Luo 2007: 2). Xi used as a noun means ‘tie’ and ‘subordination relationship’ and as a verb to ‘care for’ (Ci Yuan 1994; in Langenberg 2007: 5). However, the controversial meaning of the combination of the two characters that form guanxi implies that ‘no uniform definition’ exists (Langenberg 2007: 5). Although some argue that guanxi is ‘not a sociologically precise term’ (Walder 1986: 179; in Langenberg 2007: 5), guanxi is viewed as an ‘essential element of Chinese socio-cultural behaviour and an important dimension in the social structure of Chinese society’ (Luo 2007: 15).

Guanxi has a few crucial dimensions, such as norms, instrumentality, reciprocity, trust, and affection. The aim of this section is to understand and make use of various interrelated concepts that describe guanxi dynamics and establish the guanxi network as a system. Initially, it is important to note that the guanxi system might contain ‘both cultural [processual] and structural elements’ (Chen JJ 1998: 106; in Langenberg 2007: 27). According to Langenberg (2007: 27), ‘the discussion of guanxi as a cultural phenomenon provides a detailed analysis of the structure of its sociologic elements’. Other authors recognise that ‘guanxi is not so much a cultural logic as it is a structural system of repeated interactions based on ongoing exchanges’ (Chung & Hamilton 2002: 12; in Langenberg 2007: 39). However, for studies analysing culture, ‘most analyses leave out Chinese heterodox cultures and restrict themselves to Confucianism, the elements of which are assumed to be predominant in Chinese civilisation’ (Langenberg

2007: 28). Langenberg concludes that ‘explaining general values of ideas (e.g. preference for harmony, etc.), by reference to Confucianism is untenable when analysing the guanxi system’ (ibid.). This view is supported by Luo (2007: 34; see also Fang 2005-6), who argues that cultural heterogeneities exist and may ‘combine to either facilitate or intervene in the role of guanxi in relation to firm performance’. Overall, the majority of papers reviewed take a static view that emphasises the structural elements of guanxi, due to overreliance onto more or less static and reductionist views of culture and social behaviour. Hence, a relatively new approach to guanxi seems to emerge; an approach that assumes the existence of paradoxical cultures and network dynamics, backed up by the higher level assumptions of process and change.

Following Luo (2000; 2007) and Langenberg (2007) among others, instead of assuming a ‘unique, independent [methodological] core’ (Luo 2000: 3) for guanxi and network studies, the application of an integrated approach to theory and methodology is suggested. In essence, ‘what needs to be integrated is not standard Western sociology, but an adapted model that works for guanxi’ (Langenberg 2007: 11). Langenberg (2007: 18) notes that many publications share a methodological flaw which is drawn from ‘the role of guanxi’; guanxi ‘is explored without proper reconstruction of [itself], as a self-contained system’. However, Langenberg’s analysis, which perceives guanxi as an isolated exchange system can be criticised in terms of its business orientation as it is limited to interpersonal relationships, excluding organisations and possible links between them. These limitations set the ground for the business network approach to be ‘activated’ by incorporating the guanxi concept. Vice versa, the IMP-based business network approach can be enriched, and set the ground for research studies to depart their analysis of business network phenomena from the interpersonal relationship level.

Langenberg’s guanxi system draws basically on Coleman’s framework of ‘actors, resources, interest and control’ (Coleman 1990: 27; in Langenberg 2007: 41). Following Coleman’s methodological individualism, actors represent the basic structural component of the model (Langenberg 2007: 41). The second component is resources, the distribution of which depends on actors’ knowledge, capacity, and prestige among other factors. Actors and resources ‘are connected in two ways, namely through actors’ *interest in* resources and/or *control over* resources’ (Coleman 1990: 34ff.; in Langenberg 2007: 42). Coleman’s theory assumes actors to act intentionally, following the principle of utility

maximisation. However, the notion that people always act rationally is rejected and especially for the case of Chinese business actors. Weber (in the Religion of China, produced 1916-1919) asserted that rationalism is ‘not complete’ (in Langenberg 2007: 42). Further, it is acknowledged that ‘the interests of a Chinese actor may differ from those of a Western actor’ (Langenberg 2007: 43).

Coleman argues (1990: 34ff.; in Langenberg 2007: 44) that ‘as interests in and control over resources are changing, new relationships are established or existing ones dissolved...Norms and sanctions are adjusted, influencing in turn the importance of trust’. Chung and Hamilton (2002; in Langenberg 2007: 17) argue that ‘the inter-subjective logic of social relationships provides a socio-institutional foundation for Chinese business transactions’. For instance, it is widely accepted that guanxi is driven by reciprocity – bao (报)). This reciprocity is part of a specific set of social norms; the norms of the guanxi system (Chen JJ 1998: 102; in Langenberg 2007: 81). Kao (1991: 269; in Langenberg 2007: 81) notes that these ‘inter-subjective rules are well recognised by the people involved’ in the guanxi network. In sociological theory, actors are connected through resources, and this review goes on to present and analyse the resources, within a guanxi network, that actors are assumed to have interests in and control over, namely renqing, ganqing or mianzi. These represent terms that are frequently employed in Chinese to assess the appropriateness of exchanges (Hwang 1987: 945; in Langenberg 2007: 45). Before embarking on the analysis of guanxi resources, some major principles of guanxiology or the research field that surrounds the concept of guanxi are discussed next.

Guanxiology or guanxi xue is ‘a cross-disciplinary⁵ and integrative field researching the formation, process, and outcome of guanxi connections’ (Luo 2007: 3; see also Luo 2000; Langenberg 2007). Guanxiology ‘hinges largely on practical dynamics; these dynamics shed light on how guanxi is constructed, maintained and reinforced’ (Luo 2007: 4), and enrich the development of the field. Within guanxiology, the theoretical principles of guanxi can be described as manifestations of guanxi ‘constructs’ or ‘resources’. The establishment of guanxi is dependent on the availability of a guanxi base, which is

⁵ Guanxi is explored with concepts from disciplines of ‘sociology, economics, politics, anthropology, history and psychology as well as from a business perspective, e.g. management theory, marketing, organisational behaviour and human resource management’ (Langenberg 2007: 10).

defined as ‘a commonality of shared identification amongst two or more people’ (Luo 2007: 4). Luo (2007: 7) argues that ‘certain social bases for guanxi can be transferred’ and it is empirically supported that many foreign companies honour the transferability principle of guanxi, by using it to initiate guanxi in China (Luo 2007). The major guanxi resources are reciprocity, commitment and trust. For example renqing, which is closely associated with reciprocity, has multiple meanings that describe both instrumental and non-instrumental aspects of the concept of guanxi (Langenberg 2007: 51). Further, guanxi is intangible, as actors in a guanxi relationship ‘are committed to one another by an invisible and unwritten code of reciprocity and equity’ (Luo 2007: 10). Also, guanxi is context-specific and guanxi-based personal relationships are the basis for guanxi between organisations (Luo 2007: 11).

Linguistically seen, the resources that actors interest in and control over are manifested in guanxi principles and norms that are established through dynamic interactive relationships. One of them, along with its meanings of favour and gift, renqing (人情) can be defined as normal human feelings, such as affection (Ci Hai 2003; in Langenberg 2007: 52). Originally, Confucius defined renqing as ‘joy, anger, sadness, fear, love, disliking and liking; these seven feelings belong to men without their learning them’ (Liji VII.19, Legge 1885; in Langenberg 2007: 52). A more straightforward explanation is provided by Luo, who suggests that renqing is ‘the moral foundation for the reciprocity and equity that are implicit in all guanxi relationships’ (Luo 2007: 15). Nevertheless, a survey conducted by Ewing et al. (1998; in Watkins-Mathys 2001: 80) to overseas Chinese doing business in China, notes that ‘guanxi is built on personal relationships as a result of a shared common vision between the partners rather than personal empathy’. Luo (2007: 15) argues that ‘guanxi and renqing [together] create and maintain emotional connections between individual Chinese, while defining the activities that constitute their mutual social identities’. The latter implies that not complying with established guanxi norms and unwritten rules of reciprocity, which provide the basis for mutual social identities to be established, may lead to a ‘loss of face’, which in turn ‘is associated with opportunistic behaviour and spreads quickly through the guanxi network due to its transferability features’ (Luo 2007: 14).

Chung and Hamilton (2002: 6; in Langenberg 2007: 65) argue that ‘instrumentality is not sufficient to build guanxi’; developing guanxi also ‘depends upon ganqing’ (Luo 2000:

16), and without ganqing, guanxi would be temporary and unstable (Hwang 1987: 950; in Langenberg 2007: 65). Along with renqing, business actors have control over or interest in ganqing (感情); loosely translated as 'sentiment' in a relationship (Bian & Ang 1993: 981ff.; in Langenberg 2007: 52). Ganqing is closely associated with trust (Luo 2007: 16). Chung and Hamilton's (2002: 13; in Langenberg 2007: 69) assertion that 'guanxi is an iterated process and not a condition of being', explains how guanxi can be seen as an outcome of actors interests in and control over renqing and ganqing. Luo (2007: 15) notes that the values of ganqing and guanxi change over time, and that 'both the occurrence of ganqing and the development of close guanxi hinge upon continued social interaction and mutual help'. Through interaction processes actors will comply with guanxi norms, establishing guanxi resources, such as renqing, ganqing, mianzi (face) and xinren (trust). Mianzi is actually a source of trustworthiness and credibility (Langenberg 2007: 111). Although it does not 'replace trust in an exchange relationship' (Luo 2000: 14), it increases predictability (Langenberg 2007: 111). As an intangible form of personal identity, mianzi is closely associated with 'dignity, self-esteem and vanity' (Zuo 1997: 8; in Langenberg 2007: 92). Hence, mianzi is essentially a 'socially constructed' indicator and exchange resource in the guanxi system (Langenberg 2007: 92-3). Yang MH (1994: 126; in Langenberg 2007: 94) suggests that 'the ability to initiate new guanxi depends on historic success; success breeds success'.

Trust (xinren: 信任) is a major element of guanxi and a resource in the guanxi system and is closely related to ganqing. Ci Hai (2003) identifies trust with the willingness to 'take the risk of committing to somebody's care' (Langenberg 2007: 108f.). Luo (2000: 17) views trust as 'an essential condition for guanxi'. Further, Yeung and Tung (1996; in Luo 2007: 17) state that 'guanxi could not exist without trust'. In other words, 'guanxi replaces somehow the need for trust' (Luo 2007: 14). Literature findings show that trust serves as a prerequisite of guanxi and is included in almost all work reviewed with regards to guanxi and business relationships. However, in some work the concept of trust is overvalued while in others is undervalued. For instance, Langenberg (2007: 107f.) notes that 'Coleman did not seem particularly interested in the concept of trust'. It can be inferred that this was due to the utilitarian assumption upon individual intentions. Some authors define trust as 'a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behaviour of others' (Rousseau et al. 1998: 395; in Langenberg 2007: 106). As Nooteboom (2002: 63; in

Langenberg 2007: 113f.) notes, psychological phenomena and especially knowledge of a partner's mental framework makes it possible to attribute motives and infer causes of behaviour.

Interpersonal or *guanxi* interaction in China is a continuous process, which may or may not lead to high-involvement relationships and the establishment of *guanxi* resources, such as trust. In line with Kriz and Fang (2003: 7) 'the notion of *guanxi*, incorporating connections and/or relationships, allows for a juxtaposition of strong and weak ties and thick and thin bonds'. It can be inferred that both strong and weak ties appear fundamental to success in Chinese markets. In other words, as Kriz and Fang (2003) argue, *guanxi* by itself does not necessarily imply close ties. Instead of separating between strong and weak ties, this research maintains that *guanxi* is a process through which close ties may or may not be established. This is because the establishment of trust is dependent on the capabilities and resources of actors as well as actors' networking capacity. Research by Chua et al. (2009: 490) argues, confirming this last point, that 'the extent to which a given relationship is highly embedded in ties to third parties increases cognition-based trust for Chinese, but not for Westerners [Americans]'.

For Chinese cultural ideology, Chung and Hamilton (2002: 8; in Langenberg 2007: 58) categorise 'the individual's personal entourage into insiders and outsiders'. This dichotomy is well manifested in linguistic expressions such as 'There's a difference between the inside and the outside' (内外有别) (Langenberg 2007: 58) or 'Treat me like an insider' (把我当自己人). Yi and Ellis (2000: 26) argue that 'for outsiders, individuals not connected by a shared group identification, establishing *guanxi* requires *altercasting*, which Yeung and Tung define as *rearranging one's social network*' [original italics]. The 'insider' position is characterized by 'trust and trustworthiness embedded within the relationships and is fundamental in assisting individual actors to achieve their goals' (Watkins-Mathys 2001: 90). Yi and Ellis (2000: 29) stress that 'the concept [of *guanxi*] may be interpreted differently by insiders and outsiders'. Langenberg (2007: 64) notes that according to Confucian-based authors (e.g. Hwang 1987), becoming an insider is quite difficult to accomplish, while modern *guanxi* scholars (e.g. Luo 2007) argue that there can be changes in the quality of relationships in *guanxi* networks.

The following paragraphs discuss whether the guanxi network can be perceived as ‘a self-contained institution’ (Schramm & Taube 2001: 15f; in Langenberg 2007: 116). There are reasons explaining why the guanxi network should be perceived as ‘a self-contained institution, rather than as an informal mechanism that is subordinate to an existing system’ (Langenberg 2007: 116). Some sociologists relate guanxi to the concept of social capital; some even equate one another (e.g. Luo 2000, 2007; Watkins-Mathys 2001). For instance, Watkins-Mathys (2001: 90) notes that:

‘The theory of social capital developed by Nahapiet and Ghoshal (1997), like guanxi, refers to common understanding of collective goals and agreed ways of behaving in a social system as the essential criteria for minimizing opportunistic behaviour’.

According to Luo (2007: 41), similarly to social capital, guanxi includes obligations and connections or social position, and trust, all of which ‘are not given; they are the product of investment strategies consciously or unconsciously aimed at establishing or reproducing social relationships’. However, ‘social capital does not lie within individuals because it is embodied in the social connections of two or more actors’ (Langenberg 2007: 115). Hence, ‘it would be wrong to interpret an actor’s guanxi as social capital’ (ibid.). Instead, guanxi can be seen itself as a system, and in contrast to social capital, guanxi can be termed ‘cultural capital’ (Luo 2007: 42) representing practical knowledge and skills required to cultivate, strengthen and maintain guanxi relationships.

In terms of the eccentricism and exclusivity of guanxi, it has been observed that guanxi and contract law operate as ‘parallel mechanisms’ in China (Schramm & Taube 2001: 10; in Langenberg 2007: 117). Also, Axelrod (1997: 61; in Langenberg 2007: 117) notes that ‘law is a supplement to the informal enforcement of [guanxi] norms’. Although the socio-economic environment in China is becoming more and more institutionalised, authors contend that guanxi will continue to be important in the future. Luo (2007: 31) supporting this view, suggests that ‘an overview of economically advanced or more developed Confucian societies shows that the establishment of institutional law has not displaced reliance on personal connections’. Thus, in contrast to other authors (e.g. Brennan & Wilson 2008) it could be argued, in line with Langenberg (2007: 116) among others, that despite the existence of laws and economic regulations, favours and obligations from guanxi relationships are enforced throughout the guanxi system. Since obligations come from relationships then guanxi can be seen as a complement to contract law (Luo 2007: 59). Even when a company exits a relationship business actors should pay particular

attention to the maintenance of guanxi resources. Hence, 'guanxi or the relational paradigm is at the forefront of Chinese marketing thinking' (Luo 2007: 58). Standiford and Marshall (2000; in Langenberg 2007: 16), drawing from the resource-based view of the firm, conclude that 'guanxi can indeed provide firms with an imperfectly imitable resource that can yield a competitive edge'. Luo (2007: 53-54) notes that:

'Different guanxi relations vary in terms of firmness, reciprocity, sustainability, partners, and favourability...Thus, each guanxi relationship is individually embedded and constitutes tacit knowledge or a distinctive resource' ... 'a barrier to imitation is the intricacy of interpersonal chemistry, which makes guanxi a socially complex resource...The ambiguity about exactly how to accumulate guanxi makes it very difficult to identify, let alone control all the key factors that contribute to establishing and nurturing good social guanxi'.

Next, before extending the discussion to guanxi networks, guanxi is diagnosed philosophically. This section tries to illuminate the philosophy behind the concept of guanxi in order to explain its cultivation, utilisation, and maintenance. Many scholars, for instance, Buttery and Wong (1999: 152; in Watkins-Mathys 2001: 73) develop guanxi frameworks and theoretical models that incorporate constructs of guanxi, such as 'dependence, adaptation, trust and favour'. As Watkins-Mathys (2001: 73) notes 'these spring from essentially Confucian values (Li 1999: 333) placing emphasis on harmony and long-term commitment within the network (Wong & Chan 1999: 107)'. However, other authors (e.g. Langenberg 2007) disagree with any direct relationship between guanxi and some Confucian values, such as harmony and sentiment. For example, even reciprocity is explained by some authors with strong Buddhist influences (Langenberg 2007: 83). In general, some authors argue that for guanxi philosophy, which has implications for business network research in China, Confucian values do not provide the cornerstone of guanxi network thinking, although others (e.g. Luo 2007) argue that they do.

A quote of a Cambridge anthropologist describes the different nature between Western and Eastern societal systems. For example, talking about Japan, Alan Macfarlane states that

'[Japan] is unique in that it combines two different sides: the surface of a modern, rational economy with politics and law and so on, but behind that a set of social norms and religious beliefs that are totally at variance with that...Almost every aspect of life, from tea ceremony to business, has a feeling of something other than itself, beyond itself' (in Pilling 2008).

China can be described as a society operating on entirely identical lines. China, similarly to Japan, has a culture characterised by shame rather than guilt, one with mysterious guanxi principles of renqing, ganqing, mianzi and xinren. Luo (2007: 8) characterises Chinese as ‘situation-centred or situationally determined’ and this means that an actor ‘usually has to hide his or her independent will’ (ibid.). The above characteristics of a Chinese world are similar to Japanese, and these are described usually by Japanese scholars, as the concept of ‘honme’, what one really thinks, and ‘tatemae’, the view one presents to the world, as evidence of a unique way of thinking (Pilling 2008). According to Luo (2007: 8), because of the heavy influence of Confucianism,

‘Chinese often view themselves as interdependent with the surrounding social context... The self in relation to the other becomes the focus of individual experience... This view of an interdependent self is in sharp contrast to the Western view of an independent self’.

This divergent view of self has important ontological and methodological implications and represents one of the most fundamental differences between the East and the West in social relations research and social sciences, in general. It is clear that in China’s relation-centred world, relationships are often seen as ‘ends in and of themselves rather than as means for realising various individual goals’ (Luo 2007: 8). An emergent conclusion or implication from the above elaboration is provided by Langenberg who notes (2007: 38) that ‘rather than breaking the taboo to deny China a Confucian tradition, the suggestion is to assume that its ethics persist in the form of a substrate that influences the modern Chinese actor’ to some extent in various situations, including its ways of interacting in social and business networks.

Putting the above philosophical debate into methodological context, authors distinguish between methodological individualism and methodological relationalism. The former, drawing on Joseph Schumpeter (1908), explains guanxi with the characteristics of individuals and includes ‘collective actors, such as organisations, and other sub-systems’ (Coleman 1990: 1; in Langenberg 2007: 19). In any level of aggregation, the characteristics, interests, beliefs, and eventually actions of individuals are the foundation of systemic phenomena in social structures (Langenberg 2007: 19). However, ‘in China’s relation-centred world the real decision maker is the network as a whole’ (Davies et al. 1995: 213; in Langenberg 2007: 19). Thus, the assumption that in a Chinese world, individuals act as independent entities, aware of their goals and intentions can be easily disputed. Scholars consider methodological individualism inadequate for the analysis of

social phenomena in China. Due to a lack of demarcation between oneself and others, the Chinese are suggested to embody a relational self. Chinese scholars, thus, propose the concept of methodological relationalism, in which the absolute units of analysis are interpersonal connections (Langenberg 2007: 19). Therefore, any research on guanxi should not focus merely on individual behaviours but also, and most importantly, on interpersonal relationships of business actors and inter-subjective understandings. With regards to business and management philosophy in China, Luo (2007: 12) notes that:

‘Paradoxically, even as an unabated opening of the Chinese economy has resulted in a convergence of Chinese management philosophies with modern Western and Japanese ones, the concept of guanxi has turned out to have powerful implications’.

Guanxi relationships and guanxi networks cannot be seen merely as cultural concepts. In the following parts of this section a guanxi business network approach is proposed and the premises upon which it is based are elaborated. Guanxi networks should be associated neither with market nor hierarchical structural formations. Rather, the term should be related to the network theories and network forms discussed above. A guanxi business network implies access to companies’ resources, through guanxi interaction and informal arrangements based on the level of trust and the level of other guanxi resources (Luo 2007). It is important to embark on a comparative discussion about guanxi networks and other, Western-based network forms, such as the industrial, knowledge and supply networks discussed previously. As it is advocated, by both Western and Eastern management literature, networking is of vital strategic importance to any actor or organisation doing business in China. For instance, Luo (2007: 50) notes that ‘networks are not discrete events, but are continuous relationships, which need active and reciprocal involvement of all parties’.

Some of the differences between Western and Eastern network approaches are discussed here. In the words of Luo (2007: 50):

‘Whereas Western networking focuses on organisational commitment in the assessment of a partner firm’s effort to develop the relationship, guanxi emphasises personal relationship creation and development’.

In the assessment process for accessing others’ resources, goal compatibility or resource complementarity is important to network formation and sustainability in the West, because it determines both the strategic and organisational fit between firms. However, as Luo (2007: 50) notes ‘although understanding each other’s goals and interests is important in Chinese guanxi, goal compatibility is not a prerequisite for building and

sustaining guanxi networks'. Thus, guanxi is seen as 'a network based on favour exchange in which nothing is specified and interests are not necessarily mutual' (Luo 2007: 52). Referring to Granovetter (1983) and the strength of ties in guanxi networks, some authors (e.g. Peng & Heath 1996: 514; in Langenberg 2007: 80) 'speculate that guanxi actors build loosely structured networks'. Fang and Kriz (2003) argue that guanxi networks should be composed of both weak and strong ties. The view that this study maintains for guanxi networks is identical to the views of IMP-based business networks and their variances discussed above (e.g. supply networks and knowledge networks); simply, there is no optimal mix or solution of strong and weak ties in networks.

It is noted by Yang MH (1994: 140; in Langenberg 2007: 78) that 'the guanxi network will not expand infinitely for structural constraints limit its size'. Similarly to supply networks, an enlargement of the guanxi network provides actors access opportunities to more diverse resources. Network size depends on 'the ability of the average actor to maintain guanxi', meaning guanxi network capacity (Luo 2000: 53f.; in Langenberg 2007: 79). However, in maintaining guanxi relationships and a guanxi network base, similarly to a supply base of a company, but specifically at the individual actor level, 'the constraints of time, money and effort set a practical limit on how much close guanxi any individual can develop and maintain' (Luo 2007: 54). Another factor that affects the development of guanxi networks is a partner's place of origin. Foreign companies encounter 'the liabilities of foreignness in guanxi cultivation and development' (Luo 2007: 43) and particularly, foreign managers 'do not have intimate knowledge of the subtle practices of guanxi cultivation' (Langenberg 2007: 149). Luo (2007: 60) further argues that:

'Business transactions with Chinese actors need to be approached with the knowledge that the Chinese will place them in the context of their own guanxi networks, which may require meeting obligations of individuals who have no direct involvement in the matter at hand'.

Feng Tianli (2002: 40; in Langenberg 2007: 46) interestingly notes that 'the exchange of information favours in the guanxi system is so common that guanxi is said to act as an information bridge'. Chen Hon (1997: 113; in Langenberg 2007: 46) shows empirically that 'powerful people often owe their success to informational benefits derived from the guanxi system'. These people may, in turn, connect the firms with which they are affiliated to create new resource interfaces, for individuals are 'linking agents' (Bell 2000: 134; in Langenberg 2007: 23). When a personal relationship is used by the

organisation, an actor's guanxi becomes organisationally embedded (Luo 2007: 53). Here, a major difference emerges which 'underlies the idiosyncrasies of Chinese and Western network building' (Luo 2007: 54). The effectiveness of the interpersonal guanxi amplification to organisational levels is confirmed when looking behind the meaning of the following quote of a Japanese author, Masahiko Fujiwara (in Pilling 2008), 'I find the idea that a company belongs to its shareholders a terrifying piece of logic...A company belongs to its employees'.

McKinsey, the management consultant group (The Economist 1997; in Langenberg 2007: 146) recommends companies to make guanxi 'the essence of strategy, not a by-product of it... However, not all types of companies are advised to follow such suggestions to compete for ganqing and mianzi', since costs are high, and together with time required and personal effort, guanxi properties are considered as significant investments to the relationship. Further, business actors are idiosyncratic in their ability to absorb knowledge, manage uncertainties, and benefit from knowledge exchanges (e.g. Felicia Cai & Duanmu 2005), all of which depend on various characteristics, that refer to both interpersonal and organisational aspects. In other words, business actors in China have different levels of need and capacity to utilise and maintain guanxi networks. Although guanxi is embedded in informal interpersonal relationships, company characteristics, such as strategic orientations, skills, experience and history, should still be considered as necessary conditions to maintain a guanxi business network (Luo 2007: 110), especially when co-development of product and technology issues are of concern. Luo (2007: 106) notes that a combination of these 'shapes the setting for inter-firm transactions that affect the operational synergy of networking'. According to Luo (2007: 106), inter-firm guanxi particularly refers to 'cross-organisational connections among managers'. A guanxi network provides business actors with solutions to 'overcome the lack of resources to accommodate growth while alleviating substantial bureaucratic costs that would result from internalising operations' (Luo 2007: 108). Thus, a business actor's guanxi capacity plays a significant role to the formation and evolution of various inter-organisational relationship patterns.

It can be inferred from the above that guanxi resources developed through interactive processes enable the creation of a working guanxi network structure. In guanxi networks there are plenty of opportunities, such as superiority in resource quality, access to

information, payment terms and preferential prices (Langenberg 2007: 134). Indeed, guanxi network actors 'endeavour to meet customer expectations in terms of quality' (Graham & Lam 2003: 90; in Langenberg 2007: 134). Luo (1995: 258; in Langenberg 2007: 134) notes that 'the significant improvements to buyers' competitive positions through relaxed payment terms and conditions are empirically supported'. Guanxi networks may also facilitate superior procurement and logistics through exclusive access to supply markets. It is also argued that inbound logistics in China depend on guanxi (Ambler et al. 1999: 81f.; in Langenberg 2007: 135), and this in turn may affect efficiency in product development terms. Langenberg (2007: 139) argues that 'horizontal guanxi creates value in procurement, logistics and marketing as well as in technology development'. Therefore, once again it can be claimed that cultivation and development of actors' guanxi relationships in horizontal guanxi network formations is considered to be vital to success in the Chinese context.

For Yeung and Tung (1996; in Luo 2007: 89), 'the weight of guanxi on long-term business success is significantly higher than any other business variable'. However, the two authors note that guanxi by itself does not secure long-term success in China. Above a threshold level, other factors are considered more important for growth and sustainability, such as technological, product capabilities, design skills, and management styles (ibid.), which in turn can be seen as outcomes of interaction with various stakeholders over time. It is a combination of these factors, which in turn influence the degree and pattern of guanxi applications (Luo 2007: 34). Building guanxi has to do with cultivating relationships among managers of buyers, suppliers and even competitors. Gulati's (1995; in Luo 2007: 83) research found that in uncertain environments, actors' informal ties are mobilised to facilitate inter-firm relationships. Hence, knowing how to construct, maintain and reinforce guanxi relations is imperative for any businesses in China (Luo 2007: 301). This kind of knowledge will enhance effectiveness and efficiency of inter-firm activities. Luo (2007: 302) suggests that Western actors need to establish 'guanxi of their own, which requires looking beyond the transaction at hand to its implications for the development of personal relationships'.

Preliminary studies as well as latest work (e.g. Luo 2007; Langerberg 2007) provide a starting point on the interrelationship between the guanxi mechanism and its valuable effects on product development activities. However, sinologists, such as Luo (2007: 136),

deem research and development as well as innovation and learning capabilities ‘not relating to guanxi, because they represent the firm’s economy of scale or product differentiation and do not rely on contributions from other organisations or people outside the firm’. Luo (2007: 136), simply concludes that ‘Chinese management studies have observed that sales force marketing and credit liberalisation are important practical business determinants [of guanxi]’, ignoring other aspects. It should be stressed therefore that none of the publications reviewed emphasised precisely neither a supply management perspective of guanxi nor a guanxi approach to product development. What is needed is a more robust theoretical discussion which allows an illumination of the process of guanxi relationship and network building and guanxi utilisation in terms of knowledge-based resource interactions in business, supply and product development networks. The current research effort tries to enhance understanding of the guanxi process in dynamic networks by examining the concept of guanxi from a supply network management and knowledge-based resource interaction lens.

From the literature review, a heuristic theoretical approach for guanxi networks has emerged and this is positioned alongside the dimensions of the business network approach, based on Araujo and Easton (1996). Table 2.4, compares and distinguishes the guanxi network approach and the industrial network approach. It also provides some hints on the significance of incorporating the two approaches in business network research.

Although a comparison might suggest that the guanxi network approach could be integrated with the Western-based business network approach, this is rather difficult to empirically establish due to methodological concerns reflecting on their opposing research dimensions. Hence, the focus of integration lies on the interaction concept, which stands as the basic premise of the two network approaches. In other words, interpersonal relationships similarly to business relationships are evolving through continuous interaction processes. Literature findings suggest that the business network approach, which provides the basic theoretical framework of this research, can take into account the empirical phenomenon of guanxi interaction. A substantial contribution would be drawn by enriching the business network approach for its application in a Chinese context, with a newly defined guanxi concept of interaction. Hence, the only means to enrich the business network approach is by enriching its concept of interaction. At this point, it is important to note that it would not be possible to develop the guanxi

interaction concept without a heuristic background framework, such as the guanxi network approach (see Table 2.4 below), which is positioned in parallel to the business network approach based on the research dimensions used by Araujo and Easton (1996) to position various network theories.

Table 2.4: Industrial Networks vs. Guanxi Networks

<i>Research Dimensions</i>	INDUSTRIAL NETWORKS	GUANXI NETWORKS
<i>Research Goals</i>	Use of network metaphors and methods to explain organisational market structures	Use of guanxi network metaphors and methods to explain interpersonal relationships with a view of managing network operations and interactive relationships in China
<i>Nature of Actors</i>	Organisations	Individuals-in-Organisations [through individuals, guanxi is amplified at (inter-)organisational levels]
<i>Nature of Links</i>	Resources, Information [influenced by interaction]	Relationship Resources, such as commitment, reciprocity, trust, face, long-term orientation, cooperation, exclusivity, dependence, power, conflict [influenced by business and non-business interaction]
<i>Methodological Orientation</i>	Mainly Case Studies	Case Studies
<i>Structure vs. Process Orientation</i>	Structure & Process	Process & Structure-as-Process
<i>Unit of Analysis</i>	Inter-firm relationships	Actors-as-Relationships, Actors-in-Firms
<i>Epistemology</i>	Knowledge as a resource embedded in inter-firm activity	Knowledge is developed in the context of interpersonal relationships; Knowledge is context-specific and intangible; is a resource embedded in interpersonal relationships; Know-how is know-who
<i>Disciplinary Background</i>	Marketing & Purchasing	Marketing and Purchasing, Sociology and Studies on Culture

Source: Araujo & Easton (1996); Reproduced by Bassayannis & Cronin (2009)

Based on increasing cultural convergence trends (e.g. Fang 2007; Tung 2008), business networks and guanxi networks are vitally important for network studies in China. But the two network approaches have different dimensions which reflect a different set of values. As the former Prime Minister of Malaysia, Mahathir bin Muhammed (1998: in Langenberg 2007: 24), has noted, ‘Asian values are universal values... European values

are European values' and this has important implications for the enrichment of the interaction concept and in general the IMP-based business network approach. Hwang (2002: 968; in Langerberg 2007: 177) notes that 'many features of guanxi, such as renqing, ganqing and mianzi actually exist in cultures all over the world' and this further explains the important value of guanxi, not only for supply management and product development, but also for many aspects of social sciences and business research.

Similar to business networks, knowledge sharing and co-creation in interpersonal networks cannot be separated from interaction processes. Within a co-development context, a redefinition of relationships is necessary through dialogue, experience sharing or simply thick interaction. Guanxi seen metaphorically as a process of interpersonal interaction is likely to develop many aspects of jointness in investment, commitment and intentions. Hence, guanxi is not given, based on hierarchical structural formations nor can guanxi be acquired through arm's length relationships, based on market forms of organising. Rather, guanxi is created (i.e. negotiated) through interpersonal, social interaction in business networks, and this interaction is a process of cognition. Through language and communication, actors bring forth a world, which they communicate (Capra 1997). From a network point of view, guanxi is a self-making process that keeps the network alive, by giving it new forms and patterns. As this research shows later on, guanxi resources, such as exclusivity and trust, are considered as enablers of knowledge dissemination and co-creation. In a Chinese context, these resources can only be developed by taking into account guanxi interaction processes. Hence, it could be inferred here that an establishment of the link between guanxi interaction and knowledge-based resource interaction is key in enriching the interaction concept in business networks.

2.6 Conclusion

An initial conclusion drawn from the literature review is that a pluralist approach is required in order to decipher possible ways of organising for interactive relationships in Chinese product development networks. A pluralist approach would recognise the importance of diverse cultures and multiplicity of actors' perceptions by taking into account various relationship patterns in complex networks. In general, a postmodern approach is consistent with an emergence of pluralism, an acceptance of multiple truths, and relative rather than absolute objectivity. Managing product development in global networks is a complex and dynamic process (Johnsen & Ford 2007). Based on literature review findings, it is argued without neglecting the importance of weak ties that knowledge is created when strong bonds and social ties are established among business actors acting in networks. Further, as Waluszewski (2005: 71) notes, relationships and networks are considered as transferors of knowledge to economic resources. Hence, knowledge creation and especially co-creation cannot be separated from network and interaction processes.

At the interpersonal level, relationships have their own dynamics and they are subject to complex interactions, which may lead to their development or even disappearance. As Gadde and Hakansson (2001) suggest, there is no one best supplier strategy, and overall a company's supplier relationships should vary. Hence, 'in some cases a high-involvement approach makes sense while in other situations low-involvement is preferable' (Gadde & Jonsson 2007: 19). The study emphasises the important effect of high-involvement relationships to product development, in line with recent advances in the literature, which refer to a transformation of the supply side of companies through 'increasing reliance on suppliers through outsourcing, increasing involvement in relationships with suppliers, and coordination in the supplier base' (Gadde & Jonsson 2007: 8). By relying on suppliers, through close relationships, a buying company may improve both in terms of cost rationalisation and technical development. As relationships evolve, systematic influences and adaptations on design, manufacturing, logistics, and administrative operations take place. Gadde and Hakansson (2001; in Gadde & Jonsson 2007: 4) argue that 'the main sources of the potential benefits are the mutual adaptations between buyer and supplier'. Additionally, there might be other lower order adaptations within suppliers and sub-

suppliers' relationships. This means that a buying company may raise its benefits when gaining access to a supplier's network through close relationships with its counterparts.

Brennan and Canning (2004: 2) argue for the concept of adaptations that it 'is substantially more complex than that of transaction-specific investments, and is grounded in the biological metaphor of evolution'⁶. Recent research on inter-organisational adaptations notes that adaptations apart from economic or technical can also be 'tacit', varying in form and complexity. However, when examining relationships with Chinese suppliers, these adaptations mostly refer to efficiency and cost reduction issues. Gadde and Jonsson (2007: 4) argue that 'buyer firms can gain from suppliers also when it comes to innovation and technical development' and this is a central argument of this study. More specifically, Chinese suppliers through utilising *guanxi* networks have been successful in completing product or technology development projects. Further, it is shown that it is 'increasingly difficult for a company to develop and maintain its own capability in each specific area of technology relevant to its operations' (Ford et al. 2003; in Gadde & Jonsson 2007). Buying companies should rely on suppliers as sources of technical development and product design (e.g. Nonaka & Takeuchi 1986; Johnsen & Ford 2005; Gadde & Jonsson 2007) and these interdependences should be managed accordingly in order to produce optimum outcomes. In practice, many Western companies have been unable to achieve a prominent position through their relationships in China, because they often misperceive Chinese business culture. Chinese businesses are often viewed as interchangeable with businesses elsewhere and Western companies often fail to discern the unique Chinese traits. Theoretically speaking, scholars agree that business research in China mainly applies Western-based models (Kriz & Fang 2003; Luo 2007; Langenberg 2007). Hence, *guanxi*-based theorizing will enhance the understanding of how the Chinese think and act within and across networks of relationships.

In terms of managing the supply base and develop new products and technologies, this research argues that it is neither practical nor economic to have a large supply base. One may ask: should a Western company adopt a delegation or intervention strategy towards

⁶ Brennan and Canning (2004: 9) note that 'in biology, the eventual result of accumulated adaptations is the evolution of new species'.

its suppliers in China to manage knowledge and product co-development processes? This may be an emergent question from initial findings of a pilot study, but it can be suggested that it is not necessary to be explicitly answered when analysing product development networks in China via a *guanxi* network approach and a *guanxi* interaction lens. In general, it may be better in some cases to achieve access to others' resources through the establishment of strong actor bonds, activity links and/or resource ties with first-tier suppliers. In this way, through continuous adaptation and establishment of trust, foreign companies delegate power to their counterparts to manage their own network operations. In managerial terms, this means empowerment through flexible and soft knowledge transfer mechanisms (e.g. Mason & Leek 2008).

The power of networking in China has important implications for supply network management and product development. Chinese business actors show a sense of patriotism and a sense of belonging towards their *guanxi* network and interpersonal relationships. With regards to actor bonds, it is explicitly noted that the management of interpersonal relationships is crucial when doing business in China. Especially under co-creation settings, business actors should develop interpersonal relationships with business actors from Chinese suppliers and buyers, through considering to engage interpersonal and non-business interaction and through employing a range of adaptive processes, including chance, imitation, trial and error (Alchian 1950; in Brennan & Canning 2004: 5) to links activities and combine resources. Most importantly, business actors should show an understanding and appreciation of their counterparts; an understanding not only of oneself but also of others and others' relationships.

The study refers to Nonaka and Konno (1998: 41), who introduced the concept of *ba*, which is conceived as 'the frame in which intangible, boundaryless and dynamic knowledge is activated as a resource of creation'. The Japanese authors argue that:

'To participate in *ba* means to get involved and transcend one's own limited perspective or boundary...This exploration is necessary in order to profit from the magic synthesis of rationality and intuition that produces creativity' (ibid.).

Nonaka et al. (2006) argue that the development of strong social ties and bonds among network actors may lead to the establishment of a shared mental system; a necessary context for knowledge creation. But to establish a knowledge creation context a redefinition of relationships is needed through dialogue, experience sharing or simply thick interaction (Ford & Redwood 2005). Interaction is likely to develop many aspects

of jointness in investment, commitment and intentions (Waluszewski 2005), and it can take many forms, such as virtual and informal interactive networking (Tidd et al. 2005). Hence, interaction processes can explain how knowledge exchanges between actors in the network influence the nature of the relationship as well as some of its resources or characteristics, such as long-term orientation, exclusivity, commitment and trust among others, which in turn are considered as main enablers of knowledge dissemination and co-creation.

The literature discusses various types of relationships and types of knowledge that flow in and out of these under a network approach. Industrial network theory, in contrast to the resource-based view on theory, focuses on relationships as the basic unit of analysis, and conceives knowledge as an activity rather than a resource. Young and Denise (2000: 1) argue that ‘while knowledge is a resource that is embedded in activity, knowledge is more – it cannot be separated from the processes of creation’. Within the industrial network approach, an important distinction is usually made between network structures and network processes, but IMP scholars (e.g. Araujo & Easton 1996; Ford & Hakansson 2006) argue that the two basic challenges of network research are closely related and intertwined. The IMP view of the structure of business as a network of significant relationships between interdependent companies challenges conventional ideas of hierarchical market-based organisational forms as it implies interdependencies. On the other hand, the IMP view of the process of business has been based on the idea of interaction between interdependent companies (Ford 2005: 1). Waluszewski (2005: 81) concludes about this dimension of networks that:

‘Creating economically vigorous networks is neither about outcompeting surrounding units nor about directing a structure in a particular direction, but rather about keeping a rainforest-like process alive, in which actors with differing interests are utilising each other’s resources...To succeed in building networks structures is not the same as to succeed in breeding network processes’.

Networks are systems of interconnected exchange relationships among business actors (Karlsson 2003) and any single exchange relationship is embedded within the system of interlinked actor webs, resource constellations and activity patterns (Hakansson & Snehota 1995). The study incorporates the Activities-Resources-Actors (ARA) model of interaction (Hakansson & Snehota 1995), which ‘allows us to catch network effects of resource combinations, activity chains and actor bonds’ (Waluszewski 2005: 80). Since the knowledge creation capabilities of relationships and the networks they are embedded

exceed that of individual firms or even dyads, the ARA model is considered as an important analytic tool.

Although the first IMP model (Johanson & Mattsson 1992) focuses on dyadic business relationships and the second emphasises the whole network of relationship patterns, it is proposed that especially when analysing evolving relationship patterns that involve business actors in China, the IMP business network approach can be enriched by taking into account the empirical concept of *guanxi* and its inter-subjective premises, such as trust and commitment, which are not much dissimilar to those of relationships, and which are developed among business actors through business and non-business interaction processes. Hence, the ultimate focus of analysis remains on the evolution of interactive relationship patterns. Although the impact of relationship characteristics in *guanxi* and business networks might be similar, there are major differences between a Chinese and a Western world in terms of how relationship characteristics are nurtured, developed and maintained as relationships evolve.

Further, it should be noted that although this research acknowledges the importance of the ‘modified’ ARA model developed by Kriz and Fang (2000; see Figure 22., p.50), it goes one step further to explain that although direct and indirect business interaction may also take place at the interpersonal level of analysis, non-business interaction which takes place only at the interpersonal level has significant effects on both direct and indirect business interaction and the development of activity links, resource ties and actor bonds at the firm level. Furthermore, this research tries to understand the nature of interpersonal interaction in Chinese business networks and most importantly, in contrast to Kriz and Fang’s general modification of the ARA model, the study aims to identify and explain *guanxi* interaction effects on product co-development. Further and beyond Kriz and Fang’s theoretical modification of the model, which is based on conceptual discussions on culture and society, this research effort incorporates the ARA model to investigate relationship patterns in a multiple case study research design, which in turn exposes difficulties for the ARA model to capture and interpret what is in the ‘shadow’ of the direct business interaction processes in China.

This research maintains that business actors, similar to societies as actors, are more culturally converged than ever before, and this is reflected on the selection of a diversified sample studied. However, it is initially important to conceptually describe the

various characteristics of the two network worlds in terms of relationship stages. In order to enable a comparison of relating in guanxi and business networks, it is necessary to make reductionist assumptions about culture; simply put, that differences exist between national and corporate cultures. Let's remember that the guanxi network approach is not a theory; rather it provides a framework which is based on reductionist assumptions about Chinese culture in order to enable the researcher to analyse the nature of interaction in Chinese settings and to interpret interpersonal business and non-business interaction effects on product development success or even failure.

What is the main difference between the two approaches is that in guanxi networks interpersonal interaction is the central unit of analysis, whereas in business networks, although interpersonal relationships can be identified and analysed by the ARA model of interaction in the form of actor bonds, the central unit of analysis is the dyadic business relationship. Based on literature findings, Table 2.5 presents in a preliminary form the characteristics of interaction in business networks and in guanxi networks in terms of relationship levels or relationship phases. For instance, in guanxi networks goal compatibility is not necessary for individuals to engage in a relationship, whereas in business networks mutual interests among business actors are important. It could be inferred here that interacting in business networks is more specific whereas interacting in guanxi networks is more general in nature.

Table 2.5: Network-ing vs. Guanxi-ing in Relationships

<i>Relationship Level</i>	BUSINESS NETWORK	GUANXI NETWORK
<i>Nurturing</i>	<p>Companies as actors gain access to resources</p> <p>Mutual interests are important</p> <p>Limited commitment, trust and adaptations</p> <p>Interdependence based on contractual-based transactions</p> <p>Actors not ready to adapt</p> <p>Know-how is power</p>	<p>Individuals as linking agents connect companies</p> <p>Goal compatibility not necessary</p> <p>Commitment to regular interaction and trust not limited</p> <p>Relationship-based interdependencies; No need for contracts to start interacting</p> <p>Actors ready to adapt</p> <p>Know-who is power</p>
<i>Developing</i>	<p>Middle management involvement;</p> <p>Networking capacity of company actors; company identity</p> <p>Interaction based on competence-based trust</p> <p>No limits to expand the business relationship base</p>	<p>Centralised actors are involved</p> <p>Guanxi capacity of individual actors; individual actor identity</p> <p>Interaction based on networking capacity of actors; interpersonal relationships with third parties increase trust</p> <p>Limits to expand the interpersonal relationship base</p>
<i>Maintaining</i>	<p>Formal and rigid knowledge transfer mechanisms</p> <p>Measurable performance control mechanisms</p>	<p>Soft and flexible knowledge transfer mechanisms</p> <p>Non-measurable performance evaluators</p>

Source: Reproduced by Johnssen et al. 2010; Developed by the researcher

The literature has discussed the substance of interpersonal relationships in business networks in a Chinese context and compared existing concepts of guanxi and networking by exposing similarities as well as differences found in their premises. This research explores how, in Chinese settings, interpersonal relationship premises might offer complementary solutions to those of business relationships, which will then provide the basis of a guanxi interaction approach for business networks. The difference between the guanxi and network approaches lies to the fact that interaction in guanxi networks regards interpersonal relationships of both business and non-business nature, while business

networks mainly capture direct and indirect business interaction among business actors to explain the complex interdependencies that exist among activity links, resource ties and actor bonds in any given business relationship. As Langenberg (2007: 1) notes, although ‘recent research has not been capable of integrating guanxi and business... the prevalence of guanxi is not restricted to social interaction; rather it extends to business realms’.

A heuristic guanxi network approach could be positioned nearby the business network approach and opposite to market-based approaches. Guanxi is more personal than organisational; therefore, research on guanxi is multidisciplinary (e.g. Langenberg 2007; Luo 2007). Moreover, sinologists argue that ‘guanxi can indeed provide firms with an imperfectly imitable resource that can yield a competitive edge’ (Standifird & Marshall 2000; in Langenberg 2007: 16). This view is in line with an IMP view, which identifies a company’s unique identity by looking at its network of relationship patterns; a uniqueness that is hard to imitate. Hence, it can be concluded that the concepts of guanxi and business network although multidimensional have unique similarities and a combination of the two seems necessary to analyse interactive relationships involving Chinese business actors and to provide insights for supply network management and product development in China. However, the heuristic guanxi network approach described above is used in order to understand and develop the unique characteristics of interaction. The development of the guanxi interaction concept, reflecting both business and non-business interaction processes, is expected to enrich and enable the business networks’ interaction approach to explain how relationships between Sino-Western and Sino-Sino business actors are nurtured, developed and maintained in product and technology co-development settings.

2.7 Research Implications

Drawing from literature findings, this section presents and discusses how guanxi-based thinking and acting could form a proposed theoretical framework for this research. In other words, a guanxi interaction approach for business networks is presented based on literature findings. As has been mentioned, although there is a ‘flexible’ and ‘holistic’ business network theory that can be used to analyse business interaction, the concept of interpersonal interaction in China should be developed as it has significant impact on direct business interaction. This research views guanxi or interpersonal interaction through different lenses and maintains that guanxi is an empirical phenomenon, which can be seen as a process of interaction. In particular, guanxi is not given; guanxi is interaction and this interaction is a cognitive and relational process. Through language and communication, actors bring forth an inner world, which they communicate. Actors act and re-act based on a combination of both inner and outer reflections. From a systemic, network point of view, guanxi is a self-making, micro-level process that keeps the network alive and through which processes change and network formations emerge.

As has been elaborated throughout the literature review, the aim is to examine empirically the social processes of interaction among Chinese business actors who cross organisational borders and to identify the impact of network actors’ interactions on relationship characteristics, such as co-operation and knowledge intensity, which in turn influence knowledge co-development and co-creation. Literature findings note that nurturing, developing and maintaining relationships with Chinese business actors in order to exploit their business networks might be a feasible strategy within product development settings. In order to reach an intensifying stage of business relationships, a foreign company with its Chinese suppliers should adapt accordingly together, through ‘teaching’ and ‘learning’ each other, which in turn will create an atmosphere where co-development, through access to others’ resources and networks might be possible.

The study stresses the significance of guanxi, as a metaphorical concept that describes direct and indirect, business and non-business interaction in China. Guanxi highlights the key role interpersonal relationships play in managing business relationships and it is claimed that guanxi, as interpersonal interaction, has significant effects in managing networks. Based on literature findings, and in particular, the relationship characteristics in guanxi networks, as opposed to relationship characteristics in business networks,

discussed previously (see Table 2.5), a proposed theoretical framework has emerged, which is presented in Table 2.6, below. The proposed theoretical framework of the guanxi interaction approach in business networks presents interpersonal relationship characteristics or dimensions in different relationship levels or phases.

Table 2.6: Guanxi Interaction in Business Networks – A Proposed Framework

GUANXI INTERACTION IN BUSINESS NETWORKS			
Level of Relationship	CULTIVATION	DEVELOPMENT	MAINTENANCE
<i>Relationship Characteristic</i>			
<i>Co-operation</i>	Individuals as connect companies	Centralized actors are mobilised Relationship-based firm relating and transactions	Friendship and close professional ties underpin interaction Non-measurable performance evaluators
<i>Knowledge Intensity</i>	Information, knowledge exchanges	Introducing other relationships	Soft-knowledge transfer mechanisms
<i>Conflict</i>	No need for contracts to interact	Interpersonal agreement over contract Voice over exit; and face-to-face visits	Interpersonal agreement over conflicts Voice over exit; face-to-face visits
<i>Exclusivity</i>	Actors ready to adapt	Concessions made by parties for mutual benefit	Long-term adaptation
<i>Power/Dependence</i>	Know-who is power	Network capacity of individual actors	Established distribution of power and expertise in different areas
<i>Trust</i>	Depending on networking capacity	Individual actor identity increases trust; Interpersonal relationship with third-parties	Understanding each other in critical situations
<i>Commitment</i>	Commitment to general interaction	Personal commitment to business interaction	Commitment to long-term growth of relationship

Source: Developed by the researcher

It is proposed that a guanxi interaction approach to business networks should be taken under consideration when researching phenomena of supply network and product development management in China. The literature review has found similarities that exist between guanxi and network thinking, and has shown that the guanxi and network approaches are interrelated and can be integrated via enriching the interaction concept empirically. Although the literature has exposed the need to incorporate the guanxi concept into the industrial network theory or the interaction approach, it is argued that this can only be achieved through acknowledging the difference in the interaction process between Chinese guanxi and Western networking, as interaction is the universal drive for cultivating, developing and maintaining business relationships. Therefore, the aim is to empirically explore through case study research, the product development aspects of the rationale of guanxi interaction as well as development and effects of guanxi interactive processes to business networks. In other words, again, the research aim, in terms of theoretical development and validation of the proposed research framework, is to identify and empirically analyse actors' interactive relationships within product development networks in China.

In this exploration, the positive roles to be played by management, when acknowledging culture and in general, the efficiency of flatter organisational structures and soft and flexible, rather than hard and rigid knowledge transfer mechanisms in developing trust and commitment, which are significant relationship resources that encourage and promote effective knowledge sharing and sustainable inter-organisational change, are stressed. Lastly, based on literature findings, it could be argued that the Olympian perspective for knowledge and learning networks, that of a shared mental system, should underpin studies on supply network management and product development in every socio-cultural context. Although, there is common recognition that the business world is getting culturally converged, shared mental systems can be developed among individual actors who take into account socio-cultural characteristics. The above managerial concerns with regards to managing relationships are also explored in this multiple case studies research examining various relationship patterns in low-tech and high-tech industrial sectors. However, before the presentation of empirical findings, which is followed by a discussion of theoretical and managerial implications, the next chapter thoroughly discusses the philosophical background and explains the choice of the methodological approaches that back up the current research effort.

Chapter III

PHILOSOPHICAL AND METHODOLOGICAL CHOICES

3.0 Introduction

Product development within inter-organisational and cross-cultural networks is a multidisciplinary field of research, characterised by high receptivity to new ideas, myriads of arguments in terms of methodological choice, and philosophical debates. Within the field, high standards of scholarship are combined with a mutual tolerance among divergent perspectives, transcending the existence of incommensurable philosophical paradigms⁷ that have guided research practice until today (e.g. Capra 1997; Gummesson 2006; Lowe et al. 2007). However, in terms of paradigm incommensurability, within this field, a relatively recent emergence and establishment of various, yet hard to define qualitative approaches can be seen, partly, as a form of a major critical reaction against the functionalist, modern and positivist paradigm (Capra [1982] 1997; Newton & Smith 2002). In line with the literature review, in this chapter, a substantial effort is made to incorporate various postmodern approaches into the following discussion on philosophy, theory and methodology. The discussion combines a focus on networks or configurations, a deep interest in culture, knowledge, language, meaning, identity, and a preoccupation with processes of social change, or simply, social interaction.

The philosophical stance of the research, which provides the background for theoretical development and alternative methodological choices, is drawn from works produced by scientists – from a variety of disciplines including philosophy, biology, chemistry, physics, economics, psychology, sociology, business and management among others – who tried to understand the nature of life and the nature of society, from a network point of view. It is primarily based on Fritjof Capra⁸, whose work, ‘The Web of Life’ (1997), draws from ancient Greek philosophers, such as Aristotle, Heraclitus, Anaxagoras, and the Pythagoreans; philosophers of the German Romantic movement at the dawn of last century, such as Goethe and Kant; and by works produced during the second half of the 20th century, such as systems theories, cybernetics, and cognition theories (e.g. Maturana & Varela; Prigogine, 1970s). Further, the philosophical stance, or view of the world of

⁷ See Burrell and Morgan (1979), for a categorisation of social science’s philosophical schools of thought.

⁸ Fritjof Capra is the founder of the social ecology department of philosophy at the University of Berkeley, California.

this research adheres to network theories of complexity and change produced, more recently, by Chia (1999), Gummesson (2003; 2006), Tsoukas and Hatch (2001) and scholars from the IMP research group, who extensively, since the early 1990s, have used and continue to use the network metaphor to develop explanations of complex business phenomena.

Previous works of philosophers, scientists, psychologists, sociologists and business scholars, provide the ground for a major re-conceptualisation of fundamental premises associated with social and business structures. In other words, there has been a shift of perception from the parts to the whole, from quantitative to qualitative, from order to disorder, from being to becoming, which altogether reflect a higher order movement within the scientific paradigm; from modern to postmodern thinking. According to Capra (1997), it has to do with a total paradigm shift; from scientific to social paradigm. As Capra explains, the centre is the society, instead of the human-as-centre orientation. This signifies a movement *from hierarchies towards networks*. The concept of hierarchy, where power relationships matter, is normally associated with structuralism rather than human agency where the concept of network is based upon. As Capra puts it ([1982]1997: 5), ‘what we are seeing is a shift of paradigms not only within science but also in the larger social arena’. A paradigm shift ‘requires not only an expansion of our perceptions and ways of thinking but also of our values’ (Capra 1997: 9). Capra ([1982]1997) sees both changes of thinking and of values as shifts from self-assertion to integration, and notes that both are essential aspects of all living systems. Capra (1997: 9) concludes that ‘neither of them is intrinsically good or bad; what is good, or healthy, is a dynamic balance’.

Based on these shifts of perceptions and of values, business theorists have begun to acknowledge the advantages of perceiving complex networks linking business actors (individuals, organisations and networks) and obscuring defined boundaries, assumed within the Cartesian and Parsonian theorising. As Capra (1997: 36) notes, ‘living systems are integrated wholes whose properties are properties of the whole, which none of the parts have...They arise from the organising relations of the parts’. Further, networks, or systems thinking is contextual and synthetic thinking. Hence, the knowledge metaphor ‘as a building is being replaced by that of the network’ (Capra 1997: 39). Since reality is perceived as a network of relationships, any descriptions of this reality should also form

‘an interconnected network of concepts and models in which there are no foundations’ (ibid.). The view of reality as a network implies ‘a shift from objective to epistemic science’ (Capra 1997: 40). Capra ([1975]1997: 40) quotes Heisenberg to explain this: ‘What we observe is not nature itself, but nature exposed to our method of questioning’. Therefore, instead of making limited quantitative measurements of ‘variables’ or approximate descriptions of reality, researchers ‘obtain approximate knowledge about an infinite web of interconnected patterns’ (Capra 1997: 41). Approximate knowledge can be drawn by looking inside social relationships, in order to ‘discover their symbolic and emotional meaning for those involved and to investigate the way meanings are constructed and expressed’ (Newton & Smith 2002: viii).

The paradigm shift, in line with the shifts of perceptions and values, is based on the assumption that living systems⁹, such as people, social communities and networks, are cognitive systems, and this in turn has major implications to the ways theory is developed and methodological choices are made. Living systems, such as human societies and business networks, are open to flows of energy and resources from their environment, and exhibit self-organisation and self-making characteristics. These characteristics, such as the self-production of new forms and structures, can only occur when the system is far from equilibrium. Further, the social unity of human societies is based on language exchanges, which has been identified ‘as the critical phenomenon in the development of human consciousness and culture’ (Capra 1997: 205). Maturana and Varela (1987: 199; in Capra 1997: 205) note that: ‘the human social system applies the individual creativity of its components, as that system exists for these components’. Most importantly, ‘because of the inner world of concepts and symbols that arises with human thought, consciousness and language, human social systems exist not only in the physical, but also in a symbolic social domain’ (Capra 1997: 206). These views stress in particular that analysis should focus on social processes, instead of social structures, and these processes are processes of cognition. Accordingly, Newton and Smith (2002: viii) suggest that researchers ‘should treat organisational and social change as the key tendency whose direction has to be discovered by careful analysis using comparative and historical

⁹ The root meaning of the word ‘system’ derives from the Greek ‘synhistame’ (to place together); thus systems thinking means contextual thinking; it is applied by establishing the nature of the components’ relationships (Capra 1997: 27). Capra (1997) relates systemic thinking to an organismic worldview, which is the basis of Chinese thought; these views reflect the epistemological premises of this research.

techniques'. Therefore, it could be argued that a processual focus is required for business network research and more specifically for analysing how business actors nurture, develop and maintain business relationships in product development networks.

Nevertheless, it could be claimed that the following philosophical discussion is relevant to all studies researching complex phenomena of co-evolution and co-creation. This chapter on philosophical and methodological choices supplements and supports the thorough review of the literature on the subject of interactive relationships in product development networks and Chinese settings. The literature review has proposed a theoretical framework of the concept of interaction reflecting Chinese socio-cultural characteristics, which in turn could enrich the interaction concept of the IMP-based business network approach for its application to analyse relationships in business networks in a Chinese context.

The 'beginning' section of the methodology chapter introduces paradoxical and evolving views of networks, knowledge, and culture. The introduction is followed by a detailed discussion of the philosophical assumptions, introducing the premises of Capra's (1997) *Web of Life*, which provide the basis for theoretical and methodological orientations and the platform for understanding complex phenomena, such as organising for interaction in product development networks. Further, a section follows, which stresses the role of theory, as theory is used to guide this research heuristically. The selection of theories and concepts included in the theoretical framework is not straightforward, as this research is based neither on a hypothetico-deductive nor an inductive reasoning. In the next section, an abductive (semi-deductive) reasoning is explained by positioning itself in terms of induction and deduction. The discussion explains the choice of abduction, mainly due to the fact that abduction has a reasoning of becoming, as it requires a tight and evolving theoretical framework to be used. Next, the 'systematic combining' technique, proposed by Gadde and Dubois (2002), appropriate when conducting case study research aiming at theory development, is discussed. Further, it is explained how a systematic combining approach is best used in case study research, in order to overcome its potential limitations (e.g. Easton 1995). Next, alternative methods for network research that can be used under the umbrella of case study research and a postmodern philosophical thought are elaborated. The chosen data generation techniques in line with those of data analysis are

also discussed. Lastly, it should be noted that all sections of the methodological chapter are interrelated and interdependent.

3.1 Knowledge as Social Practice

The terms ‘network’, ‘culture’ and ‘knowledge’ are contested labels; they are not independent realities, but are language constructions; narratives; used to articulate a view or a vision of the world at a specific period of time and under specific context. As Schumacher (1978) claims for his notion of *self-awareness*, ‘it is necessary to have world-labels, although great care should be taken in order to remember that such a world-label is merely – to use a Buddhist phrase – a finger pointing to the moon’ (1978: 27). Labels themselves symbolize somehow different views of the world and different visions of what a business actor does or should do. For example, considering the meaning of broad, but ‘flexible’ concepts, such as interaction and network dynamics, or even strategy, one may realise that paradoxical interpretations emerge out of the same word. Thus, one of the premises of this research is that definitions of knowledge and network abound, as do definitions of closely associated concepts, such as supply networks or knowledge networks. Also, definitions of business relationships and interpersonal relationships abound. As the literature has stressed, although *guanxi* relationships and its associated concepts are different to the Western concepts of relationships, some similarities exist among them under specific contexts or relationship phases. Hence, this research recognises the value from enhancing understanding of complex, multi-layered and multifaceted discourses.

Discourses evolve over time. The discourse of business networks, for example, has been influenced by the ‘dyadic interaction’ concept with regards to supplier-buyer relationships. The basic idea was later to extend the interaction approach to wider market systems, reflecting a shift in perceptions, ‘from parts to the whole’, that better explain the evolving nature of society. The ‘system interdependence’ concept, although based on empirical work, implies a focus on structures, which in turn limits implications for business (Mattsson & Johanson 2006). Besides, a ‘systemic interdependence’ approach assumes a more top-down approach to management (ibid.). Mattsson and Johanson (2006: 268) argue that the network concept seems to be the ‘final compromise’, within which the dyadic approach does not lose its validity and precision. The authors (ibid.) note for the concept of business networks that:

‘In the late 1970s was not as obvious as it seems in retrospect...Network is a good concept since it would allow both wide system delimitations aimed at industry and market analyses and policies at the same time as it could be applied to more limited

marketing problems from the individual actor's point-of-view... The meaning of the word network was implicit'.

A similar case is an associated concept to business networks, that of supply networks. As has been noted in the supply network section of the literature, initially it was termed 'purchasing'. Purchasing was seen a few decades ago as a business function independent to other business functions and in particular independent in relation to others businesses, until the dyadic approach was initiated. The view of purchasing – which is still relevant today, same as dyadic relationships are – soon became procurement, and was seen as a part of a supply chain. However, all these views were based on a higher order view; that of business-as-markets and business-as-hierarchies, instead of business-as-networks. When markets are viewed as networks, the concept of supply chain is transformed to supply networks. Nowadays, a supply network may even refer to as product development, procurement or project network. Further, a supply network under a systems approach can be seen as a horizontal network that does not demarcate activities vertically, such as the concept of supply chain does. Concluding with the analysis on the evolution of the 'supply network' discourse, this research, in line with Gadde and Hakansson ([2001] 2006), takes a network view of the supply chain, which can be explained due to the fact that conditions in single supply chains are determined by the way actors, activities and resources are related to those in other supply chains.

As has been discussed in the literature, a highly related concept to the study of supply networks is that of knowledge networks. The literature review presents and links multiple theories which share a common principle with regards to how they perceive knowledge and especially knowledge creation. Simply, knowledge is 'rooted in practice, action and social relationships', (Swan et al. 2002: 8) instead of being a discrete cognitive entity that organisations or their actors possess' (ibid.). Also, in different networks 'different manifestations of knowledge may predominate, requiring different ways of managing knowledge' (Scarbrough et al. 1999: 29). The above views imply an ontological and epistemological set of assumptions about knowledge and knowing that is useful in order to understand product development within supply networks. These assumptions simply stress that understanding knowledge creation within networks of relationship patterns can be achieved by focusing on the processes of social interaction. However, understanding structures is also important as they represent the outcome of such processes; structures are considered as enacted and re-enacted entities. Based on philosophical views,

discussed in the next section, the idea of structures as static entities is seen as an illusion. To understand knowledge creation, Nonaka and Takeuchi (1995) suggest that one should emphasise the social processes, such as dialogue and interaction. According to the authors, 'knowledge cannot simply be processed; rather it is continuously re-created and re-constituted through a dynamic, interactive and social networking activity' (in Swan et al. 2002: 107).

What really matters here is that knowledge cannot be developed in isolation from the socio-cultural context (Tsoukas 1996). Huemer et al. (2004: 62) note that 'by including history and expectations in a variety of relationships, network thinking goes beyond structures, indicating that [network] boundaries are created'. Subjective knowledge of business actors, expressed sometimes as a network picture or network horizon, at a specific time, 'denotes the extent of an actor's view of the network, which changes over time as business proceeds... [network boundaries are] dependent upon the current perspective' (ibid. p. 61). According to Bryman (1988: 102), this means that 'network actors produce their own structure, which they negotiate and which is in a constant state of re-negotiation'. However, the above suggest more agency than probably occurs. As has been noted, each business actor has a different perception of the structure at a time, and the same structure is viewed from different perspectives. Business actors collectively negotiate and re-negotiate the network structure through interactive communication processes; through their actions and reactions. Therefore, insights on knowledge network processes and, in particular, on the subjective perceptions and meanings of business actors, with regards to business relationships in product development contexts, will significantly enhance understanding of how structures change. In order to draw in-depth insights of the evolving processes in knowledge networks emphasis should be placed on the ways specific societies are organised; the focus should be on culture that is created through cultural processes of language and communication. More specifically, as it is explained next on the philosophical part, language through communication can be seen as a coordination of behaviour; a bringing forth to a world.

In cross-cultural networks, business actors should consider others' culture first, and this is a prerequisite condition for the creation of a shared mental system (Nonaka & Konno 1998), which is seen as the ultimate source of co-evolution and co-creation. This means that each business actor should try to understand what is going on in terms of the others' ways of thinking and acting. The above views with regards to knowledge sharing and

creation are supported by similar views on culture, which is considered as an interactive process itself. According to Fang (2005-6: 73) culture 'is seen not just as carried but as the shared understandings through which culture is actively created (i.e. negotiated) by means of social interaction'. Hence, it is argued that an interactive view of culture is an appropriate assumption in product development research, mainly because new knowledge, which is relevant here, involves tacit, less codified knowledge; knowing, which is developed through socio-cultural interaction episodes overtime.

Within the interaction and multiple culture school (Boyacigiller et al. 2003; in Fang 2005-6), this research emphasises a dialectical view of culture in order to explain product development network dynamics in China. Such a view draws basically on insights from ancient Chinese philosophy – yin and yang¹⁰ – that implies that human behaviour within a culture is paradoxical and dynamic. Taking into consideration the existence of multitude Chinese cultures and paradoxical and dialectical network dynamics will enrich the understanding of how business relationships are created and maintained in various contexts. For instance, the development of guanxi relationships among business actors should be seen as an interactive process and guanxi phenomena in product development networks should be analysed by a network approach that takes into account the existence of higher, or lower, and of wider, or narrower guanxi network levels. Networks exist within networks. Thus, this research incorporates an interactive network approach to analyse guanxi relationships instead of the conventional approach of guanxi, which views guanxi as a static structure based on hierarchies and power relations.

An interactive culture among business actors that is developed in line with knowledge-based resource interactions determines the identity of the relationship, which in turn determines possible meaning actors give to explain actions and interactions at specific moments of time. Thus, 'in the recent period, culture has been taken to be above all a matter of meaning (Ulf Hannerz 1992: 3; in Strauss & Quinn 2001: 5). Early views of culture (e.g. Hofstede & Bond 1988) consider culture as 'socially learned ideas and behaviours...the culture of the X' (Strauss & Quinn 2001: 5). According to Strauss and

¹⁰ Literally, yin refers to the moon and yang refers to the sun. According to Fang (2005-6: 76) the image of yin and yang, 'arguably the best-known symbol in Asia (Cooper 1990), implies that yin and yang, coexist in everything, and that everything embraces yin and yang...There exists neither absolute yin nor absolute yang'.

Quinn (2001: 3), ‘the fact that both domination and everyday practices rest on shared interpretive schemes, schemes learned in ways sometimes render them resistant to change, has to be ignored’. Also, anthropologists agree that ‘cultures are not bounded, coherent, timeless systems of meanings’ (Strauss & Quinn 2001: 4). Drawing from the above views of culture, identity and meaning are seen similarly as created through interaction, and together with culture are considered as re-negotiated outcomes of interactive processes. As a result, in order to, at least partially, understand culture, together with change, the processes of how human beings construct their meanings should be examined (e.g. North 1998; Strauss & Quinn 2001).

There is a philosophical debate about what meaning is, ‘particularly with respect to the meaning of words and sentences’ (Strauss & Quinn 2001: 5). The research incorporates some of Derrida’s poststructuralist assumptions and discusses some dominant approaches in the philosophy of language, such as hermeneutics and narratives. Strauss and Quinn (2001: 6) note that ‘a person’s interpretation [or meaning] of an event includes an identification of it and expectations regarding it, and often, a feeling about it and motivation to respond to it’ (Strauss & Quinn 2001: 6). They view meanings as momentary states, which are produced at the interaction of two kinds of ideas, which they call: *intrapersonal* (mental structures) and *extrapersonal* (world structures). Their view is that these realms are different, each with distinctive characteristics not found in the other. Strauss and Quinn’s study has clearly a ‘network or culture orientation’ (Lowe et al. 2007: 242). Intrapersonal ideas are ‘schemas or networks of strongly connected cognitive elements’ (Strauss & Quinn 1997: 6; in Lowe et al. 2007: 241), whereas the extrapersonal ideas of world structures are considered as outcomes of social interaction processes. The basic argument of Strauss and Quinn (2001) is that we cannot explain cultural meanings – in a same way, we cannot articulate ‘tacit knowing’ that has strong identity elements – unless we see them as created and maintained in the interaction between the extrapersonal and intrapersonal realms. Like meaning, Strauss and Quinn (2001: 9) consider identity as having ‘an implicit, normally out of awareness, component, which is neither completely fixed nor entirely fluid’. Therefore, it can be argued that the force and stability of cultural meanings and identities as well as their possibilities for variation and change, are all

enlightened within the course of complex interactions. Cultural meanings or identities are considered as outcomes of interactions and should be seen as social constructions¹¹.

One of the aims of the literature review was to build a context for the methodological discussion that follows and to explain why interaction processes within business, supply, knowledge, and cultural networks are the focus of this research. It should be noted here that an evolving theoretical framework backed up by a holistic philosophical and methodological perspective, discussed thoroughly in this chapter, should not be viewed, and analysed by scientific terms, such as predictability criteria and scientific generalisation. In general, co-creation in inter-organisational networks, backed up with the assumptions of a social ecology paradigm (Capra 1997) should be viewed as a more ‘spiritual’ activity. This is because the focus of this kind of research studies lies on the analysis of social processes, which are considered as the primary source of evolution of business networks and which exist not only in a physical, but also in a symbolic domain. Before concluding the beginning section, it should be noted that the study takes the relationships of actors within product development networks as the central unit of analysis. However, the definition of relationships is still not clear (e.g. Morais 2008) and this is elaborated below.

The IMP group and scholars from other disciplines have analytically produced life cycle models with descriptive and evolving stages of relationships, which provide the basis of the industrial network approach. However, together with an evolutionary approach to relationships within networks, Morais (2008) argues that relationships should also be analysed through a ‘dialectic process’ approach. In the same fashion as the dialectic approach proposed by Fang (2005-6) to explain culture, Morais (2008) proposes a dialectic process approach, to explain network dynamics, and paradoxical aspects of relationships. This dialectic process approach ‘regards change as a struggle for dominance between contradictory forces – thesis and antithesis’ (Morais 2008: 5). Hakansson and Johansson (1992: in Morais 2008: 5-6) note that:

‘The IMP group appears to subscribe to the more dialectic theoretical assumptions, given the existing assumptions of interdependence and change based on asymmetric – stable yet dynamic – distribution of power and knowledge among network actors’.

¹¹ This is a major ontological premise of this research and refers to social constructivism.

Dialectic approaches may be superior to analytic ones, especially when examining interactive relationships in Chinese network contexts. Dialectic reasoning adheres to synthetic reasoning, which ‘can become the basis for an appreciation of cultures not informed by Euro-American analytic reason’ (Merleau-Ponty; in Gier 1981). Gier (1981) notes that synthetic reason¹² provides insights on how people ‘actually’ think rather than how they ‘ought’ to think. In a few words, dialectic and synthetic reasoning search for an in-depth contextualisation of actual phenomena.

This research maintains that any insights for the theoretical development of the business network approach for its application into a specific socio-cultural context should reflect the local and subjective actors’ accounts of relationships, which provide in-depth explanations of both interpersonal and inter-organisational network dynamics. In terms of network research, Morais (2008: 3), drawing on Sayer (1992), suggests that critical realism is a ‘viable’ philosophical stance that views ‘social phenomena as concept-dependent and production of knowledge as a social practice, which influences its content’. The following section discusses various philosophical outlooks for network research and concludes that it adheres totally to neither a modern nor a postmodern philosophical stance. The major philosophical stance, where this research lies is American pragmatism and its associated school of thought, that of symbolic interactionism (Locke 2001). Pragmatism does not adhere totally to any one philosophical perspective in particular (e.g. modern, phenomenological, and postmodern) or any specific ontological position (e.g. critical realism, social constructivism). Instead, this research is approached from a social perspective, or within the social paradigm in comparison to the scientific one, and maintains that different ontological positions are appropriate to validate its various contributions. Furthermore, the study takes an explorative approach to research instead of a systematic one.

To embark onto the philosophical discussion, it is argued that opposed network dynamics and perceptions of interactive relationships can be philosophically related to Schumacher’s (1978) claims that opposites cease to be opposites when a *higher force* is present. Schumacher explains that this is not a logical but an *existential* solution and suggests that a higher force derives its power from self-awareness.

¹² Synthetic reason is the mode of thinking drawn from the etymology of the Greek word logos (see Gier 1981); ‘logos’ means ‘learning’ (Olsen 2006).

‘Opposites are transcended when *higher forces*, like love and compassion, intervene, is not a matter to be argued in terms of logic: it has to be experienced in one’s actual existence (hence: existentialism)’ (Schumacher 1978: 141).

Schumacher (1978: 142), similarly to Morais (2008) and Fang (2005-6), believe that ‘societies [such as networks] need stability and change; tradition and innovation; order and freedom; growth and decay: everywhere society’s health depends on the simultaneous pursuit of mutually opposed activities or aims’. The problem cannot be solved but ‘only a higher force can reconcile these opposites’ (Schumacher 1978: 142). Schumacher call these ‘divergent’ problems and argue that ‘divergent problems provoke, stimulate, and sharpen the higher human faculties without which man is nothing but a clever animal’ (ibid.). Divergent problems, such as organising for interaction within asymmetric yet dynamic relationships and the establishment of a shared mental space within which heterogeneous network actors interact, ‘are refractory to mere logic and discursive reason’ (ibid.). Hence, it can be concluded that divergent problems should be analysed by emphasising process and change through dialectic and synthetic approaches. The philosophical input from Schumacher suggests that network, knowledge, identity, culture, meaning and other associated to interaction concepts are paradoxical and dialectical in their nature and should be viewed as changing through continuous interaction. The above views clearly indicate a state of fluxing reality, which has significant methodological implications.

3.2 Philosophical Stance

Since the dawn of Western philosophy and science, in ancient Greece, several philosophical perspectives have emerged, reflecting rather contradicting assumptions about ontology and epistemology¹³. Ontological and epistemological choices, ‘even if implicit and by default, provide the framework for methodological issues’ (Olsen 2006: 19). According to Hatch (2006: 13), ‘epistemology is closely related to ontology, because the answers to these questions depend on, and in turn help to forge, ontological assumptions about the nature of reality’; the essence of things. The modernist thought about epistemology is based on assumptions that value ‘reason, truth and validity’ (Hatch 2006: 13). It assumes that one can ‘discover what truly happens in organisations through the categorization and scientific measurement of the behaviour of people and systems’ (ibid.). In terms of ontology, ‘language mirrors reality, that is, reality and its objects can be described using language without any loss of meaning or inherent bias’ (ibid.). However, in order to draw deep insights on complex phenomena, such as interactive processes within business networks, this research is not aligned with the modernist assumptions of ontology and epistemology.

In line with Gummesson (2003) who notes that ‘all research is interpretive’¹⁴, whether it involves numbers or words, this study maintains that ‘the completely systematic and objective pursuit of truth is a myth’ (2003: 487). Within the interpretive school of thought, scholars deny an objectivist ontology and instead they build on the assumption that ‘one can only understand by occupying the frame of reference of the participant in action’ (Burrell & Morgan 1979: 5). Interpretivist epistemology assumes that ‘knowledge can only be created from the point of view of the individual who live and work in a particular culture or organisation’ (Hatch 2006: 13). For instance, a business actor gives his or her own unique meaning of what is happening based on his or her own experience of specific situations by taking into account history and future expectations (Hatch 2006). Furthermore, the assumption that ‘understanding of others is filtered through someone’s own experience’ (Hatch 2006: 13), implies that ‘we can never be objective about the

¹³ Epistemology, coming from ancient Greek (‘episteme’ means knowledge and ‘logos’ means learning), is the ‘learning about knowledge and knowledge creation’ (Olsen 2006: 19 ff.). According to Hatch (2006: 12) ‘epistemology is concerned with the formation of knowledge and the establishment of criteria for evaluating it, whereas ontology is concerned with the way of seeing the dynamics of the world’.

¹⁴ Gummesson (2003), the phrase appears in the title of the article.

interpretations made by others' (ibid.). Therefore, interpretivists view social phenomena as continuously constructed and re-interpreted via inter-subjective processes of communication (Hatch 2006). In the words of Lee (1989; in Cepeda & Martin 2005: 853), an interpretive understanding is 'the researcher's understanding of the participants' subjective understanding'.

Postmodernists agree that in between modern and interpretive thoughts there can be found many combinations of subjectivism and objectivism (Hatch 2006: 12). Table 3.1, below, summarizes different assumptions about epistemology and ontology of modern, interpretive and postmodern thought. It shows how postmodernism differs from the other two philosophical stances mainly because it does not seek truth, in objectivist terms, and does not make 'permanent ontological or epistemological commitments, such as those that give rise to modernist forms of scientific endeavour or to symbolic-interpretive descriptions of meaning and human meaning-making activity' (ibid.).

Table 3.1: Key Ontological and Epistemological Assumptions

	Modernism	Symbolic-Interpretivism	Postmodernism
<i>Ontology</i>	<i>Objectivism:</i> belief in objective, external reality whose existence is independent of knowledge of it	<i>Subjectivism:</i> the belief that we cannot know an external or objective existence apart from our subjective awareness of it; that which exists is that we agree exists	<i>Postmodernism:</i> the belief that the world appears through language and is situated in discourse; what is a spoken of exists, therefore everything that exists is a text to be read or performed
<i>Epistemology</i>	<i>Positivism:</i> we discover Truth through valid conceptualization and reliable measurement that allows us to test knowledge against an objective world; knowledge accumulates, allowing humans to progress and involve	<i>Interpretivism:</i> all knowledge is relative to the knower and can only be understood from the point of view of the individuals who are directly involved; truth is socially constructed via multiple interpretations of the objects of knowledge thereby constructed and therefore shifts and changes through time	<i>Postmodernism:</i> knowledge cannot be an accurate account of Truth because meanings cannot be fixed; there is no independent reality; there are no facts, only interpretations; knowledge is a power play

Source: Hatch M.J. (2006: 14)

Postmodern thought stresses ‘the disintegration of an authentic, individual self’ (Cepeda & Martin 2005: 876). According to Czarniawska (2004: 12):

‘[Postmodernism] challenges the operation of representation, revealing the complications of any attempt to represent something by something else [and] pays much attention to language – in a sense of any system of signs, i.e. number, words, or pictures – as a tool of reality construction’.

Mental representations, symbols or ‘signs’ of our language, and information, all involve abstract thinking, which is the key characteristic of the cognition process. However, cognition is not based on language; rather it is based on consciousness and self-awareness (Capra 1997).

The above tenets of postmodern thought create strong links with the methodological choices of hermeneutics¹⁵, narratives, and deconstructionism¹⁶. Hence, a combination of these is employed to conduct this research and analyse various interactive relationships in product development networks. The message, here, is that postmodernists ‘flit between philosophical positions [and] refuse to take even a temporary philosophical stand because they believe that doing so privileges some forms of knowledge over others and this violates postmodern ethics’ (Hatch 2006: 16). To explain this stance, Jacques Derrida (in Hatch 2006: 16) simply observes that ‘modern thought is binary and binary thinking leads us to centre our attention on one element of a pair while ignoring or denigrating its opposite or other’.

In terms of positioning the philosophical school of thought guiding this research, its location would be close to the pragmatic¹⁷, symbolic interactionist, and social constructivist¹⁸ approaches to study humans and other living systems, such as societies and networks. Nyeng (2004; in Olsen 2006) argues for social constructivists that prediction does not necessarily imply explanation. Olsen (2006: 19), in her thesis on business-to-business incremental product development, notes that ‘prediction only requires a correlation whereas explanation cries out for something more’. Explanation relies as much as possible on the views of the participants, and researchers must accept that their own background knowledge and experience influence their own interpretation (Olsen 2006). For example, IMP researchers ‘position themselves in the research to

¹⁵ According to Cepeda and Martin (2005: 876), hermeneutics originally was an approach used ‘to study a written text both in detail and as a whole to enable people to see the deeper meanings contained within it. The approach was expanded in interpretive social science to be a method for developing a deeper understanding of events in the social world’.

¹⁶ Deconstructionism, is described by Cepeda and Martin (ibid.) as ‘a critical form of analysis (and a philosophy), which aims to interrogate a text to identify the assumptions on which it is based. [Deconstructionism] can be used to reveal hidden or marginalized meanings; [meaning is not] fixed or singular, but rather multiple and up for negotiation’.

¹⁷ ‘According to Creswell (2003), who refer to Murphy (1990), pragmatism provides a basis for the following knowledge claims: Pragmatism is not committed to any one system of philosophy and reality. Individual researchers have a freedom of choice. They are free to choose the methods, techniques and procedures of research that best meet their needs and purposes. Mixed methods researchers look to many approaches to collecting and analysing data rather than subscribing to one way. Truth is what works at the time; it is not based in a strict dualism between the mind and a reality completely independent of mind’. (Olsen 2006: 20 ff.)

¹⁸ Social constructivists, argue that ‘all adequate explanations of phenomena must be potentially predictive. However, all adequate predictions of phenomena are not necessarily adequate explanations because prediction can be made without the use of law-like generalisations’ (Hunt 2002: 142; in Olsen 2006: 18ff.).

acknowledge how their interpretation flows from their own personal experience' (Gressetvold 2004; in Olsen 2006: 19). Rather than beginning with a theory, researchers inductively generate or develop a pattern of meaning. With regards to pragmatism, it is assumed that all research occurs in social, cultural and other contexts. Pragmatists believe that 'we need to stop asking questions about reality and the laws of nature' (Cresswell 2003: 12; in Olsen 2006: 20ff.). The human world one sees includes 'our inner world of abstract thought, concepts, symbols, mental representations, and self-awareness' (Capra 1997: 282). From researcher's point of view, epistemic consciousness is important. In the words of Heisenberg (in Capra [1975] 1997: 40): 'What we observe is not nature itself, but nature exposed to our method of questioning'.

It is important to note that researchers' understanding of the differences in the applications of different perspectives is important, because 'these differences are not only crucial to how theory is created but also to the way organising is practiced' (Hatch 2006: 17). However, an acceptance of the existence of differing philosophical perspectives within a single paradigm triggers off paradigm incommensurability, which is not beneficial for social sciences, and for understanding the complex nature of society and life in general (e.g. Capra 1997; Lowe et al. 2007). The above described opposing schools of thought – modern, interpretive and postmodern – are drawn from Burrell and Morgan's (1979) typology of different sets of meta-theoretical assumptions about the nature of social science and the nature of society. In their influential work, *Sociological Paradigms and Organisational Analysis*, Burrell and Morgan (1979), aimed at simplifying complexity, and consequently neglected the interconnection of thinking and of perceptions and values – in terms of ontology, epistemology, and methodology – that 'truly' explains the nature of society, its history and its evolution. Not unexpectedly, typologies and categorisation of philosophical paradigms and assignments of different methods to different typos provoke a paradigm war, which is triggered, as Lowe et al. (2007: 238) put it, by its *incommensurability edict*; 'a form of closure and a denial of the very transformational dynamic of paradigms put forward by Kuhn (1962)'. Thus, although most researchers have used, and will continue to use, Burrell and Morgan's categorisation of various paradigms as a reference point to locate their studies, this research denies paradigm incommensurability and avoids fighting in a paradigm war. Although descriptive in its nature, Burrell and Morgan's categorisation enhances our

overall understanding of the various approaches available to social science and management researchers.

By using Capra's triad – the three criteria of a theory for all living systems, including social systems: structure, pattern, and process – researchers are able to map various research approaches, in terms of their orientation towards structure, pattern or process (Lowe et al. 2007). Lowe et al. (2007: 238) argue that:

‘Studies in culture and organisation are in an early stage of paradigmatic maturity and may well be able to avoid a gridlocked debate on paradigm proliferation and incommensurability by adopting a paradigm mapping approach inspired by Capra's triad’.

The key contribution drawn from a paradigm mapping approach lies to the view that paradigms are not separate theories. Rather, they are ‘theoretical trends within a wider discipline, which operate as responses to other trends both in international business studies and elsewhere’ (Lowe et al. 2007: 242). With regards to cross-cultural management research, the authors (2007: 237) suggest that:

‘Anything goes, as long as it involves what Capra has called *epistemic consciousness*; namely a realization of the prejudices inherent in our epistemologies, a determination to avoid single-paradigm myopia, and encouragement to employ *bricolage* in the context of local moralities, relationships and actionable outcomes’.

A bricolage or polyvalent approach ‘accepts that there is no final understanding, model or knowledge form that corresponds to a totalising truth’ (Lowe et al. 2007: 244). From a critical point of view, this research does not neglect the value of the limited but generalised knowledge drawn from traditional schools of thought. However, in line with postmodern scholars (e.g. Capra 1997; Chia 1999; Tsoukas & Hatch 2001; Lowe et al. 2007) it is argued that ‘traditional research methodologies in cross-cultural management are inadequate for capturing the complexities of culture’ (Lowe et al. 2007: 238). Therefore, it is suggested that more interactive and network-like approaches are appropriate to study cross-cultural relationship management.

For instance, an approach that assumes interaction and change in networks is that of Elias' configurations (1991a; in Newtown & Smith 2002: xi); meaning complex networks of social interdependences. In line with a higher-order level of analysis, such interdependences develop gradually across the changing social environment. Configurations are not fixed since power relations reflect the changing balances between

individuals and groups. Elias sees power as relational, as a 'game' of interdependences where 'the participants always have control *over each other*' (1970: 81, original emphasis; *ibid.*). Elias also stresses that any apparent social order in our world is not planned or intended. This is because configurations, or networks, represent 'the interweaving of different groups and individuals, none of whom can second-guess the actions of others... any outcome represents the interweaving of countless individual interests and intentions' (1994a: 389; *ibid.*). Any individual, group, or network, is therefore situated in a plethora of networks and chains, and thus feelings and actions cannot be understood outside of these complex interdependences.

Capra uses network metaphors to describe complex configurations of living systems. Capra (1997: 81) notes that:

'The key to a comprehensive theory of living systems lies in the synthesis of the study of substance (structure) and the study of form (pattern)... Patterns however, cannot be measured; they must be mapped... To understand a pattern we must map a configuration of relationships'.

As Lowe et al. (2007: 244) argue, a holistic mapping of living systems¹⁹, using Capra's three criteria that comprehensively describe the nature of life and of society, transcends the 'potentially debilitating incommensurability debate in management'. As has been noted, the triad proposed by Capra (1997) emphasises three inseparable and interdependent criteria: structure, pattern and process. For Capra, 'structure is a manifestation of the process of embodiment of the pattern of organisation of a system; structure is not ontologically real... [Structure] is a reification of process and pattern' (Lowe et al. 2007: 239). Drawing on Capra, Lowe et al. (*ibid.*) conclude for 'structures' that they are 'self-organising, dissipative and are structurally open to flows of energy and matter, but organisationally closed'. In Capra's words, 'a constant flow of energy and matter through the system is necessary for self-organisation to take place' (Capra 1997: 85). As Lowe et al. (2007: 239) explain '[living structures] are paradoxically characterised by the coexistence of structural change and organisational stability'. However, in order to 'understand the phenomenon of [structural] self-organisation we first need to understand the importance of pattern... the understanding of life begins with

¹⁹ According to Lowe et al. (2007: 240), 'a living system is an integrated and interdependent whole of interconnected parts... Living systems have emergent properties in that they are more than the sum of their parts... Emergent properties are a consequence of complexity in that any network system is a product of the relationship between its parts (which are themselves networks of lower complexity)'.

the understanding of pattern' (Capra 1997: 80). Therefore, the focus should lie on the 'self-making pattern'²⁰ (or form) of organisation' (Lowe et al. 2007: 240), which involves the qualitative configuration of relationships that gives a system its essential characteristics (Capra 1997: 167; in Lowe et al. 2007: 240). Feedback loops and modes of behaviour (self-organisation and self-regulation) in the self-organising processes of development, learning, evolution, and the creation of new structures imply an 'autopoietic network pattern' (Capra 1997). For Capra (1997), autopoietic network patterns are embodied in dissipative structures through a process of cognition, which is also seen as self-organising and self-referring. In other words, in living systems, such as social networks, the process is seen as the embodiment of pattern in a structure, and this process is 'one of cognition or knowing' (Lowe et al. 2007: 240).

In line with Lowe et al. (2007: 240) this research maintains that 'human systems have mind that we recognise as culture'. A human mental process of cognition or knowing implies that '[networks] have or even *are* "mind"' in that they can think, perceive, feel, and do' (ibid.), and this totally supports the research's proposition, noted in the literature, that *guanxi* interaction – a central characteristic of the pattern of social and business systems in China – should be analysed by emphasising socio-cultural dynamic processes rather than focusing on static and reductionist structures. This is because culture is seen as 'a process of the human mind of a human group (system)' (ibid.). Culture is 'the mental process that enables the embodiment of social pattern in social structure' (Lowe et al. 2007: 240). Further, due to the complexity of human systems, 'there is an inner world of concepts and symbols arising from human thought, consciousness and language', implying that human social systems exist 'in a symbolic domain' (Capra 1997: 206). As such, in a social symbolic domain, human minds or cultures – manifested in social rules and, in our case, *guanxi* norms, resources or characteristics – can change and are subject to interpretation through language and communication.

Capra (2002: 63) argues that 'the understanding of social reality is inextricably linked to that of reflective consciousness'. In Capra's latest work (2002), language and hermeneutics serve as a fourth criterion that converts the *triad* into a *kite*' (ibid.). As

²⁰ Lowe et al. (2007: 240) explain that 'relational patterns are dynamic non-physical processes rather than static, mechanistic sets of relations between components. [Patterns] are not conducive to structural, deductive and reductionist analysis because they are only understandable through holistic mapping'.

Capra argues, a full understanding of social phenomena must involve the integration of four perspectives – structure, pattern, process and meaning. The hermeneutic dimension expresses the view that ‘human language, being of a symbolic nature, centrally involves the communication of meaning and that human action flows from the meaning that we attribute to our surroundings’ (ibid. p.64). Capra uses ‘meaning, as a short-hand notation for the inner world of reflective consciousness, which contains a multitude of interrelated characteristics’ (ibid.). As Capra notes, ‘to be human is to exist in language...To be human is to be endowed with reflective consciousness: As we know how we know, we bring forth ourselves’ (Maturana & Valera 1987: 244; in Capra 1997: 282). Capra (2002: 45) explains that ‘the inner world of our reflective consciousness emerges in evolution together with language, and social reality’. However, the social dimension of reflective consciousness is usually ignored by research scientists (Capra 2002). To conclude, in line with Lowe et al.’s (2007: 242) paradigm mapping, postmodern contributions are placed on the side of the triangle or kite, which is located directly opposite to structure, because postmodern contributions replace a concentration on structure with a concentration on process, pattern and meaning. Lowe et al. (ibid.) note that postmodernists ‘deny that culture exists as an entity that can be comparatively examined’. Hence, culture is seen as ‘knowledge, information and communication that are constitutive of all human activity’ (ibid.).

The above discussion has enhanced the understanding of the different paradigms and philosophies that underpin studies of networks, interaction, and associated concepts. As Axelsson and Easton (1992: 85) state among others ‘it is only with change that network properties like connectedness and indirect relationships are manifest’. In line with this changing nature of networks, the metaphysics²¹ of change provide a basic set of the philosophical assumptions of this research, in terms of ontology and epistemology. Chia (1999) identifies two principal alternative cosmologies in management and network studies. The two alternative cosmologies ‘differ in their assumptions relating to ontology and epistemology and these differences create different worldviews of phenomena, such as networks’ (Lowe 2006: 2). The first view is ‘the dominant hegemonic view within the West that has been labelled the Parmenidean-inspired *metaphysics of substance*’ (Chia

²¹ Hornby’s dictionary defines *metaphysics* as ‘a branch of philosophy dealing with the nature of existence, truth and knowledge’ (1974: 541).

1999: 210; in Lowe 2006: 2). Lowe (2006: 2) metaphorically describes the metaphysics of substance as:

‘A *photographic* model of reality that promotes a positivist epistemology to objectively identify the substance or presence of phenomena...Phenomena, in modernism, ideally are represented by language prior to engagement through experience...Networks under this cosmology are things that exist through their explainable, objectively measurable, modelled and theorized manifestations’.

The second cosmology is more of a *cinematographic* model of reality (ibid.) that has been labelled *the metaphysics of change*²². For Chia (1999: 211), the metaphysics of change:

‘Acknowledges the existence of an external fluxing reality, but denies our ability to accurately represent such a reality using established symbols, concepts and categories precisely because reality is ever-changing and hence resistant to description in terms of fixed categories’.

In this postmodernist cosmology, ‘reality cannot be photographed by an epistemological camera that produces an exact representation of it... Epistemology is regarded as a *cinema-camera* that facilitates a production of an image of reality’ (Lowe 2006: 3). With a cinema-camera, we see the world – networks, cultures, relationships and knowledge – as invented through a cultural process of language via communication interactions, rather than discovered. The epistemology is one of social constructivism (Chia 1999: 210) and this associates a view of reality as an uncontrollable, nominalist process and with the ontology of ‘becoming’ (Chia 1999: 215). In this view of reality, ‘movement, process and emergence’ are emphasized over ‘stasis and certainty’ (Chia 1999: 215). Chia (1999: 210) argues that ‘typologies, taxonomies and classification schemas are convenient but essentially reductionistic methods for abstracting, fixing and labelling what is an intrinsically changing, fluxing and transforming social reality’. In line with Lowe (2006: 3), it is concluded that a processual, cinematographic approach to networks becomes ‘a promising alternative to the prevailing objectivist over-theorizing that is captive of networks as substance’. However, under a socio-ecology perspective of philosophy, a dynamic balance is healthy, as the opposing metaphysics are more or less useful in satisfying different research aims, and could even be combined in the same research approach or design.

²² In contrast to the Parmenidean-inspired metaphysics of substance, the metaphysics of change has its roots on Heraclitus, and his statement that ‘everything flows’.

The preceding philosophical discussion has implications for methodological choices and stresses the important role of the researcher. The discussion has taken into account various postmodern schools of thought (i.e. pragmatism, symbolic interactionism and social constructionism) as they are all deemed appropriate to study interactive and network-like phenomena, such as dynamic social processes in product development networks. In line with Lowe et al.'s (2007) paradigm mapping approach, which is based on Capra's triad, this research with its focus on relationships and networks should be positioned opposite to structure and alongside the pattern and process dimensions. If the triad becomes a kite, then this research should be positioned in the same location and alongside the 'meaning' dimension.

In terms of research methods, the aim is to gain in-depth insights of the processes by analysing the meaning of the participants' explanations. Nevertheless, the knowledge and experience of the researcher with regards to the research topic and the research context should be acknowledged. In terms of epistemic consciousness, the researcher should avoid single paradigm myopia and employ bricolage in the context of relationships and actionable outcomes. The literature review and existing knowledge of the field provide the main criteria of acceptance and the expected degree of interpretations. Various methods and tools, such as network maps and narrative images, are combined in the research process of data generation during open-ended interviews with participants. Further, it should be acknowledged by the researcher that participants' perceptions generated with regards to specific relationships, cannot absolutely reflect reality and that stories elicited by participants cannot be complete. Hence, an interaction process between the researcher and participants directs discussion during interviews. Therefore, emergent topics are also discussed based on an interconnected exchange of ideas by both participants and the researcher.

3.3 Is There a Universal Theory for Network Studies?

This research takes an IMP perspective and views markets as networks. In contrast to the markets-as-hierarchies approach, which is based on classical marketing and economic theories and which therefore assumes an individual self – an ego-centric approach, the markets-as-networks approach assumes interdependency, complexity, interaction and change and is based on an eco-centric approach by putting the network at its centre. Although the above mentioned assumptions may serve as its foundations, it is argued that for an eco-centric market-as-networks approach there can be achieved no conclusion, in terms of a universal and standardised theory. For instance, at the 24th IMP Conference (2008), there was an effort by Professor Jansson to position the IMP theory as a marketing theory. However, Ivan Snehota, one of the co-founders of the IMP approach, responded to Jansson's argument by stating that: 'IMP cannot be seen as a theory... IMP is a set of empirical observations; explanations at the time'. In the question: Should it go close or should it be integrated to marketing theory? Snehota noted: 'What is marketing theory? It is stupid... All theories should speak about phenomena'. It can be inferred from the above that since there are no standardised phenomena then there can be no standardised theory and thus a standardised theory might be something stupid. Especially when assuming change and complexity, manifesting in characteristics of interdependency, interaction, flexibility, adaptability, asymmetry, and diversity, a universal set of conclusions cannot be achieved.

The affinity between networks and complexity²³ has been noted in the literature (Capra 2002). Therefore, a network theory can be better positioned close to complexity theory and opposite to marketing theory. Hence, for this exploratory research, the role of theory, and more specifically the combination of theories that make up the theoretical framework, is to provide a heuristic map that guides the researcher all the way through the research process and research outcomes. In other words, this research throughout all its sections tries to define somehow relevant constructs and loose interrelationships

²³ Capra (2002: 236; in Gummesson 2006: 177) has noted the affinity between complexity and networks: '...complexity is derived etymologically from the Latin verb *complecti* (to twine together) and the noun *complexus* (network). Thus, Gummesson (2006: 177) influenced by Capra (1997; 2002), concludes that 'the idea of nonlinearity – a network of intertwined strands – lies in the very root of the meaning of complexity'.

among them. The aim is to provide various explanations and scenarios of events and to facilitate thinking and discussion about them.

Apart from marketing theory and a standardised IMP-based theory for studies on business networks that are challenged in the words of Snehota, who represents an IMP world-view, scholars in economic sciences also agree that there is no standardised economic theory that explains the process of change. For instance, North (2005), in his book, 'Understanding the Process of Economic Change', notes that the neoclassical theory of economics cannot explain the process of economic change. North (2005: vii) notes that 'standard theories are of little help in this context' and suggests that understanding 'economic, political, and social change [one cannot grasp change in only one without others] requires a fundamental recasting of the way we think'. Within the economic sciences, North, a Nobel winner in Economic Sciences, argues that one cannot develop a dynamic theory of change. However, North argues that 'an understanding of the underlying process of change, can enormously improve the usefulness of social science theory in confronting human problems' (ibid.).

In order to understand the process of change, one should consider the way humans understand and act upon that understanding of social change. The main scope of North's study²⁴ is to explain economic change through understanding change in human societies, involving political and cultural changes. In order to understand how human beings understand their environment, North argues that particular attention to language is required. According to North, language or mental constructs are derived from experiences, contemporary and historical. The attention should be on human learning, taking into account the cumulative experiences of past generations, and on 'what is learned and how is shared among the members of a society and on the incremental process by which beliefs and preferences change' (North 2005: viii). The above views can be linked to the premises of the social ecology paradigm of philosophy (Capra 1997; 2002), where the process of life or the process of cognition is vital to understanding the

²⁴ Important to note that Douglas North's study has as its central focus the institutions where individuals act together. 'Human evolution is guided by the perceptions of players; choices and decisions – are made in the light of those perceptions with the intent of producing outcomes downstream that will reduce uncertainty of the organisations – political, economic and social – in pursuit of their goals' (North 2005: viii).

evolution of living systems, such as societies. The key to understand this process is language and meaning that manifest in interactive communication processes. Without understanding language and meaning (reflective consciousness) all living systems, such as human societies, can never be comprehended.

For Gummesson ([2004] 2006: 172), society is ‘a network of relationships within which we interact; and so is business’. By ‘reviewing individual links and nodes we aim for complexity and context of the whole network, recognising that a network is something other than the linear sum of its parts’ (Gummesson 2006: 176). For North (2005: viii), economic change is ‘a deliberate process shaped by the perceptions of the actors about the consequences of their actions’. Whatever it is economic, social or political change, an understanding of the process is required. To understand complexity, and change in networks, researchers need to look for in-depth insights of various relationship patterns and actors’ perceptions of their relationships as well as relationships of others. In-depth insights can be generated by looking within these relationships for the meaning actors give to situations, because that meaning forms the basis of their actions. A focus on analysing the interpretations of meaning actors give to back up their actions and reactions with regards to phenomena, such as co-development processes of products and technologies in business networks, has crucial implications to the research process and methodological choices. Inter-subjective actors’ perceptions should be elaborated and analysed during the interviews, as it is discussed later on. Next, the IMP approach to networks and its model of interaction is discussed alongside its basic components.

3.4 The IMP Approach to Network Studies

The markets-as-networks approach to research emphasises process, change and complexity by placing the network at its centre. It views business phenomena through an interdependency and interactive lens. As has been noted, the genesis of the business network approach lies in the publications dealing with buyer-supplier relationships in industrial markets and is classified under the interaction approach. The interaction approach represents a different tradition of research. In the words of Araujo and Easton (1996: 99), it is ‘a novel approach that has been gradually developed without a clear disciplinary home and with its descriptive and explanatory, rather than a prescriptive, managerial focus’. Therefore, there are important ‘cross-references to other approaches’ (social exchange theory, dyadic relationships, internationalization) and ‘although it can be constructed as a network approach to IMP, its scope has broadened to encompass all forms of interdependencies and relationships in organisational markets’ (ibid.). It should also be noted that it has been developed ‘in parallel with, rather than in response to, other approaches such as transaction cost economics, relational contracting, and inter-organisational theory’ (ibid.).

A concept of connectedness of exchange relationships moves the focus from the dyadic analysis to a focus on network effects. Hakansson and Snehota (1995: 19) state that ‘generalized connectedness of business relationships implies the existence of an aggregated structure, a form of organisation we have chosen to qualify as a network’. Hakansson (1987; in Araujo & Easton 1996: 101) states that ‘the network is the framework within which the interaction takes place but is also the result of the interaction... Thus it is affected by the exchanges between the actors’. The focus is on relating within boundaries that do not necessarily have to be defined in competitive terms (Huemer et al. 2004: 68). The IMP approach accepts that any firm can be analysed from a network perspective (Easton 1992). It is suggested that an actor’s understanding of its role in a network is not best achieved by regarding the world as a set of competitors, suppliers and customers. Rather, actors should value interaction, as it provides the means through which an actor can understand how the network functions from the perspective of the others and its own (Hakansson & Snehota 1995; Hakansson & Ford 2002).

Gadde and Hakansson (2001) also argue that the substantial point in network thinking is that at least some of the ‘others’ need to be included. This means thinking in terms of

activity patterns, resource constellations, and actor bonds, and of how single activities, single resources and single relationships are developed within a larger network structure over time. By including history and expectations in a variety of relationships, network thinking goes beyond structures. As Strauss et al. (1963; in Bryman 1988) suggest, the organisation's structure is a 'negotiated order'. This means that business actors produce their own structure, which they negotiate and which is in a constant state of re-negotiation (in Bryman 1988: 102-3). Johanson and Mattsson (1992) suggest that actors may view the network, its boundaries and the nature of its exchange relationships in quite different ways. Most importantly, the interaction approach to networks demonstrates the existence of complex and multilevel patterns of exchange surrounding each transaction episode in a business relationship. According to Hakansson (1982) 'the embeddedness of transaction episodes creates a relationship atmosphere... characterized by variables such as conflict, cooperation, power, and dependence that affect and are affected by each transaction episode' (Araujo & Easton 1996: 100). Another variable is diversity, which implies flexibility and often refers to weak relationship ties. Most importantly, as has been noted, the interaction processes are particularly important for cooperation, learning and adaptations.

The above mentioned premises of the interaction approach, or better put it, a combination of these, adhere to the philosophical assumptions of the social ecology paradigm; namely, its basic principles of interdependence, complexity, adaptation, cooperation, flexibility and diversity (Capra 1997: 290). Altogether, they reflect the major shifts of perceptions and of values, and they further imply the need for the application of more dialectic and synthetic methodologies, which should be employed to capture and analyse relationship evolution and network dynamics. Therefore, there is a clear connection between the philosophical assumptions and the interaction approach to network studies. Within the IMP-based markets-as-networks approach, the characteristics of interdependence and interaction are usually captured by the ARA framework (Hakansson & Snehota 1995). The ARA model of interaction provides an analytical tool that combines three interacted dimensions – actor bonds, resource ties, and activity links – to examine complex phenomena in business networks.

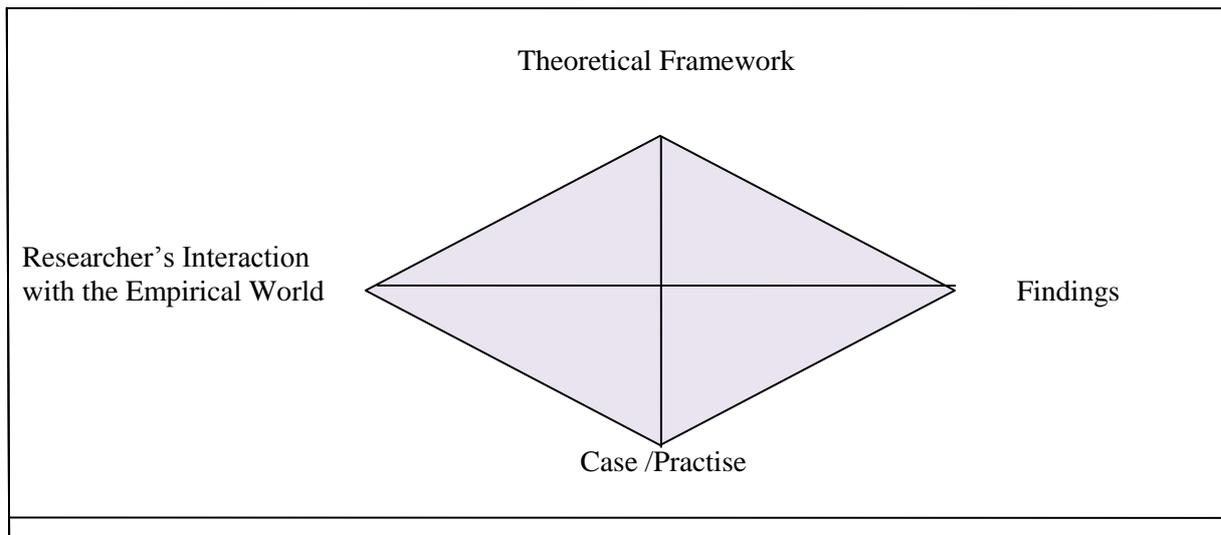
However, in line with literature findings, the current research effort aims to integrate the IMP-based business network with the guanxi network approach via enriching the

interaction concept with lessons from interpersonal relationships in Chinese business networks. In other words, the main hypothesis formed, signifies the link between the IMP interaction approach to business networks and the guanxi interaction approach when analysing interactive relationships in product development networks involving business actors in China. Based on the research implications of the literature review, which proposes a theoretical framework for guanxi interpersonal interaction in business networks, the empirical research presented in a following chapter is used to establish its components and parameters. Hence, a guanxi interaction approach to business networks is being conceptually developed to accommodate the limitations of the industrial network theory of the IMP group, when it is applied to the Chinese context. This is the main theoretical contribution of this research as it enriches the IMP paradigm and its interaction premise by incorporating concepts relevant to the Chinese socio-cultural environment, such as guanxi and associated concepts. The development lies within the actor dimension of the ARA model, which by definition is interrelated to and mainly influences the resource and activity dimensions. As a result, the new development broadens the geographical proximity and deepens the theoretical base of the industrial network theory and its main application tool. Methodologically speaking, the theoretical development is primarily based on a systematic combining case study research approach, which is discussed next.

3.5 Case Study Research and Systematic Combining

The research process is characterised by ‘a continuous movement between an empirical world and a model world’ (Dubois & Gadde 2002: 554). According to the two authors, ‘systematic combining is a process where the theoretical framework, empirical fieldwork and case analysis evolve simultaneously, and it is particular useful for theory development’ (ibid.). The interrelationships between the components of the case study, namely the theoretical framework, the researcher’s interaction with the empirical world, the rhetoric of management and business studies, and the context of the case study, are depicted in Figure 3.1, below. Systematic combining²⁵ is described as ‘a non-linear, path-dependent process of combining efforts with the ultimate objective of matching theory and reality’ (Dubois & Gadde 2002: 556). As Olsen (2006: 20) explains, a systematic combining approach implies that ‘we start from the particular [by identifying a particular phenomenon]... we then try to account for that phenomenon by relating it to broader concepts’ (ibid.). The purpose is to ‘go beyond the data itself and to locate it in explanatory or interpretive frameworks’ (Coffey & Atkinson 1996; in Olsen 2006: 20). Drawing from Dubois & Gadde (2002), Olsen (2006: 22) states that ‘empirical observations inspire changes of the view of theory and vice versa’.

Figure 3.1: An Abductive Diamond for Case Study Research



Source: Adapted from Dubois A. and Gadde L-E. (2002)

²⁵ An important point is that ‘in systematic combining the role of the theoretical framework is different from both induction and deduction’ (Dubois & Gadde 2002: 556).

Dubois and Gadde (2002) argue that systematic combining is a particularly useful approach for theory development, in terms of research process. Systematic combining is an argument for a stronger reliance on theory than it is suggested by true induction. However, it is even more distant from deduction. Although the authors have been inspired by abduction (Pierce 1931; in Dubois & Gadde 2002: 555) to propose systematic combining as a case study approach, the distinction between systematic combining and abductive case study research is blurred. Although Dubois and Gadde (2002) separate abduction from induction, it is not clear where the boundaries between the two can be drawn. Pierce, one of the founders of an abductive enquiry, emphasised the absence of theory. Thus, Dubois and Gadde's approach is better classified as systematic combining rather than an abductive approach. Hence, this research views systematic combining as closely related to semi-deductive approaches which tend to be more explorative rather than systematic, such as grounded theorising.

In line with Dubois and Gadde (2002) and under a systematic combining approach to case study research, it is considered appropriate here to briefly explain how the research focus has evolved since the initial description of the research problem, and how the shift of focus is associated with changes in the theoretical framework. Initially, the main research problem was to understand how to manage inter-organisational relationships in the context of product development networks involving Western and Chinese business actors. However, since the pilot case study, that examined this business phenomenon, it has been realised that in order to enhance understanding of the main research problem, emergent research problems had to be investigated. In particular, how companies in China operate and how companies in China manage their own supplier relationships alongside the relationships with Western buyers is an emergent research issue that implied changes in terms of theoretical framework as well as change of methodological plans, for instance, in terms of selecting the right cases to be studied.

Case study research offers an open-ended approach (Dubois & Araujo 2004; in Welch et al. 2007). Dubois and Araujo (2004) argue that case study research is 'the primary tool' used in the research field of industrial networks. The two authors agree that is neither deduction nor induction that captures the process of theory development in case study research (in Welch et al. 2007: 7). Case study research requires 'a flexible, emergent research design: to use a concept introduced by Ragin (1992); the process of doing case

research is about deciding what the case is a case of' (Welch et al. 2007: 7-8). An argument against case study research design is the limited scientific generalisation that it may offer. For example, Weick (1969: 18; in Dubois & Gadde 2002: 554) initially noted that case studies are too situation-specific and not appropriate for generalisation. However, in the second edition of the same book, Weick concludes that case studies 'are better tools than first imagined' (Weick 1979: 37; in Dubois & Gadde 2002: 554) and recommends that researchers should 'try harder to make interpretations specific to situations' (ibid.). In this regards, Stake (1978) refers to naturalistic generalisation or particularization that are achieved in case study research. In contrast to scholarly and scientific generalisations as Stake explains (1978: 6), 'naturalistic generalisations develop within a person as a product of experience'. Stake argues that the characteristics of case study research design are 'more suited to expansionist than reductionist pursuits' (ibid., p.7) and the best use of case study research design is 'for adding to existing experience and humanistic understanding' (ibid.).

Case study research design plays a significant role in enabling interpretations of findings and comparisons between empirical observations and theoretical concepts. Any finding or conclusion in a case study is likely to be 'much more convincing and accurate if it is based on several different sources of information' (Yin 1994: 92; in Dubois & Gadde 2002: 556). Consequently, deep probing case studies tend to use a multitude of data sources. Dubois and Gadde (2002: 559) argue that 'in deep probing case studies, theory generation and confirmation are inseparable'. It is also maintained that comparative case study research is useful in teasing out the parameters of a field which can be done by comparing extreme cases. In multiple case study research designs, although each case study might be presented and analysed separately, case study comparison is considered fruitful. The same is the case for unique or single case studies where comparison of sub-cases can take place. As Eisenhardt (1989: 546; in Dubois & Gadde 2002: 556) notes, 'creative insights often arise from the juxtaposition of contradictory or paradoxical evidence... The process of reconciling these contradictions forces individuals to reframe perceptions into a new gestalt'. Eisenhardt (ibid., p. 559) argues that 'parsimony is the hallmark of case study quality'. Thus, to obtain parsimony a researcher should be selective in terms of analysis. Lastly, Dubois and Gadde (2002: 560) suggest that 'if more of the processes of how [researchers] have learned were revealed to the reader, learning in the research society as a whole will be improved'.

Case study research is particularly appropriate for ‘sticky, practice-based problems where the experience of the actors is important and the context of action is critical’ (Bohoma 1983; in Cepeda & Martin 2005: 852). Drawing primarily from anthropology, phenomenology and hermeneutic interpretivism, not overlooking postmodernism or deconstructionism, Klein and Myers (1999) propose a worth mentioning set of principles that can be used to evaluate interpretive field research. Klein and Myers (1999: 69) note that interpretive field studies include in-depth case study research. The following is quoted from a table that sums up the two authors’ set of principles (Klein & Myers 1999: 72):

- *The fundamental principle of the hermeneutic circle* suggests that all human understanding is achieved by iterating between considering the interdependent meaning of the parts and the whole that they form.
- *The principle of contextualisation* requires critical reflection of the social and historical background of the research setting, so that the intended audience can see how the current situation under investigation emerged.
- *The principle of interaction between the researchers and the subjects* requires critical reflection on how the research materials (or ‘data’) were socially constructed through the interaction between the researchers and the participants.
- *The principle of dialogical reasoning* requires sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings with subsequent cycles of revision.
- *The principle of multiple interpretations* requires sensitivity to possible differences in interpretations among the participants as are typically expressed in multiple narratives or stories of the same sequence of events under study.
- *The principle of suspicion* requires sensitivity to possible biases and systematic distortions in the narratives collected from the participants.

In their review²⁶ of case study research design and choice of methodological techniques, Welch et al. (2007) stress the diversity of case study approaches in the field. Their findings support Dubois and Araujo (2004: 207), who argue that ‘understanding research methods in industrial networks means coming to terms with case study; a *methodology of choice*’ (in Welch et al. 2007: 1). Easton (1995: 480; in Welch et al. 2007: 2) argues that ‘because of the richness of the picture produced by case study research, the approach is suitable to handle the complexity of network links among actors and can be used to trace the development of network changes over time’. Welch et al. (2007), based on Halinen and Tornroos (2005), who drew basically from Easton (1995), summarise four challenges associated with the application of case studies to network research: network boundaries,

²⁶ Welch, Piekkari and Plakoyiannaki (2007: 1) in their ‘methodological’ case study reviewed ‘the use of the case study approach in industrial marketing journals over a ten-year period’ (1997-2006).

complexity, the time dimension and case comparisons. Network boundaries are linked to the challenges researchers face ‘in defining the boundaries around what constitutes the case’ (Welch et al. 2007: 2). Similarly, ‘network complexity and temporality raise practical difficulties as regards studying networks holistically and separating contemporaneous from historical events in a network, respectively’ (ibid.). Lastly, context specificity renders case studies unique and thus case comparison is difficult (ibid.).

As Welch et al. (2007: 7) conclude the ‘dominant approaches on case study research in business (e.g. Yin 2003; Eisenhardt 1989) take a positivist approach to case studies’. In contrast to a positivist approach, Easton (1998) advocates a critical realist²⁷ approach to case research and Gummesson (2003) an interpretive²⁸ approach. Welch et al.’s (2007) literature review on methodology concludes that there is no best practice for case study research. They argue that ‘notions of good case study research are very dependent on the author’s philosophical assumptions and understanding of the relationship between theory and empirical observation’ (ibid. p. 9). However, in methodological terms, the authors found that ‘the most common case study in the ten-year period across three journals²⁹ was an exploratory case study largely based on interview data’ (Welch et al. 2007: 15). Further, in terms of best practices, Brennan and Turnbull (1999) who investigated adaptive behaviour in buyer-supplier relationships, emphasize the importance of examining both sides of a business relationship. However, it should be mentioned that research by Brennan and Wilson (2007; 2008) investigating Sino-UK business relationships does not investigate the Chinese side, which clearly indicates difficulties of securing access and the high costs involved in cross-cultural research.

Lastly, based on Capra’s schema with regards to all living organisms, this research interestingly suggests that a case study approach to research can be viewed as a living

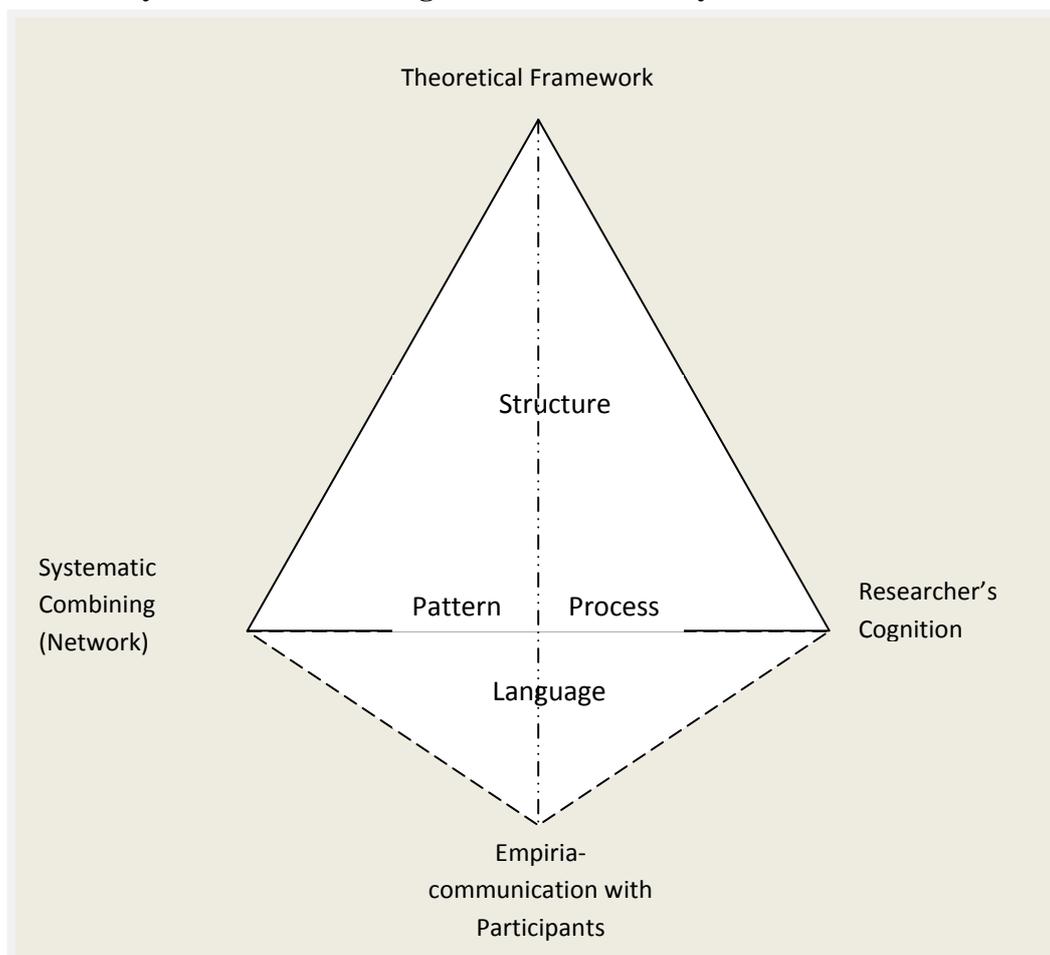
²⁷ ‘Realism and case research are well suited, given that realists do not hold that knowledge is the quest for universal, generalisable laws, but rather believe that causal mechanisms are fundamentally contingent, and their outcomes may vary depending on how causal powers are combined in any given situation’ (Easton 1998: in Welch et al. 2007: 7).

²⁸ Gummesson (2003; in Welch et al. 2007: 2) argues that ‘in fact all research is interpretive, and that all layers of the research (the philosophical foundation, data generation and analysis, and the presentation of results) ‘edifice’; are infused with research subjectivity, inter-subjectivity and the interaction between the researcher and the researched’.

²⁹ The three journals are: *Industrial Marketing Management*, *Journal of Business and Industrial Marketing*, and *Journal of Business-to-Business Marketing*.

organism itself. This ‘new’ case study research approach incorporates Capra’s premises to map the components of all living systems and is basically reproduced from Dubois and Gadde’s systematic combining case study approach, presented above. Using Capra’s terminology, it is initially assumed that for any case study, the theoretical framework represents the structure. In line with Dubois and Gadde (2002), the pattern is the systematic combining among its elements, and the process is the researcher’s cognition or understanding of the meaning drawn through interaction with the participants. A case study may continue to ‘live’ even after its completion due to its associations and interconnections to other studies and disciplines. The kite – figure 3.2 – depicts case study research as a living system. In other words, case study research is seen as an organism; one with a network pattern (systematic combining), which is continually embodied in the structure (theoretical framework) through a continuous process that is manifested in language (researcher’s interaction with the participants).

Figure 3.2: A Systematic Combining Kite for Case Study Research



Source: Developed by the researcher

3.6 Alternative Methodological Choices

This research's tight and evolving theoretical framework is developed by employing network-like methodological approaches, such as narratives and the interpretation of meaning and sense-making, through words and graphs. Based on pragmatism which by principle is not committed to any one system of philosophy and reality, researchers are free to choose the methods that best fit with their research interests and aims. According to Easton (1995), the research problem guides methodological choices. For this research the alternative epistemological approaches, such as narrative and discourse analysis for network studies, are discussed. All methodological approaches have a common interest in language and the meaning that can be derived from language, which in turn can be related to theoretical concepts discussed in the literature in order to enhance understanding of complex phenomena, such as interaction in product development networks. The methodological tools and techniques employed to generate data as well as to analyse data and present findings are discussed in the next section.

For Gummesson (2006: 169), 'a qualitative approach to research is required, allowing researchers to deal with complexity, context and persona³⁰ and their multitude of factors, relationships and fuzzy phenomena'. Gummesson (2006: 170) argues that 'reality is phenomenological, and science becomes a disciplined examination of human experience and consciousness'. However, Gummesson (2006: 175) uses yin and yang³¹ as a metaphor to explain methodological choices and recognises that 'all research is interpretive and all interpretation is a combination of the systematic and objective as well as the intuitive, emotional and subjective'. Gummesson (2003: 482) notes that 'the scientific tradition specifically concerned with interpretation is called hermeneutics'. As has been noted, meaning or reflective consciousness is the essence for the evolution of all

³⁰ The concept of persona is used to 'represent human aspects, individual personalities, collective consciousness, roles, and research environment. Examples of subjective and inter-subjective influences are intelligence and emotional quotas, personal ambition and drive, intuition, risk-inclination, greed, honesty, power, social skills, personal preferences and mood swings' (See Gummesson 2000: 72, 194; in Gummesson 2006: 173).

³¹ 'Common sense and its brothers and sisters, intuition, sound judgement, instinct, experience, wisdom, insights, and tacit knowing are part of the analytic process and they are there whether we approve of their company or not... [However] the selection of a problem, its variables and the design and purpose of a research paradigm – that is, the generation of new theory and a basis for propositions – is subjective' (Gummesson 2006: 175).

living systems (Capra 1997). Gummesson (2003: 484) notes that ‘hermeneutics wants to help us find meaning... and it is also concerned with the interpretation of non-lingual expressions of human life, where the researcher tries to translate tacit knowledge into words’. In the extension of interpretation, hermeneutic processes embrace pre-understanding, understanding and explanation³² (ibid.). Gummesson (2003: 485) stresses that research is a dynamic process and describes the research circle as the ‘hermeneutic spiral’. The hermeneutic spiral is closely linked to the systematic combining approach for case study research developed by Dubois and Gadde (2002), as it describes the research process as ‘an upward *spiral* in which we interpret and re-interpret data in a never-ending trial-and-error process of both theory generation and theory testing’ (Gummesson 2003: 485).

In terms of methodological choice, a narrative approach is appropriate in order to unveil action-based knowledge and experience of business actors, which in turn will inform the theoretical framework in use. This research maintains that narrative methods assist with the movement from the rhetoric of organisation theory, international business, and management studies to practice and action research in business networks and vice versa. Narrative research ‘is concerned with the ways in which social actors produce, represent and contextualise experiences through narratives’ (Coffey & Atkinson 1996: 54; in Gummesson 2003: 490). Gummesson (ibid.) notes that:

‘Narratives are accounts – stories – about experiences, and they can take many forms... There is usually an initial state of affairs, then actions and events occur and there is perhaps a plot, and there is an end, at least a temporary end and more rarely the definitive *and they lived happily ever after*’.

The present study sees narration as a mode of communication. Based on the conception for the human being of ‘Homo Narrans’ (Fisher 1984), Czarniawska (2004: 10) points out that ‘from this emerged an attempt to combine the narrative and paradigmatic modes of knowing in what she calls a narrative paradigm of communication’.

³² Pre-understanding is what we know about the phenomenon of study when we start a research expedition; understanding is the improved knowledge we come up with as a result of our research. Explanation is usually claimed to require unambiguous cause and effect relationships established through numbers, but as business life is in many ways ambiguous, softer and more transient explanations are required in practice.

Let's remember here that 'knowledge is disseminated through stories, jokes and anecdotes, which enlighten a shared experience' (Swan et al. 2002: 131). Brown and Duguid (1991) stress the importance of storytelling for knowledge transfer and this view has important methodological implications. Swan et al. (2002: 121) argue that 'stories link information with interest, values and relevance... helping us to grasp the tacit nature of some of the knowledge being communicated'. This way of communicating can be comprehended by using narrative methods and techniques appropriate for communication and organisational research (Boje 2001). Polkinghorne (1987: 21) argues that 'narratives exhibit an explanation instead of demonstrating it' (in Czarniawska 2004: 8). Goody (1986; in Czarniawska 2004: 17) claims that 'a narrative is understood as a spoken or written text giving an account of an event/action or series of events/actions, chronologically connected'. MacIntyre (in Czarniawska 2004: 11) notes that 'narrative is the main form of social life because it is the main device for making sense of social action'.

Alfred Schutz (1973) argues that 'it is impossible to understand human conduct while ignoring its intentions and it is impossible to understand human intentions while ignoring the settings in which they make sense' (in Czarniawska 2004: 4). Tsoukas and Hatch (2001: 994) note that 'historical know-how cannot be provided by propositionally organised renderings of human experience in organisational settings; instead it requires a contextually sensitive narrative understanding; it needs a story with a plot'. The two authors also argue that 'narrative organisational knowledge provides a mode of thinking which takes into account the features of practical reasoning and historically based know-how'. 'Narrative is factually indifferent but temporally sensitive: its power as a story is determined by the sequence of its constituents, rather than the truth or falsity of any of them' (Czarniawska 1998; in Tsoukas & Hatch 2001: 1004). Finally, 'all forms of human communication need to be seen fundamentally as stories' (Fisher 1987: xiii; in Czarniawska 2004: 11). But, what exactly is a story? To answer this, Boje (2001: 2) quotes in his book, Ricouer's (1984: 150) definition of story:

'A story describes a sequence of actions and experiences done or undergone by a certain number of people, whether real or imaginary. These people are presented either in situations that change or as reacting to such change. In turn, these changes reveal hidden aspects of the situation and the people involved, and engender a new predicament which calls for thought, action or both'.

Tsoukas and Hatch (2001) distinguish between two schools of thought that explain how social systems and business organisations in particular are thought to be organised. The logico-scientific mode of thinking is ‘sociological-historical-anthropological in orientation; it seeks to produce accounts explaining the specific features of organisations’ (Tsoukas & Hatch 2001: 980). The second school of thought is referred as cybernetic-systemic. Under this approach, an organisation is conceived much more broadly: ‘it is thought to be a feature of the cosmos at large, not just of social collectivities’ (Capra 1997; in Tsoukas & Hatch 2001: 980). Tsoukas and Hatch (2001: 982) quote Burner (1986) in order to present the two modes of thought: ‘logico-scientific’ (or paradigmatic) and ‘narrative’. Burner (1986: 11-12; in Tsoukas & Hatch 2001) explains that:

‘The types of causality implied in the two modes are palpably different. The term *then* functions differently in the logical-scientific proposition “if x, then y” and in the narrative *recit* “the king died, and then the queen died”. One leads to a search from universal truth conditions, the other for likely particular connections between two events – mortal grief, suicide, four play’ [original italics].

Three narrative approaches for organisation studies can be distinguished: narrating organisations, collecting stories, and organising as narration’ (Czarniawska (1997a, 1997b, 1998; in Tsoukas & Hatch 2001: 981). Tsoukas and Hatch (ibid.) summarize that the narrating organisations approach consists of ‘telling about organisations using a narrative structure (e.g. a sequence of events or plot)’. Collecting stories focuses on ‘storytelling within organisations as an approach to capturing the narrative mode of meaning construction’ (Tsoukas & Hatch 2001: 985). For organising as narration an interpretive approach is appropriate, which ‘further[s] our understanding of the complex and unpredictable – the major concern of current organisation studies’ (ibid.). All mentioned narrative approaches are more or less used in this research.

As this research aims to address interaction in specific socio-cultural contexts and how interaction enables or distorts knowledge sharing and creation, specific relationships within networks and the dynamics of cross-cultural networks are examined in order to identify and analyse differences existing among business actors and their inter-subjective perceptions. Lowe (2006) suggests that ‘discourse analysis provides an example of practical research implications consonant with adoption of an ‘epistemic’ paradigm’ (2006: 16). Lowe (2006: 14-5) argues that:

‘The adoption of a more nominalist ontology means that organisation is conceived as a pattern of social relationships and meanings generated and sustained by language, symbols, myths, stories, rituals and other “processes” as forms of human

imagination...The focus upon the imaginative, subjective and ideational domain makes ideographic more relevant than nomothetic methodology and reduces the relevance of positivist epistemology’.

Scollon (in Wodak & Meyer 2001: 1) argues that ‘social problems are largely constituted in discourse’ and discourse analysis ‘focuses on how ideas or truths are socially constructed or *made* rather than *found* by human beings’ (Lowe (2006: 18). Similar to hermeneutics and narrative approaches to management and organisational research, within discourse analysis ‘language is generally accepted to be the principal medium through which human subjective understanding of the world is mediated’ (ibid.). Critical Discourse Analysis (CDA) is ‘a program of social analysis that critically analyses discourse, that is to say language in use, as a means of addressing problems of social change’ (Scollon; in Wodak & Meyer 2001: 1). Scollon argues that actions are accompanied by language and vice versa, and thus there are major limitations to CDA in its efforts to establish the links between social actions and discourses (ibid.). Scollon (ibid.) suggests Mediated Discourse Analysis (MDA) to tackle such problems.

‘[MDA] shares the goals of CDA, but reformulates the object of study from a focus on the discourses of social issues to a focus on the social actions through which social actors produce the histories and habitus of their daily lives which is the ground on which society is produced and reproduced’.

Scollon (ibid. p. 31) argues that ‘the MDA takes the meaning of discourse in the broadest sense of whole systems of the possibility of producing meanings, with or without language’. Hence, ‘texts which are used within mediated actions are significant, but are often not even central in the production of mediated action by social actors’ (ibid. p. 31). According to Scollon (ibid. p. 31), MDA is based on the following methodological assumptions: ‘Social action takes place in real time... [And] participant-observation is the primary research tool for eliciting data needed for a MDA’. For instance, what is the action when we want to examine the exchange of knowledge? Following Lemke (1999) knowledge sharing could be viewed at ‘multiple levels simultaneously’ (in Scollon 2001; in Wodak & Meyer 2001: 17). According to Lemke, ‘at one level is constituted by a level of mediated actions... Each of the actions at one level is constituted by lower level actions and in turn constitutes or at least is constrained by actions at a higher level’ (ibid.). As Scollon (ibid. p. 18) goes on to argue, ‘within MDA a social action is meaningful – it makes sense – as a constituent action of higher level action and at the same time makes sense of lower level actions’. Therefore, the primary methodological concern of MDA is to ‘identify the levels at which the action upon which we are focusing

is operating for the participants and within our analysis' (ibid.). According to Scollon (ibid. 31), 'the meaning of any real-time action is predicated on the history of that action in the habitus of the participants and in the social formations which the action instantiates'.

Although, MDA provides an alternative network-like methodology, its primary data collection method is participant observation, there was no opportunity to access a Chinese based company for *in situ* observations. Instead, previously mentioned narrative approaches are employed in both data collection and analysis phases of this research. As Gummesson (2003: 491) argues, 'by presenting research as a story, we avoid the fragmentation that is inevitable when we break down a statement in concepts and categories'. To conclude, in line with Gummesson (ibid.),

'The approaches suggested above represent various interactions, such as between the researcher and the object of study and its actors; between our consciousness and qualities of our inner self; between substantive data and general concepts; between the parts and the whole; between words, numbers, body language and tacit language; and concurrent, non-linear and dynamic interaction between data generation, analysis, interpretation and conclusions'.

3.7 Choice of Data Generation

This research with a focus on complex interactive relationships within product development networks seeks to understand how an actor relates to its dynamic network context and its changing interfaces with counterparts (e.g. Hakansson & Ford 2002). The aim of multiple case studies is to identify and examine, through open-ended interviews, various relationship patterns in different network contexts. Archives relevant to specific product or technology development projects under examination, such as email communication during projects or contractual arrangements with suppliers are selectively collected. Here, it should be noted that a methodological aim is to identify and analyse perceptions and notions of both sides of a business relationship as well as actors' perceptions with regards to other business relationships, such as a buyer's or supplier's relationship with a second-tier supplier. In terms of methodological orientation, this research agrees with Gummesson (2006: 176) who notes that 'network theory is open to both qualitative and quantitative analysis... [And] can be applied in a verbal discourse, in graphic presentation or with the aid of mathematical forms', such as social network analysis. However, the limitations of quantitative techniques to readily analyse critical events of the past, business actors' perceptions, and future expectations are exposed in the first case study, where social network analysis (SNA) is employed.

Not surprisingly, Yang et al.'s³³ (2006: 601) comprehensive review on research methodologies in international business reveals that positivist techniques, such as mail questionnaire surveys, dominate the field in terms of empirical research. They found that around two-thirds of the studies used a one-country sample³⁴ indicating that only a small portion in international business research has a cross-cultural orientation. A one-country sample indicates that 'researchers lack either financial support or international experience' (Yang et al. 2006: 614) and implies major limitations in terms of analysis and findings. It is argued that 'researchers using data collected from multiple countries could control unmatched factors, increase validity, and rule out alternative explanations' (ibid. p. 613). Further, the authors found that less than 10 percent of the studies surveyed used personal interviews as a mode of collecting data (ibid. p. 606). However, Welch et al.'s

³³ Yang et al. (2006) surveyed 1296 empirical articles published in six leading international business journals from 1992 to 2003 with a focus on research methodologies.

³⁴ Yang et al.'s (2006) review concludes that ninety percent of the one-country sample was from Western countries.

(2007) review of case study methodologies contradicts Yang et al.'s (2006) findings by noting that in-depth interviews is the most commonly used technique of data collection. Overall, the current study corrects for the above mentioned biases by using qualitative techniques. In particular, in-depth interviews are conducted to examine both sides of cross-cultural business relationships when this is possible and where access is granted without any possibility of damaging any of the actors' relationships examined or negatively influencing other relationships within the larger network arena. The majority of this study's sample is composed of business actors based in China, and as it is discussed in a later section, a snowball or convenience sampling method is used to identify participants.

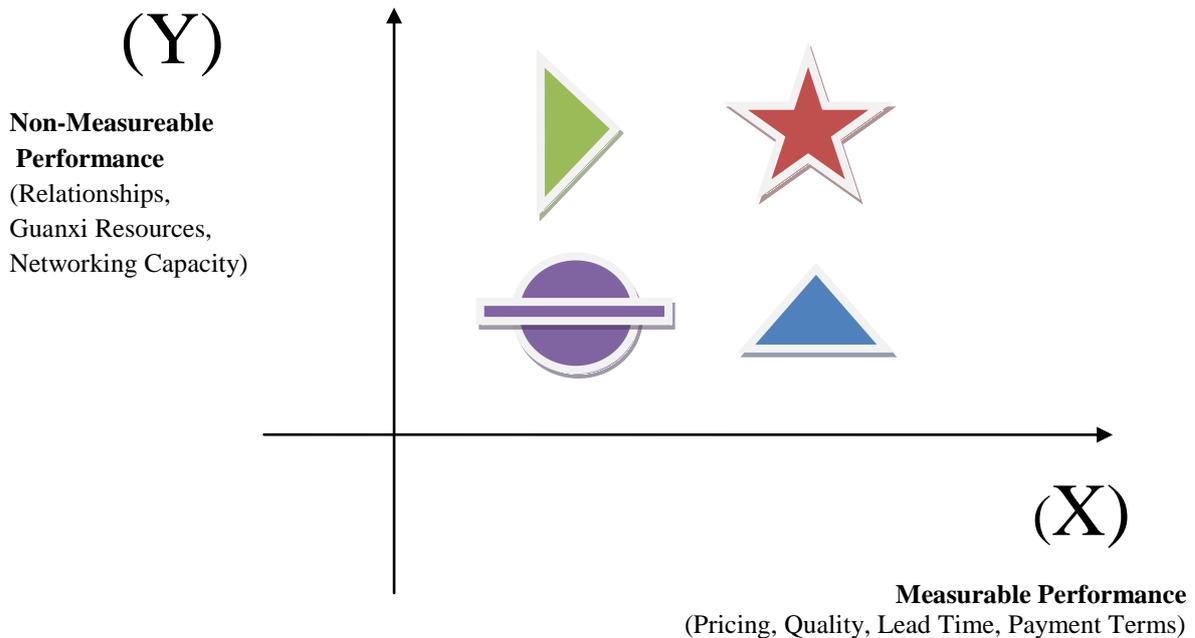
Instead of data collection, the term data generation is used (e.g. Gummesson 2003: 486), as data in social settings are not objects that are ready for collection. In other words, data is the creation of the researcher in interaction with the respondent in an interview. This research follows Leek and Mason (2008) by taking a multi-method exploratory approach to examine actors' perceptions of relationships at both interpersonal and inter-firm relationship levels. Interviewees are asked to produce network maps that depict their perceptions of key people and key relationship patterns in networks; their role, influence, and bearing on the network being investigated. Network maps are initially drawn for the organisational network level and at a later stage network maps depict some specific inter-organisational product development network. Each participant is accompanied by the researcher as he or she draws network maps. Further, the narrative which explains and interprets the network maps is recorded. The researcher asks emergent questions, where necessary, for clarification and to gain further insights into the network structure and its evolving relationships.

It should be noted that past studies of network maps or network pictures (e.g. Henneberg et al. 2006; Leek & Mason 2008) have used a number of constructs, such as network boundary and network centre. In this study, these constructs have similarly been adopted. Each interview which lasted around two hours on average was audio-recorded and a major part of analysis was carried out simultaneously with data generation creating an iterative process between interviews, literature review and analysis. For every product development network context, respondents are encouraged to answer questions aiming at investigating the relationship atmosphere, such as trust, commitment, cooperation and power, during different phases of specific relationships throughout the life of the product

development project. Network maps and their support to generate emergent questions and in-depth insights via an interactive researcher-participant analysis have been significant to this research.

A story-eliciting device has been used as a complementary technique to network mapping. The supply network performance (SNP) matrix has been designed by the researcher to elicit stories about evolving relationships and to contextualise specific interaction processes in product development networks. Before presenting the narrative image to interviewees, the researcher tries to understand the criteria participants use in practice to evaluate suppliers' relationship performance and whether they use any specific model for its evaluation and what kind of approach that is. Then, the researcher introduces and explains the SNP matrix to the participant. After discussing what is different with the SNP matrix compared to other conventional supplier performance tools companies usually use, the researcher poses some questions, such as: Can you recall any story or event that has shaped the status of a business relationship and/or the structure of the network, by increasing the level of a supplier relationship's performance and how it has happened. The SNP matrix used during interviews has enabled the researcher to elicit participants' perceptions of change and evolution of specific business relationships, in terms of activity links, resource ties and actor bonds. Narratives referring to both successful and unsuccessful relationship evolution are collected and analysed. The result is to generate useful stories of business relationships that explain relationship and network evolution.

Figure 3.3: Supply Network Performance (SNP) Matrix as Story Eliciting Device



Source: Developed by the researcher

This research investigates socio-cultural network dynamics in China and analyses specific interactive processes through which knowledge is transferred and new knowledge is created. However, a major limitation of network research is the limited access to relevant data, in terms of social actors; namely, the key informants. As has been noted, usually one side of a business relationship is studied and the majority of these studies examine the Western side's point of view, and does not consider the Chinese point of view of the relationship (e.g. Wilson & Brenan 2007; 2008). This causes major limitations for analysis and reduces substantially the validity and scope of findings. One of the reasons may be that primary data collection, especially in international grounds, is likely to be prohibitively expensive and time consuming. These limitations explain the rather esoteric data sets to which network analysis has been applied. The alternative methodologies are largely case-based or qualitative, which at least have the potential to tease out network processes but cannot handle large data sets.

IMP researchers use the network concept as a metaphor to illustrate and explain network structures and processes. Within the IMP school, researchers use mainly qualitative

methodologies in case study research designs. Some use statistical, sociometric techniques, such as Social Network Analysis (SNA), to elicit ‘structural patterns of relationships in social and economic settings’ (Araujo & Easton 1996: 67). Therefore, SNA can also be used as a baseline to explain information flows in supply chains (e.g. Clark 2007) or structural patterns of relationships. However, the major limitation of SNA is the requirement of large and complete data sets. Hence, this research employs SNA only in an exploratory manner, in the first case study presented, where the volume of participants is large compared to other case studies conducted; thus, allowing SNA to be employed. Qualitative and quantitative approaches are by no means mutually exclusive. There are examples of work within network research that contain both kinds of methodological orientations (e.g. Olsen 2006), and there are ‘examples of work combining both types of methodologies in the same research design’ (Araujo & Easton 1996: 67).

Here, it should be noted that open-ended interviewing methods for eliciting data as well as SNA have been pilot-tested. For this study, the interviews conducted in order to decipher ways to organise for interaction in product development networks under Chinese settings are classified as open-ended interviews. A structured interview is by no means the only type of interview, but it is certainly the standard type that is likely to be encountered in survey research and quantitative research. All forms of interview with the exception of the structured and standardised interview are primarily used in connection with qualitative research. The term ‘semi-structured interview’, typically refers to a context in which ‘the interviewer has a series of questions that are in the general form of an interview schedule, but the interviewer is able to vary the sequence of questions’ (Bryman & Bell 2003: 119). Besides, ‘the interviewer usually has some latitude to ask further questions in response to what are seen as significant replies’ (ibid.).

In open-ended interviews, there is an interview plan before each interview, but generally this plan is more like emergent and developing during the interview. Questions become more focused as an interview progresses. Questions usually vary from the first to the second interview within a single case study and from the second to the third and so on. It is also acknowledged that every case study and every product development network examined is unique in terms of relationship patterns, both in supply and demand sides. Further, the sample of companies is diversified and this implies that in a state-owned company some of the questions may regard relationships with headquarters and the

degree of interdependency among its different business units, whereas participants from a foreign-owned company in China can be asked to elaborate on slightly different questions. The questions also may vary in terms of the industrial sector as high-, medium-, and low-tech sectors are investigated. As Bryman and Burgess (1994: 173; in Ritchie & Lewis 2003) argue, ‘the use of qualitative methods has come about for a number of reasons but is underpinned by the persistent requirement in social policy fields to understand complex behaviours, needs, systems and cultures’. In this way, a relatively rich data set is usually collected that provides better quality data for input to decision making processes. Appendix B, at the end of the thesis, presents an example of an interview transcript. The key informant is the UK-owned high-tech manufacturer’s regional Sales manager in China.

Participants have been identified out of the researcher’s personal network, expanding from the network of initially identified key informants. A major limitation of social, snowball sampling is the sensitivity of questions, as care should be taken at all times. In terms of research ethics, the first stage was to send via email an ‘interview consent form’ and a ‘participant information sheet’ clearly explaining research purposes and assuring interviewees’ minimum exposure to risk (see Appendices B and C, respectively). It should be noted that the University Research Ethics Committee (UREC) had approved a detailed research ethics application form prior to commencement of the major stage of fieldwork. Its purpose was to reflect on issues of confidentiality, anonymity, and the formulation of consent forms and participant information sheets, which explained the nature of the research and its purposes to participants. Consent forms and participant information sheets had to be read, agreed and signed by each of the participants prior to interview. Because interview questions are primarily based on initial research and researcher’s background knowledge and experience, it is vital to move from the rhetoric of social sciences and management theory to practice and action. Thus, especially during the pre-recording interview stage and during the introduction of the research to participants, the researcher tries to avoid research jargon and provides further explanation with regards to researcher’s background and the research itself.

Having explained in detail the research nature and its objectives each interview embarks by collecting information about interviewees’ background, level of experience, current position and education level. Interviewees are prepared to narrate as the discussion on the

research topic commences. Interviewees are asked to give practical examples of successful and unsuccessful interactive relationships they had experienced with an organisation and its organisational member(s). The aim is to probe them to explain about 'what' interactive relationships mean to them, to their organisation, and to the 'other' sides. The researcher also tries to guide interviewees to identify specific product development projects that they had been involved and within these identified contexts to narrate about interaction effects and evolution of business relationships. The notion of guanxi is analysed by all interviewees and examples of cultivating and developing guanxi in relationships as well as guanxi network effects on product development are discussed. The next set of questions tries to identify examples that reflect essential criteria for effective co-development of products or technologies within Sino-Western and/or Chinese business networks. In particular, the final parts of each interview are concerned with 'how' questions, and particularly, under which circumstances trust, commitment and a shared understanding, or a common view can be nurtured, developed and maintained within networks of relationships. To conclude, based on Saunders et al. among others, an open-ended interview approach provides flexibility in the process, and is considered to be a suitable data collection tool for exploratory studies.

3.8 Analysis Methods

As Patton (2002; in Ritchie & Lewis 2003) argues, there is no standardised form of qualitative data analysis and much depends on researcher's capability. Furthermore, due to the context specificity of data generated, it is neither considered necessary to use any software for qualitative analysis nor to code, index and develop thematic charts. In this regards, Welch et al. (2007: 16) note with regards to methodological reporting that 'the process for analysing and verifying the data was often not reported'. The discussion of findings section provides an in-depth discussion and argumentation based on empirical evidence. But this section describes briefly how the research analysed the empirical evidence. In particular, how the researcher used and developed the theoretical framework to make sense of the data generated.

Existing literature has resulted to a proposed preliminary initial framework that is revised in the light of empirical findings (e.g. Wynstra et al. 2003; in Welch et al. 2007: 20). To revise a proposed framework and match reality with concepts from literature, researchers distinguish between the nomothetic and epistemic parts of analysis. An etic analysis is presented initially by using directly the social scenes shown through the voices of the scene's actors; the research participants. In this research, the nomothetic analysis is presented in the empirical findings chapter which discusses empirical observations from all five case studies conducted. On the other hand, an epistemic or 'emic' analysis represents the researcher's voice; the narrator's voice. It should be also mentioned that epistemic parts of analysis can be derived from nomothetic ones. This research uses narrative inquiry as a method of discussing findings that combines etic and emic approaches to analysis. The researcher narrates based on the experience of interaction with the study's participants as well as background knowledge. The epistemic analysis is revealed in the discussion of findings chapter.

The systematic analysis of empirical observations is based on the proposed two-dimensional framework. Analysis of findings follows an epistemic approach where notions and concepts developed from empirical observations are systematically analysed and positioned in the structure of the framework, vertically, based on relationship characteristics, and horizontally, based on the relationship phase or level. Through a parsimonious selection of findings and a search for similarities in empirical observations, without neglecting the value of distinguished or extreme observations, the theoretical

framework for interpersonal interaction as a process in business networks in China is developed.

Further, in line with Eisenhardt (1989: 546; in Dubois & Gadde 2002: 556) this research maintains that for the analysis of findings parsimony should be sought by selecting to present and interpret not only commonalities but also contradictory and paradoxical evidence from the case studies. An epistemic analysis under a flexible case study research design allows research findings to be elaborated, interpreted and compared. Finally, it should be mentioned once more here that it was through a combination of etic and emic approaches of analysis that enabled the development of concepts, notions and ideas and validated the components of the theoretical framework.

3.9 Selection of Case Studies

As Gummesson (2003: 488) notes ‘interactive research encompasses a series of strategies such as case study research’. In case study research ‘the sample is theoretical and purposeful – find the cases that give a maximum of information – and guided by saturation’ (ibid.). Dubois and Gadde (2002: 559) note that ‘the main concern in this kind of sampling is to arrive at an appropriate matching between reality and theoretical constructs’. Deep probing case studies are conducted to examine the evolution of business relationships under a network approach. In particular, business relationships are investigated in five case studies under the ‘umbrellas’ of ten product development networks. In total, interviews with more than twenty participants have been recorded by the researcher during visits to nine company sites; the majority of company sites being in China. This section explains the sample’s sufficiency to enrich understanding and provides reasons for the selection of a diversified sample. The case studies can be basically distinguished by the industrial sector within which the participant companies operate. These include: home interior, electric appliances, mobile telecommunications (hardware), tobacco, and textiles.

The choice of the sample aims to draw insights to the research problem from different lenses. Hence, diversity and variety in terms of industrial sector, location, ownership structure, participants’ background and position, among other variables, has been sought. For example, although two case studies examine both sides of Sino-Western business relationships that cross organisational borders, the relationship patterns examined are not identical, as one analyses relationship patterns among a Western buyer and its Chinese suppliers (CS1), whereas another analyses the relationship of a Chinese buyer with a Western supplier (CS4). More specifically, CS1 analyses relationship evolution and network effects on product development among a UK buyer and four of its first-tier suppliers in China and CS4 analyses interpersonal relationship formation, development and effects among a Chinese state-owned tobacco manufacturer and a Western supplier. Further, CS4 analyses relationships with indigenous suppliers and the influence of Beijing headquarters and Chinese government on encouraging the nurturing of interaction in product development network contexts.

With regards to the sample of companies employed in CS1, it should be noted that although the UK company does not necessarily represent an average UK company, as this

is not the purpose, it can be seen as a representative of Western businesses, as it is the only UK company in this multiple case study that operates in the UK, meaning here that it does not sell its products in other markets. However, the UK retailer plans to enter the Chinese market in the future and respond to the high domestic demand for foreign luxury brands by exhibiting its products at a showroom in Shanghai. It should also be noted that all its Directors are UK-born. The sample of companies employed to conduct the first explorative case study is diversified when looking at the business actors based in China; the UK company's four suppliers. The sample units chosen represent a part of the UK-buyer's supply network in China. The sample units include one partly state-owned company, two private companies and one foreign-owned company. The sample's diversification implies that these companies do not represent an average company operating in China. Further, among the rest of the focal companies in all five case studies, it is hard to find common ground in terms of ownership structure. The sample of companies includes foreign-owned high- and low-tech manufacturers in China, as well as Chinese private and public indigenous companies. Once again, the unit of analysis is the business relationship and the aim is to understand actors' perceptions and notions of interactive relationships in product development networks.

An identical characteristic of all case studies is the examination of the Chinese point-of-view and Chinese actors' perceptions of various downstream and upstream relationship patterns in various product development networks. CS2 examines relationship patterns in networks involving a UK-owned high-tech manufacturer in China and its relationships with Chinese suppliers, OEMs and two large Chinese customers (Haier and Midea) as well as the involvement of the UK headquarters in managing business relationships and networks in China. In this case, the UK-focal company develops innovations in its foreign-owned research and development and production unit in the Southern Chinese province of Guangzhou. In CS2, all informants are Chinese nationals. CS3 examines interpersonal relationships that cross organisational borders with regards to two product development networks, involving large buyers, such as Nokia and Samsung, and business actors from the supply side in China. Lastly, CS5 examines a foreign-owned textile manufacturer's supply operations and analyses business actors' relationships with Chinese local suppliers.

The five cases can be distinguished broadly in terms of the technological level of the industry in which the networks operate. They can be thus divided into two broad groups. CS2 and CS3 examine business relationships in high-tech industries. In contrast, CS1, CS4 and CS5 examine business relationships in medium and low-tech sectors. Table 3.2, below, summarizes the five case studies in terms of product type, network complexity, actor centrality, volume of actors, key brokers, and the major relationship types investigated.

Table 3.2: Profiles of Multiple Case Studies

	Case 1 (CS1)	Case 2 (CS2)	Case 3 CS3)	Case 4 (CS4)	Case 5 (CS5)
<i>Industrial Sector</i>	Medium-tech	High-tech	High-tech	Low-tech	Low-tech
<i>Product Type</i>	Home-interior	Electric appliances	Mobile Hardware	Tobacco	Textiles/ Garments
<i>Focal Actors Interviewed</i>	UK Retailer (London) and 4 suppliers in China (3 local: (Shanghai, Zhejiang, Guangzhou) and 1 Dutch (Shanghai))	UK-owned high-tech manufacturer (Guangzhou); Chinese buyer	HK-owned high-tech manufacturing corporation (Shenzhen)	Chinese state-owned Tobacco manufacturing unit (Shenzhen); Foreign Supplier	Foreign-owned manufacturer (Hangzhou)
<i>Relationship Types Examined</i>	Buyer (UK) – Suppliers (China); Suppliers (China) – Buyer (UK)	Buyer – Supplier (China); Supplier – buyer (China); Supplier – Sub-supplier (China)	Supplier (China) – Buyer (foreign); Supplier – Sub-supplier (China)	Buyer (China) – supplier (foreign); Supplier (foreign) – Buyer (China)	Supplier (China) - Sub-supplier (China); Supplier – Buyer (Foreign)
<i>Key Brokers</i>	CEO, Directors, Head of Buying, Sales, Merchandising and PD Managers	Head(s) of Sales and Operations; Purchasing Managers	Managers & Assistants	General and Operations Managers, Governmental Actors	CEOs; Operations Directors; General Managers
<i>PD Networks</i>	Centralised around few actors	Complex	Complex	Centralised around few actors	Centralised around few actors
<i>Volume of Central Actors</i>	Medium	High	High	Low	Low

Initially, it should be mentioned that every case is unique and that the companies examined operate in different industries and regions. As a result, although case comparisons should be attempted, generalisation of findings should not take the form of a descriptive analysis. The degree to which interpersonal relationships and non-business interaction influence direct business interaction and the formation of network patterns, in particular, varies. By analysing how actors nurture, develop and maintain relationship resources in China, the multiple case studies provide insights on how organising for interpersonal interaction happens in practice and how it influences the evolution and transformation of inter-organisational networks in the context of various product development projects. By using the ARA model it is possible to outline what influences the development of various resource interfaces, in terms of actors bonds, activities links and resource ties.

By using the ARA model to analyse business relationships, it is possible to outline the mobilising processes behind the direct interface development and the actors directly and indirectly involved in the mobilising process. However, the aim is to explain in particular the nature of guanxi and the role of interpersonal relationships and non-business interaction in Chinese product development networks. Through an ARA-based analysis, the limitation of the model to capture non-business interaction is exposed. However, this research perceives this limitation as an opportunity to enrich the interaction concept and the interaction approach, in general, with an established concept of guanxi interaction developed from research data. Thus, subsequently, the outcome would be to also strengthen the actor dimension of the ARA model, so that it will be able to capture critical interaction episodes including non-business interaction and analyse their effects when it is applied in contexts other than Western.

3.10 Social Sampling and Data Sources

The choice of in-depth interviewing as a data collection method has direct effects on the sampling process. Hence, the sample size of this explorative qualitative research is small, convenient and appropriate. Mador et al. (2005) note that convenience sampling is a generic term that covers a wide variety of non-probability sampling procedures and implies that the sampling units selected are accessible, cooperative and articulate. In particular, a snowball, social or multiplicity sampling procedure is used. This approach relies on previously identified participants providing referrals which helps to identify other specialised populations. A consequence of snowball sampling is that the exact number of participants cannot be known in advance, which in turn introduces a bias as these are in some ways related to the initial selection. The sample of the study's participants³⁵ includes Chief Executive Officers, Managing Directors and General Managers, Operations Managers, Project Managers, Product Development Managers, Merchandiser Managers as well as Logistics and Sales Managers. The large majority of key informants have at least a decade of experience in China or in business with Chinese companies and at least five years of experience in their company.

A snowball sampling technique is used to identify key informants. For example, in CS1, the Head of Buying of the UK buyer was the first contact identified. The personal relationship between the Head of Buying and the researcher has been established from university years. As classmates in a master in International Business Management, back in 2003, strong relationship ties were developed through their cooperation in various projects and classroom presentations. The Head of Buying is originally from China and has a decade's experience in the Chinese home interior supply and production market. Most importantly, this business actor secured access to all required business actors within the UK Company's supply network in China, as has played a significant role in knowledge-based resource combination, through the development and establishment of close ties with partners. The Head of Buying was interviewed twice. It should be noted that since the first interview for this case study, in February 2008 until the last

³⁵ Participants' names have been disguised to protect their identities (see Appendix E, at the end of the thesis).

confirmation-interview in April 2009, this business actor has been promoted to be the Head of the Buying Department, which includes the Product Development function. Besides, this informant has been involved in all four product development projects examined in CS1.

Once again, it should be noted as it is considered important that for foreign researchers conducting their research in China the sampling method employed depends, apart from the objectives of the study, on the researcher's interpersonal networks and the researcher's relationships with individual business actors in China. It seems that the interpersonal demands of business are paralleled in research and achieving reliable results means nurturing, developing and using *guanxi* networks to access Chinese respondents (e.g. Kriz & Flint 2003; Stening & Zhang 2007). In other words, various interpersonal skills are required for researchers doing research in China. It is significantly important for researchers to have established *guanxi* relationships with business and non-business people in China in order to secure access into company sites in China and identify and make available key informants that trust the researcher and are willing to participate with interest in the study. Researchers may also face important methodological challenges (e.g. Stening & Zhang 2007). However, the researcher has a seven-year experience in China, speaks Chinese Mandarin and acknowledges the various socio-cultural dimensions of the Chinese business system and the ways business actors think and act within the Chinese society.

3.11 Conclusion

‘Scientific observation of the facts of commercial life; common sensical influence from personal introspection, daily experience and psychological inquiry about the ways in which human beings are likely to react to different stimuli; a sense of the continuity and of the messages of history; logical and mathematical analysis of the implication of complicated sets of interactions; and a strong mixture of modern and political philosophy’

(James Meade, 1997)³⁶

The Nobel winner in economics, James Meade’s description of the elements of an ‘impossible’ combination of qualities that seems to be necessary for research practices, not only in economics but also in studies of culture and society as well as business networks. An ‘impossible’ combination of research qualities may reflect incommensurable philosophical paradigms that guide research practice until today. Hence, a critical evaluation of theoretical and philosophical concepts throughout the study is necessary in order to establish strong links with methodology. The choice of methodology should be explained in comparative terms and explanations should be given for choices. Although debates in the literature to date about the epistemology and ontology of networks are endless, this chapter enhances the understanding of the different paradigms and philosophies, which underpin studies of business, knowledge, supply, and cross-cultural networks.

The research objective is to investigate interaction by examining evolving patterns of social interaction in networks that involve business actors in China, with a focus on their effects on co-development of products and technologies. To understand interaction processes the researcher should look behind standard and current patterns of interaction to what has preceded them and to what has framed their evolution (Ford & Hakansson 2005). There are periods of more intense episodes of interaction than others; one way for researchers to deal with lumpy interactions is to identify critical incidents, although this approach has similar boundary problems to those of episodes. Therefore, it is suggested that the researcher should be interested in ‘the evolving views of the actors’ (ibid. p.9),

³⁶ James Meade’s (1997) speech of inauguration of the Nobel in Economic Sciences (Nobel Museum, Sweden, Sep. 2008)

such as asking what they were thinking before and what has changed their perceptions of specific relationships. In this way, the researcher can identify and analyse critical events and can offer a reliable analysis of inter-subjective perceptions of business actors acting within networks.

This chapter has shown that data generation and analysis through qualitative techniques, such as open-ended interviews and narrative techniques should be employed to investigate various sides and inter-subjective actors' perceptions of business relationships in order to provide more complete insights of particular network contexts. As has been noted, informants include a variety of actors, such as PD managers and directors as well as other business actors from selected suppliers and various departments and company sites. Each key informant has mapped, the network of relationships, identifying the major actors involved in each product development project discussed (e.g. Johnsen & Ford 2007) and the components or technologies they contributed.

The process of collaboration and relationship evolution during the project should be analysed together with the nature of the situations in which there was some degree of influence coming either from the buyer, the supplier or the sub-supplier. Most importantly, all case studies aim to identify and analyse the effects of direct and indirect interpersonal business and non-business interaction to activity links, resource combinations and firm bonds, in product development contexts, as well as interaction effects on the business relationship(s) and the network(s) themselves. To conclude, the current research issues call for methodological techniques that take into account the context-specificity and complexity characteristics found in networks. Hence, a dialectic and synthetic reasoning guides analysis and discussion of findings.

Chapter IV

INDUSTRY DEFINITION AND CONTEXT

4.0 Introduction

The initiative to investigate organising for interaction and network evolution involving Chinese business actors under the umbrella of inter-organisational collaboration and co-creation of products and technologies started to emerge in 2004 during the researcher's first visit to China. Since that time and until completion of this study, nearly a decade later, China has experienced tremendous change in every line of business, industrial sector and the economy as a whole. Within this time, China's economy has overtaken Japan and Germany in GDP terms and is estimated to overtake the US by 2018. Although the past two decades of China's increasing engagement with the Western world in all systemic levels – political, economic, and social – could be seen as a prerequisite of its rapid but sustainable development, wealth accumulation, rise in consumption spending and a dramatic swift of focus from a labour-intensive and export-led economy characterized by cheap labour to a consumption-driven economy characterized by innovation, high value-added activities and a growing services sector, credit should be given to China as a national actor, Chinese corporations and Chinese private companies as firm actors and most importantly Chinese people as individual actors whose relationships at the micro-level drive change and promote continuous interaction in managing business networks.

Profitable business relationships in China require the development of interpersonal relationships and these can be developed by Western managers when taking into consideration socio-cultural and historical characteristics. As Faure and Fang (2008: 195) argue, 'Chinese language reveals idiosyncrasies of Chinese thought'. For instance, '*wei ji*, the Chinese word for crisis: *wei* means danger and *ji* means opportunity' (ibid.). Linguistically, a crisis might imply danger but it could be also seen as an opportunity, which in turn implies that there are possible solutions to problems. Although this research acknowledges the paradoxical nature of Chinese thought, it maintains that solutions to problems arising in crisis situations or critical events can emerge via interpersonal interaction in business networks.

This chapter initially provides an overview of economic change in China and presents latest estimations for its future economic model and sustainable pace of growth. Also, the major swift of focus in the industrial level is elaborated and the industrial context of the multiple case studies is briefly introduced. Besides, as this study maintains, there is an

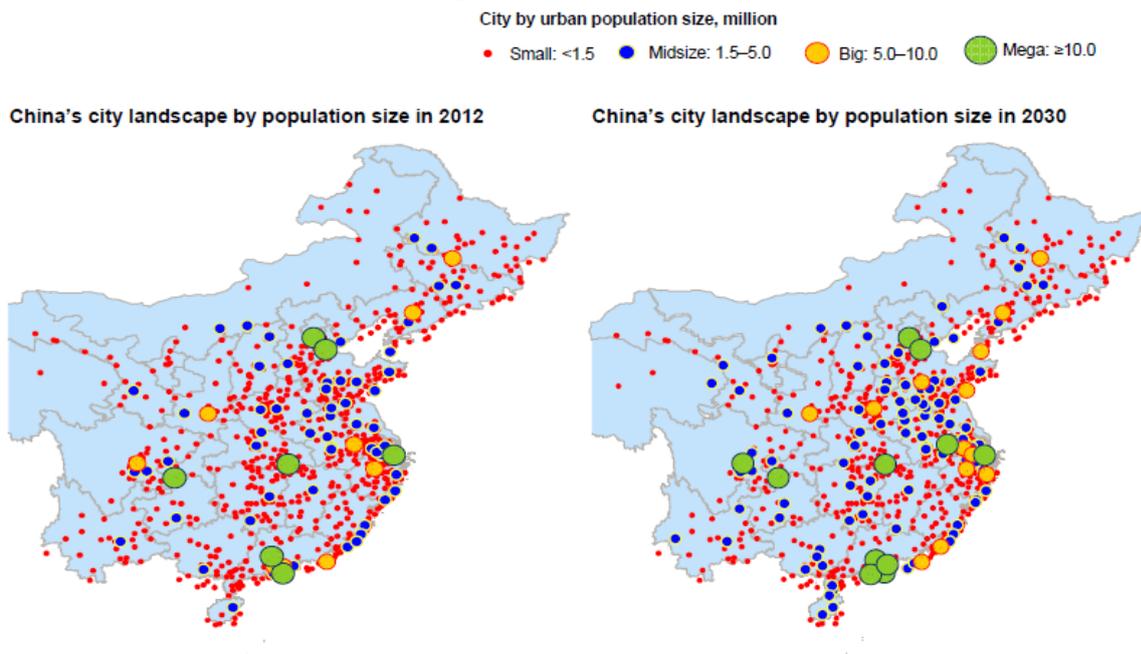
opportunity for Western firms to move from a view of China as a source of cost-cutting to a source of innovation. Hence, product development is introduced as the context in which interaction effects are investigated. Lastly, the specific network contexts examined in this multiple case study research are introduced in brief.

4.1 Chinese Economy

Since the opening of the Chinese economy in 1978 and in particular since China's accession to the World Trade Organisation in 2001, the country has dramatically transformed its economic and industrial profiles. In line with globalisation of information trends and regionalism in terms of accumulation of production, China has increasingly shifted its labour-intensive industrial structures towards more specialised industrial sectors by undertaking higher value-added industrial activities (e.g. Fang et al. 2010; Jui 2010; Butler et al. 2012). The above mentioned trends have been supported by the central Chinese government and local bureaus, through incentives that encourage collaboration and interaction with foreign partners and enable mobilisation of specialised Western business actors from abroad as well as repatriation of key Chinese nationals into the Chinese economic and industrial structures.

According to the central government's 12th five-year plan, the new economic model of China requires input from citizens' income and thus a rise in purchasing power is a prerequisite. A consumption-driven economy is characterized by increasing productivity in line with regionalism of production and urbanization trends. Figure 4.1, below, shows an estimation of urban expansion over the next two decades. Research, published by McKinsey, predicts that urban expansion will significantly contribute to GDP growth in the future (Woetzel et al. 2012). It presents the urban population size in 2012 and the estimated urban population size in 2030.

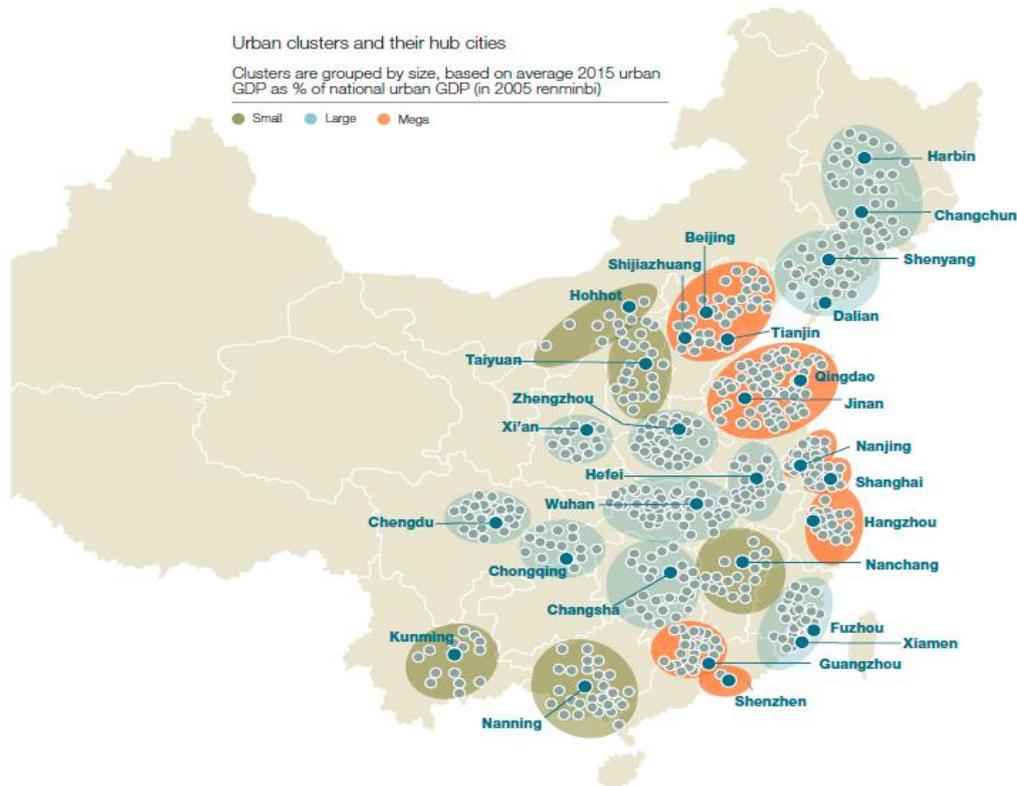
Figure 4.1: Predicted Urban Expansion in China from 2012 to 2030



Source: McKinsey Insights China macroeconomic model update (2012, p.9)

According to research by McKinsey China, it is estimated that China's GDP growth is likely to slow around one per cent in every five years over the next two decades and it is expected to remain over five per cent until 2030 (Woetzel et al. 2012). However, Woetzel et al. (2012: 1) note that China's GDP could grow faster than announced targets. High growth rates can be preserved due to the region's size and the many emerging urban areas or city clusters, which include second-tier and third-tier cities. The following figure presents the country's urban clusters and their hub cities. The 22 city clusters shown in Figure 4.2, each the size of a midsize European country enables researchers to identify each region's characteristics and in particular each region's contribution to China's GDP.

Figure 4.2: Predicted Regionalisation Trends in China



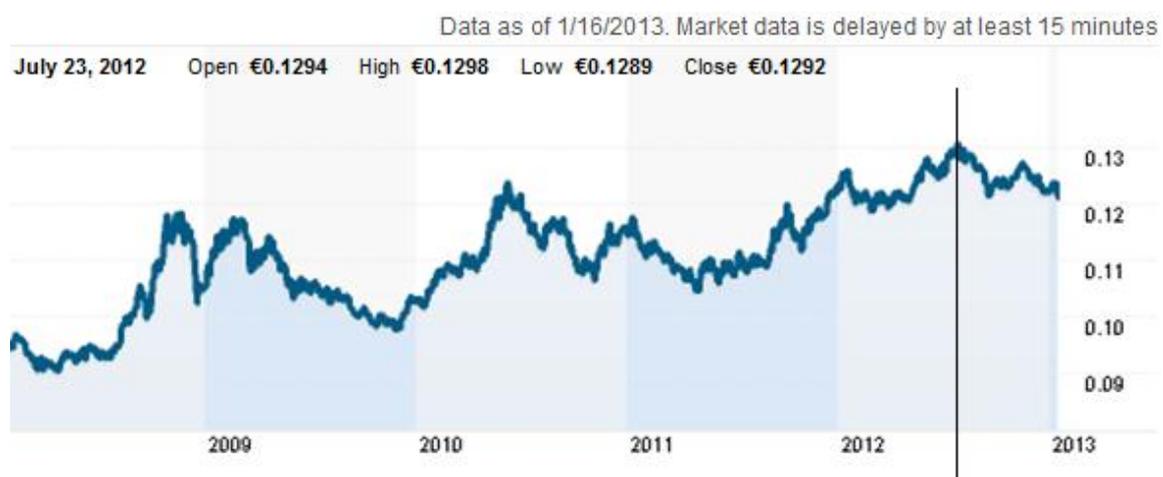
Source: McKinsey Insights China macroeconomic model update (2012, p.10)

It is worthwhile mentioning that ‘the GDP of the Shangdong cluster [around Jinan and Qingdao] will by 2020 be similar to the size of South Korea’s today’ (Woetzel et al. 2012: 9). In general, it is expected that each cluster will preserve and develop different industrial profiles based on current capacity and strengths. For instance, Hangzhou is already the centre of e-commerce, where the headquarters of Alibaba and Taobao (similar to eBay) among others are located. The financial services centre of China is in Shanghai, which might take over Hong Kong and Tokyo in the future as the first financial centre in Asia. It is also interesting to note that Shijiazhuang, which is located in the city cluster together with Beijing and Tianjin, is known as the most advanced pharmaceutical production centre in China. Further, there is potential to expand an industry’s scale depending on resource capacity within a city cluster. For instance, due to Beijing’s lack of available resources for its over 20 million residents and environmental concerns, a re-allocation to Tianjin of specific industries is currently in planning phase (Zhao 2013).

The Chinese currency, known as Chinese Yuan or RMB, has appreciated around thirty to forty per cent compared to major global currencies over the past decade and has become a

sustainable international currency. For instance, figure 4.3 shows the climbing of the Chinese Yuan over Euro in the last five years. China nowadays trades with major European, Asian and African countries not only in USD but also in Chinese Yuan. In addition to a strengthening currency, there has been a major rise to income levels and purchasing power contributing to a new born and rising middle class, whereas the Western side of the world as well as major developed economies, such as Japan and US are trapped in a downward spiral of recessionary trends, falling output, diminishing purchasing power, and increasing unemployment rates.

Figure 4.3: The Chinese Yuan Appreciation over Euro (2008-2013)



Source: www.reuters.com/finance/currencies - snapshot taken on 01.16.2013

In terms of societal change, education and people development should be also discussed as education is the driving force for sustainable economic growth. Education levels have increased rapidly especially in the youth segment. As a result, industrial and services sectors in China are nowadays supplied by increasing numbers of university graduates and postgraduates every year. For example, there are millions of IT graduates every year adding to an already large supply base of labor for high-tech industries. However, a smooth transfer process from education to the industry and the competitive demand of labor market is still in premature levels, which has negative implications in career development and exploiting the full potential of new employees.

4.2 Industry Definition

The previous section discussed the major shifts in the economic environment in China, its new industrial revolution, its strengthening currency as well as the effects of regionalism to economic growth and prosperity. Macro-economically speaking, it is estimated that the scale of the service sector is expected to match and overtake that of industry and this estimation reflects a major shift towards a consumption-driven and service-driven economy (Woetzel et al. 2012). However, the focus of this section is to differentiate between high-tech and low-tech industrial sectors, and categorize accordingly the specific industrial contexts of the multiple case studies conducted. Although broad categorisations should be avoided, the five case studies can be initially divided into two groups, which allow comparison of empirical findings based on industrial level. CS1, CS4 and CS5 examine business relationships in networks within low- and medium-tech sectors, whereas CS2 and CS3 examine business relationships in high-tech industrial sectors.

The industrial sectors wherein the companies investigated in the five case studies operate are briefly introduced in terms of low-tech and high-tech categorization. Oka Direct Ltd., the network hub of CS1, operates in the home interior sector as a retailer, meaning that except of product design the company completely outsources production to suppliers worldwide. Endysis Group, which is seen as the network hub in CS5, acts as a broker between buyers and suppliers. Endysis is a foreign-owned textile manufacturer in South-East China, which outsources production to a large indigenous supply base. CS3 investigates networks of the Shenzhen Tobacco Industry Ltd., which is a state-owned tobacco manufacturing unit. In contrast, CS2 and CS3 investigate networks of relationships in high-tech industrial sectors. Strix, the network hub in CS2, is a UK-owned high-tech appliances component manufacturing base in Guangzhou, whereas Chungnam (CN) is a large high-tech corporation in Southern China. CN is the network hub in CS3 and produces high-tech components and parts for telecommunication devices. Lastly, it should be noted that the sample of companies selected is considered sufficient to offer insights on nurturing, developing and maintaining relationships in both low-tech and high-tech industrial sectors, allowing for comparison among relationship characteristics in low-tech and high-tech sectors.

4.3 Product Development Context

This research investigates how business actors and management teams can learn from business practices in China and how they can utilise specific techniques and models to breed and support interaction among actors, which in turn promotes sustainability in product development networks. Product development is viewed from socio-cultural and interactive lenses. As this research maintains although socio-cultural characteristics in general might be seen as not directly related to product development or simply put they are intangible, hard to measure, parameters, they can be actually adapted through interaction to support, influence and accommodate change in business networks.

Product development is treated as the context in which interaction effects are investigated and not as the subject matter of this research. In other words, the unit of analysis is interaction in business relationships and product development is taken as a context issue (e.g. Johnsen & Ford 2002). Overall, the main value of the thesis draws from its focus on innovation and product development potential of Chinese partnerships in place of the prevailing cost efficiency focus.

4.4 Networks in Multiple Case Studies

Primary research data are generated from multiple actors in companies of various sectors, sizes and a variety in the degree of decentralisation. Open-ended interviews are conducted, supported by network mapping techniques and narration eliciting tools, which are employed to identify and analyse interaction effects and network change in a variety of product development contexts. In some cases it is possible to examine both sides of business relationships whereas in some it is not possible. Although in some cases, dyadic Sino-Western business relationships are examined in most cases emphasis is placed on the Chinese side, such as the supplier's point of view of the relationship with the buyer and more downstream in supply chain terms; investigating relationships with suppliers and sub-suppliers. This is something of an antidote to previous studies in this multidisciplinary field, which underemphasise a supplier's point of view and in particular a Chinese point of view. However, in line with requirements of a network approach, the multiple case studies conducted consider a variety of relationship types. It should be noted that although buyers usually operate in the West, they are increasingly Chinese-owned companies or foreign-owned companies operating in China. Similarly, suppliers and OEMs are increasingly foreign-owned companies, which have transferred production as well as R&D operations in China.

The aim here is to explain why variety in relationship patterns and networks investigated has been sought in order to provide valuable insights to the research problems. It should be initially noted that participants' names remain anonymous but company names are disclosed for examination purposes. The choice of a diversified sample aims to draw insights to the research problem from different lenses. Two case studies examine both sides of Sino-Western interpersonal relationships that cross organisational borders. However, these two cases are not identical in terms of relationship patterns examined, as one analyses relationship patterns among a Western buyer and its Chinese suppliers, whereas the other analyses the relationship of a Chinese buyer with a Western supplier. Nevertheless, as the research questions point towards the Chinese side of networks, all case studies examine the Chinese point-of-view of various types of relationship patterns in various product development networks. The case studies focus on analysing interaction in relationships within the supply side of product development networks. For example, CS2 and CS5 involve foreign-owned manufacturers in China. CS2 investigates

interaction effects to product development involving a foreign-owned supplier operating in the high-tech sector, whereas CS5 investigates relationships of a foreign-owned supplier with Chinese indigenous sub-suppliers in the low-tech sector.

A preliminary presentation of the main relationship patterns involved in the product development networks examined aims to show how the identification of a diversified selection of relationship patterns could altogether provide valuable insights and support to the research questions. In CS1, although the UK buyer can be seen as the hub of the network, this case study focuses on relationships rather than organisations as network hubs. Both sides of actors' relationships between the UK buyer and its four suppliers in China as well as their evolution during four product development projects are thoroughly examined. In CS2, ways of managing product development networks in China and in particular the nurturing, development, and maintenance of downstream and upstream relationships as well as the involvement of the UK headquarters in managing relationships among the UK-owned manufacturing base in Guangzhou and Chinese suppliers and buyers are examined, alongside evolution of relationships in two large product development networks. In CS3, relationships with buyers, such as Nokia and Samsung, and supplier relationships in China of a large Chinese high-tech manufacturer alongside two product development networks are examined. In CS4, relationships with both Western and Chinese suppliers as well as the involvement of Beijing headquarters into these relationships are examined under the context of a product development network. Lastly, in CS5, relationships with Chinese suppliers are identified and examined, and challenges to horizontally integrate the supply base in China are analysed.

Chapter V

EMPIRICAL FINDINGS

5.0 Introduction to Multiple Case Studies Research

The presentation of empirical findings from the five case studies follows a real time sequence. Although some case studies were conducted during the same period, the case study commenced first is presented first (CS1) and so on. This research investigates social interaction under the context of specific product development networks. Hence, the unit of analysis is interaction in business relationships whereas product development is taken as a context issue. Primary data are generated through qualitative techniques and in particular an open-ended interviewing approach, which helps us to move from the rhetoric of networks and social relationships to practice and action. Interviews generate in-depth insights of subjective actors' perceptions of their relationships and notions with regards to relationship evolution under specific product and technology development contexts. Further, an open-ended approach to interview generates explanations of actors with regards to interpersonal interactions and socio-cultural dynamics, which in turn explain how business relationships are nurtured, developed and maintained and how networks change through interaction processes.

The degree to which interpersonal relationships influence direct business interaction and the formation of network patterns in product development networks, in particular, varies. By analysing how actors nurture and develop relationship resources in China, case study findings show how organising for interaction happens in practice and how it influences the evolution and transformation of inter-organisational product development networks. By using the ARA model, this research tries to outline what influences the development of resource interfaces. In particular, the aim is to identify and describe the mobilising processes behind the direct interface development and the actors directly and indirectly involved in the mobilising process. In this way, the role of interpersonal interaction to product development networks is explained and the limitation of the ARA model and the IMP-based business network theory to capture both direct and indirect interpersonal business interaction as well as non-business interaction is exposed.

In line with a systematic combining case study research approach, data generation and analysis are highly intertwined. In this chapter, the context of each case study is described and a nomothetic analysis is presented putting the pieces of the interview puzzles together. The discussion of empirical findings, which are reflected into a set of theoretical developments, practical implications and methodological contributions are thoroughly

discussed in the following chapter, using an epistemic approach to research analysis through which the researcher's voice is heard. The profiles³⁷ of the five case studies conducted have been presented in the methodology chapter. In particular, in table 3.2 various dimensions are used to differentiate each of the case studies conducted, such as the industrial sector investigated, the origin of the focal company, and the relationship types examined, such as Western buyer-Chinese supplier, Chinese supplier-Western buyer, Western supplier-Chinese buyer and Chinese supplier-Chinese buyer.

Further, it should be mentioned here that CS1 uses a different research design which combines qualitative and quantitative techniques. For instance, the scope of CS1 is to describe Sino-Western relationships by investigating both sides of cross-cultural and inter-organisational relationships. For CS1, open-ended interviewing techniques for data generation purposes are employed and the research design combines both quantitative and qualitative methods for analysing generated data; Social Network Analysis (SNA) and narrative methods, respectively. Although this research maintains throughout that all research methods for analysis, even those of numbers, require an interpretative inquiry, in CS1 the many limitations quantitative techniques may face when analysing evolutionary relationship patterns and critical events within inter-organisational product development networks are exposed.

With regards to the multiple case studies conducted, it should be mentioned that a pilot study has preceded the major phase of the fieldwork. The pilot study employed a qualitative approach to investigate key relationship patterns among a UK buyer and one of its Chinese suppliers under the context of one product development project³⁸. The pilot study was actually only a part of a sub-case of the first case study conducted (CS1), which examined both sides of business relationships in four product development networks. Although initial findings, drawn from data collected by just one side of the relationship - the UK buyer's side - were valuable, they raised important questions. For example, what are the Chinese actors' perceptions of their relationship with the UK buyer? In other words, initial research suggested that in general both sides of a

³⁷ Table 3.2 can be found at page 149.

³⁸ The findings from the pilot study, which investigated actors' relationships between the UK Company and one of its main Chinese suppliers, were presented at the 24th IMP Conference at Uppsala University, Sweden, Sep. 2008 (Bassayannis & Cronin 2008).

relationship pattern should be examined and in particular the Chinese side. In other words, major emergent research issues included investigations on how companies in China manage their own supply and production networks and how Chinese business actors manage business relationships further down the supply chain (i.e. the UK Company's sub-suppliers) and, in general, business relationships within product development networks in China. How business actors based in China manage their supply and production networks is an issue that is also explored in CS1. However, this latter issue is the main focus of the other four case studies, which examine how the Chinese side of product development networks initiates, develops and maintains relationships. This is also due to the fact that in CS2, CS3, CS4 and CS5 the hub of the product development network is located in China, whereas in CS1 the hub of the networks examined is the UK Company based in London, UK. Hence, it should be made clear that the aim of CS1 is to draw in-depth insights of the Chinese point of view, in terms of their relationships with business actors of the UK buyer and vice versa, and to a lesser extent to draw insights on how companies manage their relationships further down the supply chain.

Drawing from the pilot study, emergent research issues have been transformed to main research questions, which have been articulated in the first page of this thesis and have pointed towards further and narrower investigations. Consequently, the research focus has been shifted from dyadic Sino-UK relationships to the description of a Chinese point-of-view of various relationship patterns, under a network and interaction approach. Nevertheless, the unit of analysis and the research context has remained unchanged. For CS1, presented next, interviews were conducted initially with the Head of Buying of the UK buyer to generate more data, in terms of relationship evolution within its supply networks in China and specifically within the relationships with four suppliers. Following initial interviews, a research trip was undertaken to examine the Chinese side of the relationship patterns discussed with the Head of Buying in the context of specific product development projects and the suppliers' perceptions of other relationship patterns, usually downstream in vertical supply chain terms. In other words, interviews were conducted with key business actors in all four of the UK buyer's suppliers in China, with an aim to analyse their point of view with regards to their relationship with the UK buyer and also other various but relevant to the product development context relationship patterns, such as relationships with sub-suppliers in China.

5.1 Case Study One: Interactive Relationships Among UK Buyer and First-Tier Suppliers in China

This case study describes interpersonal interaction effects in the context of product co-development involving actors from a UK buyer and four first-tier suppliers in China. All sides of the relationship patterns involving five company actors are examined by generating data in interviews with eight key informants. The purpose is to investigate interaction and the mobilisation processes behind direct business interface development. Although the UK buyer is the focal company and centre of the network, it is neither considered as the network hub nor the main unit of analysis. The unit of analysis is interaction in business relationships within inter-organisational product development networks rather than the business unit or organisation of neither buyer nor supplier. In the first case study, four product development networks are examined; one with each supplier in China.

Oka Direct (hereafter Oka), the London-based upmarket home design group, is a multi-channel retailer with over twenty-five first-tier suppliers in China, at the time of fieldwork. The UK buyer having realised the high handling costs associated with having multiple high-involvement relationships is trying to reduce its number of suppliers in China, by consolidating small suppliers located in close distance and by terminating relationships with low performers. Nevertheless, it should be mentioned that the UK buying department does not use any specific tool or model to evaluate suppliers' performance. Rather, it relies on a case-by-case qualitative evaluation, considering simultaneously various aspects of each specific relationship with a supplier.

Oka dismissed its agent in China due to efficiency and knowledge hoarding problems that had negative impact on product co-development and direct interaction processes. In the initial phase of entering a foreign market an agent strategy is usually adopted by both Oka's buyers and suppliers. For Oka's relationships with suppliers in China, high efficiency and effectiveness is achieved without an agent's aid. In other case studies, although an agent introduced the supplier to the buyer and vice versa, the agent's intervention was not concerned with product development related interaction. An interviewee noted that 'agents break guanxi' (merchandiser manager: Guangzhou supplier), due to inefficiencies caused through an agent's interference between the

company and its suppliers. This may further imply that agents may neglect the long-term possibilities of relationships.

For CS1, open-ended interviews were conducted in China, Hong Kong, and the UK to examine various sides of business relationships, with an aim to get a more complete understanding of the supply network context and more specifically of each product development network discussed. Informants include the Head of Buying of the UK buyer and business actors from each of the four suppliers, such as CEO, General Manager, Merchandise, Operations and PD managers. However, participation in the study depended on availability during the time of the researcher's visits at various company sites in various regions of China. For example, central actors, such as the founder and the quality controller of the Dutch company in Shanghai were not in China at the time of fieldwork and as a result they have not been interviewed. During interviews, participants drew various network maps upon which discussions were centred. For instance, in one of the product development projects examined, the network map designed by the key informant of the Hong Kong supplier based in Guangzhou provided the basis for further discussions allowing the researcher to probe deeply into the interactions and specifically the evolution of relationships not only with those between the UK buyer's and Hong Kong supplier's business actors but with business actors from Oka's sub-supplier, in Taiwan.

In CS1, in addition to data generated and discussed during interviews with the eight key informants, a selection of archives relevant to some of the examined product development projects, such as email communication during the project duration, were examined prior to interviews for preparation purposes. Additionally, the Oka Head of buying provided the researcher with a documented product development procedure (PDP). The PDP, which is presented in Table 5.1, is not only used internally by Oka but also is shared to Oka suppliers as it is a documented procedure relevant to purchasing, quality as well as product development activities. Although descriptive and definitely helpful in terms of coordinating activities and somehow offering a standard working context for business exchanges with regards to purchasing and product development processes, it is presented to better position this research and its focus. Hence, based on the PDP, this research is basically interested in the initial stages of the PDP and in particular in business actors' actions and reactions that take place, for example, before or during the sampling stage of the PDP or until confirmation of the production sample and prior to negotiating

payments. It is maintained that in terms of nurturing and developing a business relationship, actors' social interaction is crucial, and there can be no specific procedure provided in a written form. Thus, the current research effort tries to identify how specific aspects of inter-organisational relationships are established, by placing emphasis on the interpersonal business actor level, which in turn may lead to mobilisations, adaptations and systematic combining of inter-organisational resources.

Table 5.1: Product Development Procedure – UK Buyer

1	Initial samples are selected at visits to trade fairs, supplier showrooms or meetings with suppliers.
2	Initial sample order is placed using a distinctive code; this code must be referred to in all correspondence thereafter.
3	The supplier must submit working cost prices, materials and composition information, probable manufacturing time, and approximate dimensions before official purchase order can be released.
4	The supplier is expected to make as many samples as originally specified within a timely manner; unless otherwise agreed a maximum of 6 weeks for manufacture is expected.
5	The supplier must always retain one counter sample, and one counter sample should be forwarded to our local representatives for reference purposes.
6	Once samples have arrived in the UK they will need to be checked and booked into the system within “5 working days” by Sample Coordinator. All aspects of the product will need to be checked, including quantity, colours, material, sizes and structure etc. The result will need to be sent to buying department via email.
7	Once the sample order has arrived and been booked into the system, a GRN number will be generated. Sample coordinator should then notify the buying team. The buying team will then send this GRN along with the Invoice and PO to Finance to enter into the system.
8	Buying team will then book a review with directors in a timely manner. Feedback on the suitability of these samples will be passed back to the supplier so that any changes can be made as quickly as possible. If amended samples are requested the original numeric code will be adjusted using an alphabetic addition. For example 20091234 will become 20091234-A for the first adjustments, then 20091234-B if there are further adjustments etc.
9	Once a product is selected to be included in the range by OKA, a specification sheet will be sent to the supplier. Details of the product must then be given to OKA so that the official stock purchase order can be placed. . OKA will require a full technical drawing of all furniture items to be submitted at this stage. Both the completed product specification and the technical drawing will be utilised by the OKA QC team for incoming inspection of stock, therefore all information must be completed and correct.
10	Marketing department will be invited to do a review of the collection and order samples for press if necessary.
11	If any changes are made to the specification by OKA or the supplier they must be fully documented so that subsequent orders and delivery of goods are acceptable to OKA. It is the responsibility of the supplier to inform OKA of any risks to production, this should include availability of raw materials, structural stability of product, problems relating to hand finishing of goods etc. If OKA is not informed of these potential problems which can be reasonably foreseen by the supplier prior to production then subsequently the supplier will be held to be entirely responsible for interruptions of manufacturing or post production quality problems and appropriate penalties will be imposed
12	Once PO is inserted in the system, it needs to be checked and signed off by line manager before sending out to supplier as a double checking procedure. The supplier will hold the red seal sample (pre-production sample) so that it can be used for Quality Control purposes once production has started. All new products will require a production sample to be produced, if there is any query from OKA this must be sent to OKA for approval before the full production is completed. If accepted, this production sample will then have a gold seal. For subsequent orders a production sample may be requested as appropriate by OKA or their agents, this must immediately be supplied. If there has been no production of a particular item during the past 18 months it should be assumed that this is required.
13	Delivery of all samples to OKA and its agents is the responsibility of the supplier; it must be done as quickly as possible. All samples to be delivered to OKA must be sent to the main company address unless otherwise indicated by the buying team. The tracking number for sample delivery should be forwarded by email to a buying team member as soon as it is known.

Source: Oka Buying Department

Relationship patterns within inter-organisational product development networks can be analysed using different levels and types of analysis. In CS1, a Social Network Analysis

(SNA) is used initially to present who forms a tie with whom in the network and who has network power in terms of closeness, betweenness and brokerage measurements. The SNA technique not only confirms mathematically each actor's structural position in the network, in terms of centrality and betweenness, but also provides a visualisation of the network under examination, which is useful for the researcher as well as the reader. However, SNA cannot explain interpersonal interaction and evolution of interpersonal relationships within inter-organisational networks. This is because numbers and visualisations that SNA provides are static tools, which do not explain how change happens and do not take historical and socio-cultural aspects of relationships into consideration. An analysis of interpersonal interaction in China and the various interpersonal interaction levels, such as direct, indirect, business and non-business interaction, should take into account the socio-cultural context, which influences the development of actors' relationship resources, and promote knowledge-based resource interaction. Thus, for CS1, although SNA offers a contextualisation and visualization of key relationship patterns involved in the networks examined under the context of four product development projects, interpersonal interaction is further explored by more interpretive methods of analysis. The rest of the multiple case studies do not employ SNA and quantitative techniques; they rely on qualitative inquiries.

5.1.1 A Social Network Analysis of a UK-Chinese Product Development Network

A snowball sampling technique was used, asking each participant to identify the individuals in each company actor who had crossed organisational borders during the product development process and how frequently they had done so. This was replicated with those nominated at each point. A major limitation of SNA is its limited access to relevant data. However, relevant data have been collected for this case study by eight informants through in-depth interviews. The reports were analysed with social network analytic techniques, commencing with an anonymised sociogram highlighting the key roles in the product development network. This was followed by metric analysis, identifying central and key brokerage roles in the network, utilising UCINET 6 and Netdraw software (Borgatti et al. 2002).

Figure 5.1 aggregates the relationships reported by each of the respondents concerning the product development process for the four product projects³⁹. Three modes of relationship are discernable, those between the principle trading entities, the UK retailer and its contracted suppliers; a second set of interpersonal relationships, described here in functional terms, but reported by respondents on a familiar first name basis “Bob”, “Sarah”; and a third set of subsidiary organisations cited as important to the process. The visualisation, presented below, represents the cognitive mapping of the relationships in the product development network structure, which surrounds the UK Retailer, a ‘messy’ world of personal relationships mixed in with production and distribution sites and framed by contractual parameters. The mixed network is sparse, with 3.3% of the possible ties actually connected, with a low clustering coefficient of 0.13⁴⁰. The network of interpersonal relationships alone is sparser with 1% of the possible ties actually made but a higher clustering coefficient of 0.24, suggesting the network is underpinned by links among groups of closely connected individuals. Excluding the principle corporate entities, the product development network forged in the four projects centres on the Head of Buying, Quality Control Manager, and one of the Directors of the UK Retailer,

³⁹ The visualisations were prepared in Netdraw 2.0, via a spring-embedded algorithm, following a Gower scaling, utilising distances, node repulsion and equal edge limits.

⁴⁰ The clustering coefficient of an individual node is the extent to which the node’s neighbours have ties with one another, to a maximum of 1. The coefficient for the network as a whole is the mean of the node coefficients. Where this is significantly larger than that of a random network, the network is considered to be a ‘small world’ (Watts 1999).

Table 5.2 below presents the five most central nodes by various normalized measures of centrality. For example, the UK Head of Buying (Buyer), the Shanghai PDM (manager) and the HK manager are major players in terms of closeness centrality that is perhaps not surprisingly at the centre of the integration of the network.

Table 5.2: Measures of Centrality

Degree		Closeness		Betweenness		Eigenvector	
Buyer	29.7	Buyer	53.4	Buyer	60.6	Buyer	61.8
Shanghai PDM	23.4	Shanghai PDM	42.7	HK Mgr	43.6	Shanghai PDM	51.9
HK Mgr	21.2	HK Mgr	42.7	Shanghai PDM	22.0	Designer	47.1
QC2	19.1	QC2	42.7	QC2	21.1	Shanghai CEO	42.4
Designer	17.0	Designer	40.8	ZJ JV	12.4	Director 3	33.9

An analysis of Gould and Fernandez's (1989) brokerage roles sheds further light on the roles being played by the various actors and organisational units in the product development process. A brokerage role arises when one node connects two other nodes; the nature of brokerage varies by the group affiliation of each node. Table 5.3 lists the brokerage roles of the key players, as they differ from a random network of these group sizes (Borgatti et al. 2002). Most of the brokerage roles in the network are coordinators, that is, brokerage among three nodes within the same organisational grouping. The designer and the Shanghai PD manager, the Assistant and Design Department in the Shanghai Main Supplier, and the UK Warehouse play a disproportionately greater role in coordinating nodes within their respective groups than would normally be expected. Conversely, nodes with high connectivity such as the UK Head of Buying are relatively less significant in this regard as they also have other roles in the networks. There are eight gatekeepers, where the broker and one node belong to one grouping and the third node citing the broker belongs to another group. These include the principals of two suppliers, not surprising as they are the external faces to approach the UK retailer. But other figures in the Shanghai and Main suppliers are also independently significant.

Table 5.3: Principal Brokerage Roles

	Coordinator	Gatekeeper	Representative	Honest Broker Index ¹	E-I Index
Assistant		6.166			-0.3
Buyer	5.17		4.833	10	0.142
CEO					0.5
Design dept	11.97	3.083		1	-0.333
Designer ²	4.79	1.850	0.616	7	0.25
Director 2					0.6
Director 3					0.6
HK Mgr	20.68	0.840		34	-0.8
Main Assist	11.97	3.083			-0.333
Ningbo Warehouse				3	0.333
QC2			6.166	2	0.333
Shanghai CEO		6.166		10	-0.142
Shanghai Factory	7.98	4.111		1	-0.75
Shanghai PDM ³	13.21	1.701	0.850	8	-0.454
UK Warehouse	11.97		3.083		-0.333
ZJ JV				8	0.2
ZJ Sales Mgr				7	1

1. non-normalised;
2. Liaison Role 0.85;
3. Consultant Role 0.21

There are also five representatives, where the broker and one node belong to one group but the broker cites a node in another group. These are the key figures in the UK retailer, responsible for sourcing and product development and two in the Shanghai supplier. Interestingly, however, the QC2 figure is more prominent in this regard than the Buyer with the formal responsibility. The honest broker index lists the number of otherwise disconnected pairs, connected by the broker. Only incoming ties are considered. This brings together the key figures from the gatekeeper and representative roles, with figures from the ZJ supplier. Finally, the last column reports an index drawn from the ratio of

external to internal ties (Krackhardt & Stern 1988) for those nodes where this was positive, that is their reported ties in the product development process were predominately outside their organisational grouping. Significantly, the CEO, Directors and Head of Buying of the UK Retailer as well as principal figures in the four suppliers appear prominent here.

The product development network formed in the four projects centres on the Buyer, Quality Control Manager and one of the Directors of the UK Retailer, together with the CEOs of the Hong Kong and Shanghai suppliers and the Shanghai PD manager and designer. The supplier principals are structurally gatekeepers for the relationships within their groups cited as important to product development. Within their groups there are key coordinating figures such as the designers in the Shanghai and Main suppliers. The Main and Shanghai suppliers involve a wider range of players in their relationships with the UK retailer. This may simply point to the more established histories or particularly involved aspects of the products that require a more embedded set of relationships. But it also signals greater trust as the suppliers have opened their organisational perimeter to a wider range of interaction.

Finally, there is some evidence of a ‘diplomatic’ process alongside the more structurally embedded interaction. These are the players with high externality – cited relationships outside their organisational group – who otherwise are not particularly embedded in other terms. These not only included the CEO and Directors of the UK Retailer, but also the principal figures in the less embedded suppliers. The above findings although significant, as they mathematically visualise the interconnected networks of relationship patterns, do not explain what this study seeks to comprehend. However, they provide the context, where upon further qualitative analysis is based. It should be noted that SNA techniques, in terms of data collection, cannot approach all involved network members. Thus, the qualitative analysis is based mostly on the subjective views of the study’s participants and the participants’ interaction with the researcher. Hence, research issues, such as how business actors interact, how they nurture and develop relationships and to what extent relationship resources facilitate knowledge-based resource combining, are explored in a qualitative inquiry, presented next.

5.1.2 Network Perceptions – A Qualitative Inquiry

Kenas, a foreign-owned furniture manufacturer, which is based in Shanghai and has its warehouse facilities in Ningbo, has been the largest supplier of the UK buyer in China. The directors of the two companies met in a trade fair, in Singapore, almost a decade ago. Since the first years, Oka agreed exclusivity in the whole UK market, and Kenas, agreed with Oka to be its exclusive supplier in the whole Shanghai province. Although it seems that the business actors' relationship had reached its developing phase, there were many critical events that have shaped the status of the relationship since then. For example, a few years later, Oka placed a relatively small purchase order for wooden chairs from a Swiss producer, which was identified in a trade fair in Shanghai. But Oka buyers did not know that this company operates in Shanghai. The Director of Kenas learned about the order, due to his extensive interpersonal networks with local producers, and reacted immediately.

As the Head of Buying narrates, the action of the director of the supplier was to send an email to the directors of Oka, requesting immediate cancellation of the order and questioning their agreement on exclusivity and indirectly the UK buyer's trust and commitment to the relationship. It should be noted here that the exclusivity agreement was unofficial and came out of interpersonal interaction. The Oka directors requested immediate cancellation of the order to the Swiss supplier in Shanghai. The Head of Buying explains in an interview that this move was critical, as it showed how committed Oka was to its relationship with Kenas. High commitment at the time was shown due to the fact that 'Kenas [was] the door to a whole network in China' (interview: UK Head of Buying). Based on the long-term orientation towards the relationship, the general manager of Kenas offered a large space for Oka's finished products in the foreign-owned company's warehouse, which is located in Ningbo; a place with close proximity to Kenas supply base and Oka's sub-suppliers. With the warehouse in Ningbo, quality inspection takes place at the warehouse and this results in shortened lead times and a huge drop in defection rates. In total, according to the general manager of Kenas, around ten people are involved on a daily basis to manage Oka's account.

In the beginning of the relationship, Kenas started to supply Oka with wooden furniture, as finished products without any modifications involved. In 2005, Oka requested upholstery products, such as sofas and armchairs. However, their production should take

into account strict UK safety standards. Kenas at the time of the request had just introduced its first upholstery product line. However, although Kenas agreed to produce this request, it had to invest in new machinery and equipment as well as identify and nurture relationships with new suppliers. Kenas' general manager notes in an interview that the foreign-owned company perceived the relationship with the buyer as long-term orientated due to the fact that Oka was growing and thus the relationship was promising. But most importantly, Kenas' creative directors knew what Oka wanted due to the established relationship with the UK buyer (interview: Kenas GM). It should be noted that before 2005 all upholstery products were produced in the UK or South Africa, where Oka was buying from.

For the upholstery project, Oka's team, travelled to Shanghai with specific drawings and working methods for completing the project successfully. Most importantly, Oka sent over a PD manager for a couple of months initially and approximately once in three months until completion of the production samples. It took Oka and Kenas around sixteen months to complete the project. The team of R&D, which composed of business actors from both sides, visited a new sub-supplier of foam for this project. This is important to be noted as Kenas' business actors are usually responsible for the selection and management of their relationships with their suppliers and sub-suppliers. Hence, it can be inferred that Kenas' side was willing to involve the buyer in this, as they appreciated Oka's know-how with regards to the project under consideration. This project was only the beginning of the continuous knowledge-based resource interaction that has taken place for the past five years, with successful outcomes and new product ranges, which are exclusively produced for Oka. Lastly, it is important to be mentioned that Kenas' side visits Oka almost twice a year, especially when there are problems to be settled or future plans to be agreed, but even when Kenas' managers and directors travel to London for leisure they will organise outings and leisure activities. Similarly, Oka's directors and the Head of Buying visit Kenas sites at least twice a year. Hence, frequent visits to each other's' sites help them to further develop and maintain close interpersonal ties with characteristics of friendship and affection.

Another product development project, initiated by Oka, involved the identification of an appropriate supplier, which could be able to produce a technically specialised fabric that meets UK safety standards (fire retardant, water resistant, stain resistant, and colour fast to sunlight - UV). The innovative fabric had been introduced to the UK market in

2006 by a US upmarket designer, Ralph Lauren. However, the UK Retailer had no knowledge of which of its existing suppliers was capable to develop the innovative material. Once the project had been approved internally, the product development team and in particular the Head of Buying started to contact potential suppliers. The most appropriate candidates would be those with widely established networks and relevant capabilities and resources to develop the required technology; a required 'module' upon which a variety of product ranges could be further produced and marketed. The buying company contacted four potential suppliers, two of them new contacts. The two new contacts failed to provide the specialised fabric. One of the current suppliers based in mainland China (Zhejiang), which is partly state-owned, failed to produce or source the requested module quality within its own inter-organisational networks, and could not find a lab for testing. Interestingly enough, the Zhejiang supplier was later given another R&D opportunity by the UK buyer, which is discussed later on. Given its already well established relationship with the UK Company, a Chinese supplier in Guangzhou with its headquarters in Hong Kong qualified as the best solution for the project, due to its established networks in China and internationally. It should also be noted that one of its largest suppliers is located in Taiwan and introduces innovative materials on a regular basis (interview: Merchandiser Manager of HK Supplier).

The selected Chinese supplier is considered to be one of Oka's important suppliers. As the UK Head of Buying notes in an interview, since an early relationship stage:

‘[The Guangzhou supplier] has shown innovative capabilities and a culture that emphasising trust through willingness to learn, efficiency and innovative solutions as well as problem solving through effective communication... Most importantly, the Chinese supplier has established wide guanxi networks in China’.

The supplier with its production unit in Guangzhou used its own supply network to develop the new solution. The supplier's supplier provided parts and technical knowledge. The two companies had established a close relationship, which kept growing for many years. Oka's sub-supplier, a Taiwanese company, was introduced to the Chinese supplier by another buyer, from the US, on account of its high quality fabric materials as well as its networking capacity. Relationship resources among the two suppliers were built through visits to each others' sites. The merchandising manager of the Chinese supplier notes that on-time shipments increased reliability and trust within the relationship, but most importantly, in the beginning of the relationship, the two parties visited many times each other's sites, which assisted in developing the characteristics of

commitment and trust to the relationship. The sub-supplier, with its headquarters in Taiwan and its production unit in China, was responsible for providing the supplier with reports of production and testing procedures, which were then passed to the UK buyer through the HK supplier for assessment.

The difference in this project compared to the previous one is the lack of direct interaction of the UK buyer with indirect partners. For this project, the UK buyer had to depend on its Southern Chinese supplier and hope that the supplier efficiently manages its network of relationships for this project on its behalf. But Oka could have confidence in this process because of the high involvement relationship and especially the relationship resources that had been built among its central actors over time, such as trust and reciprocity. By adopting a delegation strategy towards its suppliers, the supply base is reduced and suppliers interact with sub-suppliers directly without the involvement of a foreign buyer or a higher-order supplier. This may prove to be a successful strategy for managing the supply side in the 'East' side and with regards to delegation issues in product development networks, research findings by Johnsen & Ford (2002) argue that a delegation approach is preferential when dealing with partners in Japan. Further, intervention not only involves costs but also affects direct as well as indirect relationships. By intervening into the supplier's network the UK buyer would have possibly questioned the trust towards its supplier and would most likely have undermined the relationship between the Chinese and the Taiwanese suppliers, by negatively affecting the Chinese company's face; an important resource in guanxi networks.

What is particularly notable in this case is the development of the guanxi aspects of the relationship. The network for this product development project proved to be highly centralised around a few individual actors, noting the interpersonal nature of guanxi. As a matter of fact, two actors were highly involved in daily inter-organisational communication processes. The very central role of these actors in terms of project management and information flows within their networks can be explained by the fact that both have developed over time a reputation for expertise and responsiveness and thus have become critical sources of information. In other words, the two central business actors have cooperated in previous projects, and this has helped to facilitate the interaction process and speed up the development of strong social ties. Inter-subjective appreciation and understanding of each other's knowledge and skills have made interaction and knowledge sharing a natural process. With regards to relationship

maintenance, the Chinese supplier showed understanding of reduced orders due to decreased demand by the UK buyer's customers during the economic downturn, and started to provide storage space in Guangzhou warehouse for Oka's outstanding orders.

Finally, apart from *guanxi*, and interpersonal relationships, 'nengli' meaning capabilities is also one of the key factors influencing co-creation and co-development. The Head of Buying of the UK buyer apart from network maps also produced a narrative in writing with regards to the evolution of the interpersonal relationship with the central actor of the Chinese supplier, from which it can be inferred that absorptive capacity and working attitude influences the establishment of relational aspects, and in turn knowledge co-creation, even though they are both Chinese nationals.

'At the first beginning, I didn't know her well apart from she is an experienced merchandiser. Through the first project to develop a garden range together, I learnt more quality from her. She is a reliable person that you can always rely on. She is reachable even on her holidays. Also, she has a working attitude; always willing to learn and try different approaches. It makes the product development so much fun. We communicate frequently, share information, discuss production problems and try to find ways to solve them. Based on the profound knowledge in the industry by both sides, setting up the relationship and the trust is not difficult. Although my colleague is dealing with her account now, she always provides full support to the company because she knows that I will be supervising the department and she can always rely on me in case of a problem'.

As has been noted above, the Zhejiang supplier failed to produce the specialised (UV, fireproof and water resistant) fabric. One reason might be its limited network. Another might be the lack of experience or innovation capability. But most likely is that the relationship with the UK buyer was comparatively at an early stage at the time of the request. However, the UK Company did not give up on the Zhejiang supplier and after the failure to develop the specialised fabric, the UK buyer requested from the supplier a specific pattern of 100 per cent linen material, which did not produce at the time of the request. The mainland supplier successfully sourced to Oka the required material by adapting its technical resources. It can be inferred that a close relationship can lead to investment in technical resources. Although the production of linen was not its major competence, a new product launch became quickly a success in the UK market and a large product range has been jointly designed and developed at the Chinese supplier's factories. Research findings reveal that the successful product launch came through a redefinition of interpersonal relationships via an ongoing interaction process, which redefined the nature of this specific relationship and developed its characteristics. At an

interview, the manager of the Zhejiang supplier explains that success came after working together in numerous projects, but most importantly was due to a visit to the UK Company's site, where the manager completely understood their mindset, and also showed commitment to the UK side. The Head of Buying of the UK Company also notes that the central actor involved in the project has shown 'an understanding of our mindset', after visits to each others' sites.

For the 100 per cent linen project, two of Oka Directors and the Head of Buying visited the Zhejiang supplier to examine its linen quality and colour options. After the visit, they believed that the Zhejiang supplier is capable of producing the request. As a result, they decided to cut down orders from an Indian supplier, which was comparatively expensive. But, why did Oka trust the Zhejiang supplier before the production samples had been agreed? One reason is that all business actors were satisfied with their visit to the supplier's sites. Another might be that the two firms had an ongoing business relationship. But most importantly, as the Head of Buying notes, Oka realised how keen the Zhejiang manager was to develop this business relationship. For example, the Head of Buying notes that the Zhejiang manager told them that had looked at many hotel rooms and even checked the facilities on offer in order to choose the best rooms for Oka representatives, just for a night's stay. This is an act that nurtures and develops important aspects of interpersonal relationships. Having successfully produced the production samples, the Zhejiang manager visited Oka at his initiative in London to present to the buyer; an act which shows how valuable in business relationships face-to-face meetings are. It can be concluded that the above actions and reactions are parts of an ongoing interaction process that involves both business and non-business interaction. In other words, it shows how relationship resources are established and how a context is created upon which knowledge-based resources can be combined and new knowledge be created.

Another product project involved the UK buyer, the Shanghai supplier (HOFI), and the quality controller (QC2) of the Shanghai supplier; Kenas. What shall be explained initially for this product development network is the position of QC2; an actor, who links the networks of two competitive suppliers, in Shanghai, horizontally⁴¹. Having mentioned the exclusivity of Kenas in the Shanghai supply market, an understanding of the

⁴¹ The sociogram can be found at figure 5.1, p. 176.

evolution of various relationship patterns is required to explain this sensitive role in the network and the mobilisation of this actor. Initially, the product project did not pass the sampling stage due to quality problems, and a refinement in production and packaging methods that had to involve many actors at various departments was negotiated at a meeting, in London, which involved business actors from both sides. The Shanghai CEO visited the UK buyer at its site to discuss their feedback on the rejected samples. The visit showed how important interpersonal interaction is during critical events; in this case discuss feedback and plans on how to improve product quality. The Shanghai CEO notes in an interview that ‘business is relationship’.

During the meeting, the suggestion from actors of the UK buyer, which was enthusiastically accepted, was to allow the QC2 actor to inspect the whole production process for this particular project. But, how the UK buyer could mobilise a quality controller employed at its other supplier in Shanghai? In the beginning, the QC2 actor was employed by the Shanghai supplier (Kenas), with which the UK buyer has a strategic relationship, and was responsible for all Oka projects. Due to the trust and reciprocity in the relationship between the UK Head of Buying and the general manager of Kenas, the QC2 actor was at a later stage fully employed by the UK Company, reporting directly to the UK Head of Buying, even though the business actor, QC2, has not yet visited the UK buyer’s sites. Here, it is important to note the network-making power of the UK Head of Buying, who as a linking agent, mobilised business actors within the supply network by appointing the QC2 to work also at another supplier, as an external consultant in the quality control function. This network switching is not yet known by Kenas’ Directors and as a result it was suggested by the Oka participant that the researcher does not raise this issue during interviews with participants from the Shanghai supplier.

The above mentioned horizontal integration of a supply network, in terms of product development issues, has been the result of negotiations during the sampling stage of the ‘weather oak table’ project. As has been mentioned, the CEO of the Shanghai supplier, HOFI, together with the PD manager visited Oka when there were reported sampling defections by the UK side. The defection had not only been caused by the packaging methods but also by the weak bonding of the table’s legs. During the meeting in London many issues were raised with regards to potential changes in production and packaging methods. But the switch of the QC2 business actor from a competitor was seen

as an effort by the UK buyer to assure quality for the new version of the production samples; a move showing commitment, trust, and long-term orientation as well as a vision for sustainable new product co-development. Research findings reveal that the UK Head of Buying and the HOFI CEO had developed close relationship ties through an ongoing interpersonal interaction process as they are both Chinese business women and understand each other's backgrounds and future expectations. It is also uncovered that the HOFI CEO sends personal gifts to the UK Head of Buying during the Chinese New Year season whereas the UK Head of Buying shares regularly confidential and strictly internal information to the Shanghai supplier, such as new designs, sketches and information on UK market trends.

In terms of organising for interpersonal relationships a *guanxi* relational approach adopted by business actors which may have positive outcomes and promote continuous innovation and efficiency within the supply and production networks in China cannot be documented by management. On the other hand, in terms of developing inter-organisational relationships the UK buyer and most of supplier companies have used a number of mechanisms to link their activities and leverage exchange of resources. Companies form virtual communities with their partners through the use of internet platforms, such as ERP and JIT systems. However, in terms of soft knowledge transfer mechanisms and the development of interpersonal relationships, the UK Company organises yearly presentations for its suppliers in China and most of its first-tier suppliers are invited to England, and are hosted at the director's home; the sort of action that greatly builds *guanxi* in China. The UK management team values socialisation for business and implements soft knowledge transfer moves with an aim to create epistemic aspects of inter-organisational networks; rather than aiming at controlling supply network operations through promoting rigid structures. This kind of management practice seems appropriate for product development and has positive impact specifically to interpersonal relationship cultivation and evolution among individual business actors. Lastly, it can be concluded that a close relationship with first-tier suppliers in China can provide direct access to suppliers' networks. The above findings are explored in more depth in the following case studies.

It is possible to argue at an early stage of this multiple case study that there is a difference between Chinese and Western business actors. Findings show that the two suppliers in

Shanghai, Kenas and Hofi, have a different approach to relationship building, as one is Chinese and the other is Dutch. An example is that during the economic recession of 2009, the Chinese supplier, HOFI, decided to visit its overseas customers to develop and maintain its business relationships. As the CEO of HOFI noted in an interview; she travelled from Australia, to USA and Europe, during a climate of global recession, where orders from the Western part of the world were being cancelled or at least reduced and new product development plans were postponed. In contrast, the Dutch supplier believed that organising an expensive exhibition at a Singapore fair to find new buyers would be an appropriate antidote to reduced orders from the West. Hence, it can be inferred that indigenous Chinese companies invest more on developing and maintaining strong ties with buyers through interpersonal relationships and face-to-face interaction.

5.2 Case Study Two: Downstream and Upstream Interactive Relationships of a Foreign-Owned High-Tech Manufacturer in Guangzhou

Strix Guangzhou (GZ) is the main manufacturing unit of Strix with its headquarters in Manchester, UK. Strix UK has established many close relationships with high-tech component manufacturers in the Guangdong province and during the last decade has moved 80 percent of its manufacturing base from Europe to China. Strix GZ produces high-tech components for electric appliances, such as kettles. Although the headquarters are located in the UK, some key Directors are based in China. It is important to be noted that the first ever appointed Chinese national director was the Operations Director. The Chinese Operations director was appointed a couple of months before the interviews and nearly after a decade since the establishment of Strix GZ. The appointment of a Chinese national Operations director was due to the many existing relationships of Strix GZ with local suppliers and producers as well as customers. However, the Operations Director was not available during the time of the fieldwork in Guangzhou and a telephone interview was arranged which neither allowed network mapping and narrative techniques to be employed nor more sensitive issues to be discussed.

In the beginning of the millennium, the general manager of Strix GZ was a Hong Kong national, and this has resulted in a large supply base around Canton. At that time, there was no purchasing office in China. In 2001, a purchasing department was set up in Guangzhou, which followed more formal procedures to develop relationships with suppliers compared to the previous interpersonal and network-like process that has been followed by the Hong Kongnese general manager. Since its establishment, the purchasing office was named as Strix GZ. Its initial purpose was to evaluate the performance of suppliers on a monthly basis, in terms of quality, price terms and lead times. Nowadays, most of the company's strategic suppliers and OEMs are local Chinese as well as many of its key customers (e.g. Haier, Midea).

The researcher interviewed three key business actors and analysed their perceptions with regards to the evolution of various relationship patterns in two high-technology project networks. The gatekeeper for this case study was the Strix Asia Sales manager. The researcher has a personal relationship with this informant for nearly six years. The gatekeeper granted permission by the nowadays Chinese general manager of Strix GZ to introduce another two key business actors from Strix GZ to the researcher; the Operations

and Purchasing managers. Similarly to the previous case, the researcher encouraged and assisted interviewees to design network maps depicting key relationship patterns within specific high-tech product development projects; wherein each of them has been involved. Although the networks are complex, the key relationship patterns in these networks are usually characterised by close ties that involve trust, and commitment. As findings show, later on, in terms of co-development and knowledge-based inter-organisational resource interaction, the development of interpersonal aspects of relationships seem to be influential as they rejuvenate the whole network at the time of critical interaction episodes.

With regards to the link between interpersonal relationships and research and development, the Operations manager notes that a Chinese general manager of Strix GZ or a Chinese Operations Director of Strix UK can be more successful in managing a supply base in China and developing good working relationships with business actors internally as well as interpersonal bonds with actors of suppliers and business customers in China. The Operations manager views *guanxi* at the operational level as a process and differentiates from political *guanxi*, which is static, and should be developed, usually with governmental actors. Strategic or political *guanxi* relationships are not dynamic as they mostly involve the exchange of explicit knowledge, which has no direct impact on product development processes. In fact, Strix UK used its political connections to develop *guanxi* with central and local governmental actors with a purpose to expand its factories and its foreign-owned production base in the industrial district of Guangzhou. In that political building of *guanxi*, officials were present, such as the British ambassador of China and local politicians.

The appointment of a Chinese general manager of Strix GZ and that of a Chinese operations director is beneficial for managing interactive product development processes in China and developing good working relationships with business actors internally as well as strong bonds with actors of suppliers and business customers in China (interview: Operations Manager). Interestingly, the purchasing manager of Strix GZ notes in an interview that more and more Chinese people are getting involved with business management and R&D issues and in general throughout activities in the whole supply chain. In addition, the manager interestingly notes that if the *guanxi* aspects of relationships are not established, problems in the product development process cannot be

solved easily and may take longer time. The purchasing manager concludes in a few words that ‘guanxi is dynamic... guanxi is life’. But guanxi should be protected as conflicts may arise indirectly. For example, Strix GZ does not organise any conferences, presentations or events for its suppliers, which could be seen as a common inter-organisational knowledge transfer mechanism. With regards to the latter, the Operations manager notes that a presentation or a conference may bring competitive suppliers together and this in turn may distort knowledge sharing as conflicts may arise among competitors.

The operations department of Strix GZ is composed of the purchasing, production, quality, and logistics functions. They are all interrelated and interdependent functions directly involved in each component or product development network involving both customer and supply sides. The first person interviewed was the Strix GZ Operations manager, who has been with the company since its establishment. The Sales department of Strix GZ is composed of a technical support manager, an OEM/customer support manager and an application engineer manager; all reporting to the Asia Sales manager and the Sales director. The Asia Sales manager, who was also interviewed, reports to the Sales Director, who has been moved from UK to Hong Kong, since the beginning of 2009, where the first showroom of Strix UK in Asia was established. The whole network of business actors at the Sales department is always directly involved in various parts of the product development process alongside its customer side.

The first high-tech project network examined, involved Strix GZ, Haier, an OEM (XBO) and a few suppliers; all located in China. For this case, social network analysis is not feasible as the high-tech network is complex and Strix GZ’s buyers and suppliers have not been interviewed. Instead, the most important interaction episodes are presented via a nomothetic analysis, according to participants’ perceptions of the network. The purpose of this product development network was to develop a variable temperature component for Haier - the buyer. With this new technology the end-product would be able to control the boiling temperature according to user’s needs. For the ‘variable temperature’ high-tech component there have been involved many business actors and many new relationships have been nurtured and developed for almost three years. Also, all managers of Strix GZ have been involved more or less until completion of the project.

The inter-organisational relationship between Strix and Haier was nurtured five years ago, due to a close interpersonal relationship of the Strix GZ Sales Manager with a manager at Haier. The two business actors were university classmates and were born in the same city, and thus speaking the same dialect, Wuhanese. Although the gatekeeper at Haier's headquarters in Qingdao was working in another division, which was related neither to purchasing nor to marketing divisions, introduced the friend to the appropriate manager at Haier headquarters. As the Sales Manager⁴² explains because of the close interpersonal relationship with one of Haier's managers, it was not so hard to nurture the relationship. However, the Sales Manager went on to argue that in the high-tech industry, what is important, in terms of developing business relationships is know-how. Strix GZ, apart from being an expert in the high-tech sector, it has developed via its multilevel inter-organisational relationships a detailed assessment of different OEMs and suppliers, which in turn offers valuable knowledge and access to resources for its customers. In addition, the interviewee claims that Strix GZ introduces new technologies to both customers and OEMs on a yearly basis, and this is the main drive in maintaining multilevel relationships in high-tech networks.

Haier is a brand name; it does not produce any whole end-products for its customers. For this project, Strix GZ introduced three OEMs to Haier for its assessment. Then, Strix GZ's employees together with Haier representatives visited the OEMs. The relationships of Strix GZ with all three OEMs were well-established and all OEMs were considered as capable to develop the required new technology. The successful candidate was XBO, which Strix had had a close relationship with for almost a decade. The regional Sales Manager of Strix has established personal relationships with many business actors from XBO throughout the completion of many projects. Although Haier employed its own assessment procedures, in the view of the Sales Manager of Strix GZ, XBO is very sophisticated and it was chosen because it is always keen to develop new technologies and take on new challenges compared to the other two OEMs. XBO employs around seven thousand people. Representatives from both Haier and Strix GZ met with XBO's business actors to discuss possible product failures and ways to improve the industrial design of the end-product, hence eliminating risks and securing the rate of return of the investment. The Strix Sales Manager notes in an interview that during this project face-

⁴² For details of this interview transcript, see appendix B, at the end of the thesis.

to-face communication was preferred for issues with regards to production and supply management as well as issues concerning potential business developments and suggestions in terms of approaching potential customers.

The second project discussed in this case study refers to another thermostat innovation, but in this case the end-product is a kettle appliance designed exclusively for Midea, another of Strix GZ's large local customer. The new kettle would provide a unique solution to Chinese consumers as not only it enables the user to boil water at different temperatures for drinking various kinds of tea but also it is cost efficient as the appliance consumes less electrical power. Strix GZ and Midea, one of the biggest kettle brands in China, were the two company actors alongside two local suppliers. Both suppliers are located in the Guangdong province. The two suppliers provided plastic and metal parts used for the production of a new high-tech component. Strix GZ and Midea have an established business relationship that goes on for more than five years. For this project, during initial meetings, business actors from the Media team suggested some special features for the new product to be developed, such as energy-saving and low-cost in terms of industrial design. The supplier, Strix GZ, designed a questionnaire and employed this to conduct a survey with an aim to identify Chinese local consumers' preferences for kettles, mostly with regards to price and quality. The Strix UK R&D director and the Sales director in Hong Kong were deeply involved in this strategic project. As a team, including the Asia Sales manager and business actors from the operations department of Strix GZ, after interacting with key business actors from sub-suppliers, decided that it would be a profitable solution and most importantly will improve the business relationship with Midea; a strategic partner of Strix GZ, which enjoys a thirty percent share of the total kettle market in China and employs over three thousand people in its kettle division.

For this project, Strix GZ developed a new 'wave' technology with one of its long-term partners; a Chinese supplier. Based on experience from previous developments with its supplier, Strix requested a new plastic component required for the production of the new wave technology, which in turn was going to be included in the final kettle solution to be produced for Midea. The technical engineer, technical support and production manager of Strix GZ shared know-how with business actors of the Chinese supplier in order to develop the new high-tech component. Strix GZ suggested possible solutions and

provided advice in terms of specific equipment needed to be used for the production of the wave technology. The Sales Manager noted that Strix's Chinese supplier has shown trust as they continuously offer to the company new solutions and try to produce new components and end-products with them. In a few words, Strix activated its existing network and worked closely with the two suppliers; one for a new thermostat development and another for a new wave technology. Finally, Strix brought the completed package solution to Midea, which included technical implications of a market survey conducted by Strix GZ on behalf of Midea that took into consideration responses from Midea, but also from some of Midea's competitors, which happens to be Strix's business customers in the Chinese market.

Companies use various kinds of soft knowledge transfer mechanisms, such as socialisation events. As the Sales Manager notes, during the whole period of the thermostat project with Midea face-to-face communication was preferred for issues with regards to production and supply management as well as issues concerning potential business developments. In particular, face-to-face meetings and direct phone calls were gradually became the basic mode of communication during this project. According to the Sales Manager, all began during the initial phase of this project with Midea. Strix GZ invited Midea's business actors, who they were particularly involved in the project for a football game. Although, the arrangement was made for just a game, business actors from both sides gathered to play football many times until completion of the project. The idea was initially proposed by the Sales Manager of Strix GZ to the Sales Director, who agreed to offer the budget for the games. As a result, the 'football' teams of Midea and Strix GZ played many times and dined together after each game. The purpose by management was to encourage interaction and establish close interpersonal relationships among business actors working in the same project. In an interview, the Sales Manager interestingly notes that 'sometimes we try to lose so they do not lose face'. The above statement enhances understanding of the guanxi process and explains that guanxi interaction processes take into account aspects of the Chinese socio-cultural system, such as face and reciprocity.

Findings show that in terms of co-development and knowledge-based inter-organisational resource interaction, the development of guanxi aspects of relationships seem to be influential as they rejuvenate the whole network at the time of critical interaction

episodes. By developing guanxi aspects of relationships, Midea's position in the market was improved due to the knowledge-based resource combinations that took place among business actors of Midea, Strix GZ and sub-suppliers. Also, the two local suppliers of Strix GZ gained a lot from the development of strong social ties among the two large partners as they improved their position in the high-tech component manufacturing market in China as well as in the view of their partners.

5.3 Case Study Three: High-Tech Product Development Networks of a Mobile Phone Component Manufacturer in Southern China

The CN Group is a network enterprise with its headquarters in Hong Kong. The CN internal organisational network involves around ten thousand employees, including management and administration staff, and has established business relationships with hundreds of suppliers in China and internationally. Its customers include Nokia, Samsung, and Apple, among other large players in the global mobile telecommunication industry. CN group is family-owned and has a history of nearly a century. It is composed of many decentralised but interdependent manufacturing and business units, the majority of which are located in Southern China. Also, CN has set up a few joint ventures inside and outside China and has sales and technical support offices abroad, close to customers. The researcher has visited two of its core factory sites: Vitalink (VL), which develops surface treatment by Physical Vapour Deposition (PVD) and CN Innovations (CNI), which does metal/powder injection moulding (MIM) for precision products.

CNI acts as a brand name and an umbrella ‘company’ of CN’s horizontal enterprise network. Although each company in the network is decentralised, having its own suppliers and customers, it is also interdependent and interrelated to the others, in terms of sharing know-how and introducing suppliers and customers to each other according to the project under development. Close relationship patterns characterise the CN network and assist on maintaining a state of continuous intra-organisational knowledge-based resource combinations, which are leveraged through inter-organisational knowledge-based resource interactions through the development of relationships with customers and suppliers. As has been noted, of substantial value is the cooperation that takes place within the group of companies, including a few sales offices abroad, close to customers, which support product development processes through close interaction and the establishment of trust and commitment. For example, CN has set up a sales office in Finland, which employs local people and is located close to headquarters of Nokia. The sales office is responsible to provide customer services and increase speed of response to demands from the customer. It also handles sampling issues and organises inter-organisational meetings between Nokia and CN.

Open-ended interviews discussed issues with regards to interactive relationships within the supply side of CN, and perceptions of relationships with business actors from

customers: Nokia and Samsung. The aim of interviews was to emphasise the evolution of business relationships within product development networks, in the context of two high-tech projects; each involving one buyer. With regards to the social sampling approach for selecting participants, the Sales manager of CNI, was a person known to the researcher for nearly six years. After discussions with the interviewer and especially after an initial interview, the CNI Sales Manager identified as relevant to the study the operations manager of Vitalink; a manufacturing unit of CN that employs around 1200 workers and which was involved directly in the co-development of both high-tech components discussed in this case study. These two key informants come from the same city and therefore speak the same dialect. As a result, the two key informants' interpersonal relationship, which is characterised by trust and reciprocity, allowed openness and trust to the researcher during the interview. The operations manager, in turn, introduced two of his PD managers in order to discuss with the researcher relationship and network evolution with regards to these two high-tech product development projects.

The Sales department of CN, which belongs to CNI, is composed of around forty people and is split into teams according to buyers, such as the Nokia team. The Sales manager is responsible for the management and the formation of all product development teams. This implies that the manager is not directly involved with managing the supplier network for each project, but plays a vital role through mobilising the necessary business actors from different departments of the CN Group to form product development teams for each project. Each team includes business actors from various departments, such as Sales, Production, R&D, Design and Quality Assurance. For instance, the CNI Nokia Sales team involves ten people. Further, the CNI Nokia team is separated in terms of geographical regions. The Sales manager notes in an interview that each product development team is composed of managerial staff alone; then it is up to each manager's discretion to select the appropriate business actors to be involved. In terms of the process, the Sales Manager notes that before the production department is involved, the entire job is done by the quality and product development departments, always in line with the Sales department and of course through interaction with business actors of both customer and supply sides.

According to the Sales manager, the Sales department can be distinguished into two functions; the Marketing and the Programme Marketing. The Marketing function's

primary duty is to identify and approach new customers through face-to-face communication. In contrast, the purpose of the Programme Marketing function is to further develop and maintain existing business relationships; for example, by setting up overseas offices, such as CN Finland. It is noted by the Sales manager that people from the Programme Marketing function do not arrange many face-to-face meetings, as these are particularly necessary to nurture relationships, but not to develop them. In terms of *guanxi*, the interviewee notes that for *guanxi* to be transferred to *xinren* (trust) ‘you have to prove yourself’ by developing your knowledge-, technical- and economic resources through interaction with various business actors within an infinite network. From the interviewee’s point of view, for medium-large companies in the high-tech sector, *guanxi* can also be established between companies and departments. However, for small businesses *guanxi* is more interpersonal in nature. Most importantly, the Sales manager perceives *guanxi* as a processual phenomenon found in all industrial sectors. For the business relationship with Nokia, the Sales Manager notes that through long-term cooperation with business actors of Nokia, the buyer has learned CN’s mindset and ways of operating. For example, the Sales Manager claims that even if the price of CN’s is ten percent higher, Nokia will still buy from CN due to the established trust and commitment that characterise the relationship.

With regards to the development and maintenance of its business relationships, Nokia organises supplier conferences yearly for its strategic suppliers in China, who are invited to learn about Nokia’s directions and future expectations. However, as the Sales manager notes, during the conference, suppliers are not allowed to visit other suppliers’ showrooms. In this way, Nokia protects its suppliers. The Sales manager perceives CN as a medium-sized supplier of Nokia and argues that in order for a company to remain competitive within the huge supply and production market of China, it is necessary to hire business actors who have previously worked, for example, for Nokia or for a large supplier of Nokia. In this way, actors can be mobilised within global production and supply networks. Hence, through people, a company can get advantage of new relationships by gaining access to new networks, which in turn can leverage the development of inter-organisational knowledge-based resources. Further, the Sales manager notes that these key business actors may come from abroad but also from within China; especially the Southern regions of China, where the high-tech industry is in a mature stage. This is because Southern parts of China, including Hong Kong, have

opened the door to foreign companies for many decades and have established long-term relationships with companies from Taiwan, Japan, Europe and the United States. With regards to a regional comparison, the operation manager notes that Taiwanese companies focus more on technology as they have a more specialised workforce and well-established relationships with American and Japanese companies.

Vitalink is a large business and production unit within the CN Group. It is separated into the engineering, product development, production, and quality assurance departments; all of which report to the operation manager. The product development department has around twelve managers, who are separated into teams of two or three. The product development teams are involved in a few projects at a time, which involve different sets of customers and suppliers. The supply network of Vitalink is composed of over hundred suppliers in China, but as has been noted Vitalink also shares suppliers from other units of the CN Group (e.g. CNI; Zoltrix; CNPC). Relevant to the product development networks examined in this case study; Vitalink has established a joint venture with a Chinese company in Suzhou. They have jointly invested in coating machinery, which is important for the finishing of its glass components, such as touch panels and front cover glasses for mobile devices

Regarding supplier evaluation, the operation manager notes that Vitalink does not evaluate the performance of individual suppliers or the performance of the whole supply network. Rather, in the beginning of the relationship, company representatives visit various potential suppliers and perform audit-runs at their sites. Most importantly, on the project level, there is an ongoing trial and error process until the required specifications are satisfied. The operation manager notes that suppliers usually fail when they do not invest in resources together with CN. For example, during the economic downturn, the development of new solutions have slowed down due to a risk averse attitude taken by supplier companies to invest in new resources, which in turn would usually allow inter-organisational resources to be adopted and combined. However, as the study maintains, investment and adaptations are dependent on ongoing interaction. Hence, it could be that organising for interaction is not sufficient in cases where partners do not wish to jointly invest in resources. It might also be that there are no high levels of trust, as the relationship may be in a pre-mature stage. These issues are further elaborated in the context of two product development projects.

The first high-tech development project discussed concerns an 'ITO Glass' component. Vitalink supplies the ITO Glass to SwenC; a Taiwanese supplier of Samsung with over 600 employees in the production division of panels. The ITO Glass is an important component for the production of touch panels; the end-product of the Taiwanese company. Vitalink in order to produce the ITO Glass uses mainly glass, which is purchased from Japan, and ITO coating, which is supplied from CSG, a Chinese supplier in Shenzhen. In this project, the PD manager of Vitalink interacted with business actors from the engineering, production and quality assurance departments. Inter-organisationally, the PD and engineering managers of Vitalink interacted with key actors of the Shenzhen supplier until the production sample was developed. Close relationships were established overtime and due to Vitalink's relationship with Samsung, the Shenzhen supplier has shown trust and commitment since the initial stages of the relationship. It should be noted that business actors from neither Samsung nor SwenC intervened to the management of the relationship with the Shenzhen supplier.

It is important to explain how the relationship with the Taiwanese supplier of Samsung was nurtured and developed as well as how Vitalink interacted with Samsung. In the beginning, business actors from Samsung R&D and Engineering departments interacted with Vitalink indirectly via the South Korean agent of CN in Seoul. The agent, whose general manager is a Chinese national and a friend of the Operations manager of Vitalink, has assisted in nurturing the relationship with Samsung and as a result, Vitalink was introduced by Samsung to work with one of its strategic suppliers, SwenC. It should be noted that Samsung mobilises some of its specialised workforce to work at SwenC. In terms of developing the required component Vitalink started to interact directly with Samsung for issues of technical development, which implies that interpersonal relationship among key business actors of the two companies who cross-organisational borders had started to develop. The Korean agent was taking action with regards to financial issues but not technical and relevant to product development issues. Lastly, during the production of samples phase, it should be noted that even for small issues, the PD manager was informing all business actors involved in the project, including the agent. Although, the network was highly complex, interpersonal interaction had an impact on linking activities and tying inter-organisational resources.

The second high-tech project discussed is the Three-Dimensional, '3D Glass'. Managers interviewed from CNI and Vitalink drew various network maps depicting their perceptions of the relationship patterns with Nokia. The specific project network involved numerous business actors from Nokia R&D, CN R&D, Vitalink, a few production units of the CN Group and a local Chinese supplier in Sichuan, a province in Western China. CN Group is a certified supplier of Nokia and Nokia usually recommends or selects appropriate sub-suppliers to work with CN. However, for the 3D Glass project, CN suggested a Chinese supplier in Sichuan, Western China. The CN Group and specifically the R&D manager together with the PD manager identified and visited the potential sub-supplier of Nokia. Nokia also visited its Chinese sub-supplier's factory site in order to reduce the distance among them. As far as know-how and knowledge capacity is concerned, Nokia sent auditors to review production and quality assurance processes of its sub-supplier.

For this project, Nokia Denmark was the customer. Nokia R&D sent specifications and drafts of the industrial design for the project to be developed. Vitalink interacted with a PVP and a metal factory; both production units of the CN Group. Within the CN Group, business actors usually communicate through emails and the exchange of samples. For the 3D Glass project, the Vitalink PD manager reported to the operations manager in case any problems came up with sampling or production plans. If there were any problems with the customer or with suppliers' performance, the PD manager reported to the CNI R&D manager. The CNI R&D department involves business actors from various production units of the CN Group. For the 3D Glass project, the CNI PD and CNI R&D managers have developed relationships with key people from both the demand (Nokia) and the supply side (Nokia's sub-supplier). The PD manager most often interacts with the PD and Sourcing managers of Nokia and through working together on an ongoing basis with the sub-supplier has established interpersonal relationships with three key business actors; the general manager, technical engineer and sales managers. However, during the project, the PD manager notes in an interview that interacted on a daily basis with the Sales manager of the supplier. The two key business actors of CNI and Vitalink since the beginning of the business relationship with the Sichuan supplier visited many times its production site in order to inspect the machineries used as well as to understand their absorptive capacity as well as learn about their network of partners and sub-suppliers. Through visiting the supplier and meeting with key business actors, CN assured that the

supplier has a high level of technological background and thus, it was considered suitable to co-develop knowledge-based resources with CN. It can also be noted that the Sichuan supplier would have shown increased trust and commitment towards its relationship with CN due to CN's long-term relationship with Nokia.

However, initial samples were sent to Nokia and negative feedback reported defections. As the PD manager explains, after eighteen months of network creation and evolution, Nokia put the project on hold due to the economic downturn. It could also be that a large investment was further required for the production of the 3D Glass and a more embedded set of relationships was needed within a network of high complexity. Also, the demand side of Nokia, Nokia customers were not ready for such an expensive device; the market was not ready. However, it was noted during the interview with the sales manager that a future successful development of mobile hardware technology would have changed the position of Nokia in the highly competitive mobile hardware market. However, such an achievement would have required not only knowledge-based resource interaction, but also economic and technical resource interaction among many business actors on a long-term basis. For this case it can be suggested that business actors from Nokia Denmark and Nokia R&D should form a 3D Glass project team together with various actors from the supply side in China. A horizontally integrated network would bring business actors closely together, which in turn would bring along knowledge sharing and co-creation activities.

5.4 Case Study Four: Interpersonal Aspects of Relationship Formation and Development: The Case of a Chinese State-Owned Tobacco Manufacturer and a Western Supplier.

This case study describes the nurturing and evolution of interpersonal relationships in the context of a product development project involving business actors of the Shenzhen Tobacco Industrial (STI) Company – a manufacturing unit of the Chinese National Tobacco Corporation (CNTC), and a Western supplier, Golden Filter (GF). CNTC has its headquarters in Beijing but is geographically decentralised based on Chinese regional and provincial structures. This case study, in particular, examines the supply network of one of its decentralised manufacturing and business units, which is based in one of China's Special Administrative Region, Shenzhen. Although the majority of STI's suppliers and customers are based in the Guangdong province, the State Tobacco Monopoly Administration (STMA), which belongs to CNTC and is also based in Beijing, manages most of the tobacco leaf supplies. These are imported from all over the world, but are also supplied from local producers, on behalf of STI. Moreover, STMA provides quotas to each manufacturing unit of CNTC, in terms of production capacity and place of selling.

STI was established in 1987 and bought its first machinery from the UK, US and Italy. The company nowadays employs around 500 workers, including almost 80 management and administration staff. STI is separated into four departments: product development, purchasing, production/workshops, and sales. The purchasing department orders supplies from factories and warehouses owned by CNTC. Also, CNTC has established a joint venture in China with an Austrian partner, which produces corn and cigarette paper. Having mentioned the centralised direction of CNTC towards its region-based manufacturing units, this case study investigates STI's relationships with headquarters and its relationships with other manufacturing units of CNTC. It should be noted that although production of the state-owned tobacco company is more centralised than companies examined in previous cases and especially those in high-tech industries, their product offerings are innovative in relation to the other production units of the parent, CNTC. Most importantly, STI has localised most of its supply base, and this explains how it differs from other manufacturing units of CNTC. Furthermore, STI is the only manufacturing unit of CNTC that uses the biological filter for one of its product ranges, which is supplied by GF; a European supplier. The above mentioned parties form the key

direct inter-relationship patterns in the product development network examined in this case study.

The researcher's access to this set of relationships came from an executive of a supplier to STI, who suggested the general manager of its international marketing company, Golden Filter (GF), as an appropriate informant. GF is the sole global representative of the innovation patent. Its general manager was the most influential actor in this network, in terms of nurturing and developing interpersonal relationships with government officials and key business actors at CNTC headquarters. This informant in turn connected the researcher with the PD manager of STI, who was employed at CNTC headquarters at the time business negotiations commenced.

In terms of supplier selection in China, as the PD manager notes, competition within the supply side in China is keen and even suppliers with established relationships can change, depending not only on price, quality and lead times, but most importantly on whether they satisfy specific project requirements. In terms of supply base, the tobacco leaves that are supplied to the Shenzhen manufacturing unit come through suppliers, both Chinese and international. The parent company's warehouses and most of its relationships with suppliers are managed by STMA. Thus, one may infer that the degree of decentralisation, because of the ownership structure but also due to the low-tech manufacturing level is quite low. As a result, knowledge exchanges, both intra- and inter-organisationally, and the product development processes, in general, are more simplified compared to previous cases examined. Also, the number of business actors involved is comparatively lower than the number of people involved in high-tech product development projects. What is important to be elaborated in this case, is the development of the interpersonal relationship between the general manager of the foreign supplier, GF, and a Chinese actor who had both political connections and interpersonal relationships with actors from the CNTC headquarters, and who assisted the foreign business actor to enter into negotiations with various manufacturing units of CNTC and later on to sign contractual agreement with one of CNTC's manufacturing units, STI. The case further expands by analysing critical events and past interaction episodes and exploring the nurturing and development of key relationship patterns in order to explain how the network has evolved through time.

The discussions take place under the context of a specific product development project, which involved a core innovation from a foreign supplier and more than ten suppliers in China for tobacco mix, which included Virginia tobacco leaves from China (local producers and CNTC's warehouses), cacao powder and flavour from Guangzhou. The joint venture with the Austrian partner produced and supplied STI with corn, cigarette and packing paper. The relationship of STI with the joint venture is characterised by trust and commitment, which in turn has positively influenced knowledge-based resource combinations, as the two parties are working closely together for almost a decade (interview: STI PD manager). Further, the key relationship pattern of the project network, involves two central actors; the two key informants of this study; the general manager of the foreign supplier, GF, and the PD manager of STI. They both reveal how their seven-year interpersonal and inter-organisational relationship has evolved. This is a key relationship pattern of the product development network, as it contributes a special component - an innovative biological filter - to one of STI's biggest and most promising cigarette brands, 'Hao Ri Zi'.

In 1999, the leader of the Chinese government, Jiang Zemin, visited the prime minister of Greece. The two delegations discussed business opportunities and the biological filter was an innovative product that attracted huge interest by the Chinese side. The general manager of GF was introduced to a Chinese official who had close relationships with members of the board of directors of the CNTC. The two actors nurtured an interpersonal relationship through alter-casting but most importantly the development of this interpersonal relationship was due to visits to each other's country of origin, which in turn enhanced understanding of each other's mind-set and ways of thinking (interview: GF General manager). They also discussed business opportunities and potential market entry as well as shared their views on socio-cultural aspects of life and found common ground among China and Greece.

In September 1999, the two central actors set up a joint company in Beijing; GF China. Its purpose was to start negotiations with CNTC and in particular STMA. The joint company was registered in Hong Kong and operated in Beijing for over three years. During this period, the GF general manager visited China for around six months per year. The aim was to organise and deliver presentations to various tobacco manufacturing units of CNTC. The total cost of the presentations and until the first deal of GF China with STI

had been completed reached \$0.5m. In other words, this interpersonal relationship assisted in identifying key business actors and influenced the identification and nurturing of new relationship patterns, which in turn had an impact on inter-organisational activity links, exchange of resources and firm actor bonds. The above also imply that a close relationship between two actors can gain access to a foreign buyer, or supplier, in this case, into the local actor's networks.

The biological filter is a patent that belongs to Golden Filter (GF), a Greek owned company. GF is partly owned by SEKAP, which manages the production of the biological filter. SEKAP is state-owned; it is part of the Agricultural Bank of Greece, which is also state-owned. SEKAP exclusively produces the biological filter on behalf of GF. The production of the innovative filter takes place in Newcastle, UK. For this project, deliveries were sent directly from the UK to China. However, for this product development project, GF's role and influence was significant. At the time of negotiations, the STI PD manager was employed at CNTC headquarters. Although the general manager of GF visited many factories in China, only the business relationship with STI was nurtured and then developed. This was due to the interpersonal relationship that had been established between the GF general manager and the STI PD manager. Having developed interpersonal ties, STI sent specifications to the foreign supplier, such as designs, diameters and pressure job details. Since then, the GF general manager usually visits China once a year in order to maintain close relationship ties and nurture interpersonal relationships with existing as well as new business actors. At this point, it should also be mentioned that CNTC sponsored part of the deal. CNTC not only assisted STI financially with new product development, but most importantly promoted the new brand to the upper social class in various Chinese regions, as a product that eliminates the bad health effects of tobacco consumption.

A critical event which took place neither within STI nor CNTC closes the discussion of the fourth case study. STI's operations strategy and CNTC strategic marketing plans were significantly affected by this. In 2003, Golden Filter China shut down. This was a distorting effect from the deteriorating relationship between GF and SEKAP, caused mainly by a governmental change in the Southern European country. The current GF general manager of GF was not satisfied, as he notes in an interview, because the government appointed new Board of Directors, whose relationship ties with the general manager were weak or not even nurtured. In other words, the GF general manager and the

new members of the Board of Directors did not share common views about business strategy and future expectations with regards to the relationship with STI. As a result, from 2003 to 2006, the foreign company dropped sales to STI to two containers per year. The above caused turbulence in STI's relationship with GF. However, in 2006, a new Board of Directors was appointed by another new government. The general manager continued to lead GF and due to previous interaction episodes and existing interpersonal relationship resources with the PD manager of STI, there was an increase in the number of containers delivered to STI; from two in 2006 to fifteen in 2009.

A final finding that should be mentioned was reported in an interview with STI PD manager. The manager narrated the willingness to resolve a financial issue emerged from a strengthening EUR currency. The contractual agreement was in USD, but due to the crisis the USD was depreciated at the time of a new purchase order in 2009. As a result, STI showed understanding and paid a premium to cover the losses of the USD. This event strengthened the commitment of both parties into the relationship. Finally, the GF general manager having established strong interpersonal relationships in China is now entering into negotiations with factories in other Chinese provinces. The GF general manager is treated by CNTC as an insider.

5.5 Case Study Five: Formation and Development of Supply Networks in China: The Case of a Western Textile Manufacturer in China.

Endysis Hong Kong (HK) is a foreign-owned textile producer specialised in high-end children fashion. This case study analyses its manufacturing operating unit; Endysis Hangzhou (HZ), which belongs to Endysis HK and operates in China for almost two decades. Endysis HZ cooperates with customers and suppliers to design and develop new products and then delivers its end-products to customers in the West. In 2009, Endysis HZ had around fifty Chinese indigenous suppliers and subcontractors, all of which are based near Zhejiang and Jiangsu Provinces, in South-eastern China. Hangzhou is the capital of Zhejiang province and Jiangsu is its neighbour province. Both provinces are known for their comparative advantage in textiles and related accessories.

The purpose of this case study is to examine the evolution of specific relationship patterns within the company's supply and production networks in China and to discuss the role and effects of interpersonal relationships to nurturing, developing and maintaining supplier relationships at firm level. Initially, it would be useful to note the organisational structure of the foreign-owned company in China. There are four interrelated departments: the Operations, Technical, Sales and Administration Departments. The Operations department includes the project, purchasing, and production functions. The key informants in this study are the Operations Director and the PD and Project managers. In terms of the social sampling technique used to identify key informants, it should be noted that the Project manager is a close friend to the researcher. The Project manager in turn introduced the other two participants. The Operations Director, who co-founded the company in China almost a couple of decades ago allowed access to company sites.

As has been noted the foreign-owned company has a large supply base in China and multiple relationships with indigenous Chinese manufacturers. Hence, this case study provides potential ground to examine how a foreign-owned company manages supplier relationships in China. In the beginning of 2008, Endysis HZ set up a Supplier Relationship Marketing (SRM) function to assist with developing and maintaining relationships with suppliers. However, after three months of operations, the SRM function was dissolved. The Operations director explains in an interview that Chinese central business actors were not satisfied in interacting with employees of the SRM

function, as these employees could not make decisions at once, mainly because they were not senior employees and they had to communicate internally with other business actors, which slowed down response time and caused knowledge hoarding problems in various stages of the product development process. The Operations director also notes that communication with local Chinese suppliers takes place through phones rather than emails and in general, relationships with suppliers in China are nurtured, developed and maintained through face-to-face communications on a daily basis.

The Operations director explains that in China due to close interpersonal relationships sometimes it feels like Endysis HZ owns a supplier's factory. Paradoxically, the same interviewee notes that in China everything can happen and business relationships are not based solely on interpersonal relationships and trust. However, the informant stresses the significance of interpersonal relationships to the product development process and the implementation of contractual agreements. As it is mentioned later on, although having established a good working relationship with a supplier, and signed a contractual agreement, interpersonal relationship ties may become weak or even break, when, for example, a supplier does not follow the negotiated production plan due to a larger customer who may take over the whole capacity of the supplier for some time (interview: Endysis Operations director). In such cases, the level of trust will be dramatically reduced and any future interaction will be distorted.

It is interesting to see, in the sub-cases discussed in this case study that the formation of horizontal supply networks is largely based on previous interaction episodes and the current stage of interpersonal relationships central business actors are into. But, initially, the supplier evaluation system that Endysis HZ employs to measure suppliers' performance is discussed. Endysis HZ evaluates every single supplier twice a year. The three categories that make up the 100 per cent are separated in quality, delivery and communication. The proportion of each category to the total scale is 40, 40, and 20 percent respectively. Therefore, the final rating for each supplier is one dimensional. Five business actors are involved to measure quality and delivery variables for each supplier relationship; in particular, the five business actors are: the purchasing order handler, the purchasing relationship manager and three business actors, second line managers from the logistics and inspection departments. With regards to the measurement of communication in each supplier relationship, the manager of the recently dissolved SRM department, who is originally from China, provides the final 20 percent of the total rating.

The Operations director, although is not directly involved, makes the final decision with regards to which suppliers will continue and which ones will be dropped for the season that follows the evaluation. For example, in one case, a supplier had scored low according to the rating formula, but the interpersonal relationship between the director of the supplier and the Operations director was characterised by strong ties. Strong interpersonal ties among key business actors assisted in knowledge sharing and thus a shared understanding, in terms of the other relationships that were the cause of production difficulties and late delivery in this specific supplier relationship performance.

The Operations director although acknowledges that most of Endysis evaluators have been given small amounts of money, explains that before 2004 suppliers paid big amounts to the outsourced at the time quality control company. However, this has changed since 2004, and all finished products are gathered in Endysis HZ warehouse for quality testing. Also, defected products are sent to the repairing department of Endysis HZ. The Operations director adds that Endysis HZ is not a textile manufacturer; rather it is an insurance company. Better put it, Endysis HZ acts as a broker between the customer in the West and the Chinese supply base. Further, the Project manager claims that Western customers are willing to pay a higher price to buy an end-product of high quality and zero defects. Findings show that foreign companies operating in China, including those companies examined in previous cases, are acting as brokers, exploiting their relationships both in the demand and supply side.

Sometimes, the R&D of the customers' organisation design and develop samples that are then sent to the supplier, but Endysis HZ has set up a design team with the purpose to promote their own-designs to existing and new customers. In one case, a large order was placed by a large European buyer to Endysis HZ. However, the factory that successfully developed the production samples was not able to produce the whole order due to capacity limits. Hence, Endysis HZ had to synthesize a horizontal supply network for the production of this order, and to mobilise other suppliers. As the Operations director explains, 'in some cases when there is no existing relationship know-how is sold from one supplier to another usually via Endysis HZ de facto decision'. In this specific case, a single supplier designed the production samples and incurred all costs associated to this development. However, Endysis HZ due to its close relationship with a supplier from Ningbo introduced the competitive suppliers to share know-how and jointly produce the

new order. The supplier finally passed one third of the production scale to the Ningbo supplier due to its existing relationship with Endysis.

As the Operations director explains, there was a strong interpersonal relationship between the Operations director and the general manager of the supplier and the designs were given without any economic exchange. Here, it may be inferred that this kind of action is part of the guanxi network world, and cannot be captured by a Western model of actors' relationships. Lastly, here, it should be noted that within horizontal production networks, producers and suppliers involved are usually competitors. However, in the case of horizontal supply networks suppliers may be competitive; yet they are given an opportunity to cooperate and develop dynamic relationships.

The project network examined in this case involves Endysis and a large Chinese supplier. This supplier has a large workforce and has established extensive networks in China, offering good quality and fast lead times in high prices. The Western customer having bought the trademark and designs from Warner Bros., requested a production of 150 thousand sets to ICS; one trader of Endysis HZ, which belongs to Endysis HK. Endysis HZ passed the designs to a known supplier, located in Jiangsu. The supplier then sent to the customer via Endysis HZ its own designs. A few visits were made to each other's sites for negotiating the quality of the samples produced by the supplier, payment terms as well as delivery schedules. It should be noted that a few central actors were involved in these key relationship patterns. The first order ever placed by Endysis to the supplier was for 150 thousand sets with an agreed planned delivery date of 70 days. The price that was paid to the supplier for the order was \$1.5m.

It should be noted that the Western buyer was not directly involved with its sub-supplier and Endysis HZ was responsible for managing the Jiangsu sub-supplier. Everything went according to plan. For the next season, a much bigger production order was placed to the same Jiangsu supplier. However, this time Endysis was notified of late delivery of around 45 days. Endysis could not do anything, such as transferring production to another supplier; it was too late. The result was to wait for the Jiangsu supplier to complete production of the requested order. The supplier compensated Endysis HZ by paying the airfreight costs on behalf of the customer. According to the Operations director, the reason for the late delivery was a much larger order placed by a Japanese customer who had a long-term relationship with the supplier. The Japanese customer's order required

almost the whole capacity of the supplier to be used for its production. As a result, the Jiansu supplier postponed the production plan of Endysis HZ, and provided its manufacturing services to a customer whose relationship resources with the Jiansu supplier were more developed. In this way, the Jiansu supplier showed commitment to its relationship with the Japanese company. Here, it could be concluded that contract specifications within supplier relationships in China are not often seen as an obligation, from the Chinese business actors' point of view.

5.6 Conclusion

The ten product development networks examined in this multiple case study research are embedded on specific sets of interpersonal business relationships. Findings show that in Chinese business networks, interpersonal relationships may prove superior to Western-based networks, not only in terms of measurable aspects, such as quality, access to information and payment terms, but also in terms of non-measurable, intangible aspects, such as conflict resolution and mobilisation of actors. Findings show that the power of interpersonal relationships in China enables the utilization of key relationship patterns, mobilisation of key individual business actors and access to key resources in other networks. However, as China is 'a matrix-civilisation of paradoxical cultural development' (Faure & Fang 2008: 206) and Chinese actors continuously interact within systems that increasingly manifest Western ways of acting, due to the nowadays global presence of Western social and business systems, the interpersonal or, metaphorically put it, guanxi interaction process should be thus taken as something trivial.

Multiple case studies have shown that guanxi can be seen as a process that evolves through time and depends on the interplay between business and non-business interaction. Although it should be acknowledged that 'business interaction' and 'non-business interaction' may be narrow Western formulations, this research makes clear that business and non-business interaction are all related to business when doing business in China. According to the Yin Yang philosophy, opposites are embraced and they co-exist in each other. Interpersonal non-business interaction is specifically required to create trust, which is the most important factor influencing the process and outcomes of direct business interaction in China. However, a guanxi network approach for neither business nor non-business interaction can stand on its feet, and this is further elaborated in the following chapter, as it has major implications on the ways the theoretical framework of guanxi interaction in business networks is developed.

A dynamic guanxi interaction process may not only reflect on episodes from previous non-business interaction but also on the attitudes of individual business actors in current and future interaction episodes. Drawing on lessons from multiple case studies, a guanxi interaction concept can be generally defined as to involve both direct and indirect, business and non-business ways of organising interaction in China. Overall, this newly developed understanding of interpersonal interaction can enrich the IMP paradigm of

business networks and in particular can enhance understanding of complex phenomena when the IMP-based interaction approach is applied to capture critical episodes and analyse the evolution of business relationships in Chinese contexts. In particular, findings seem to agree that interpersonal interaction influences in multiple ways activity links, resource combinations and firm bonds. Hence, it is argued that interpersonal interaction has significant effects on network structures and can explain some evolutionary aspects of product development processes in inter-organisational networks.

Findings show that guanxi interaction can be analysed only at the interpersonal level. The guanxi interaction concept enhances our understanding of the characteristics of network links captured by the actor level of the ARA model. The model assumes that the actor dimension is interrelated to the activity and resource dimensions, and it is found that in China and in particular in low-tech sectors, actors' interpersonal relationships, actors' networking capacity and actor-specific attitudes towards networking influence significantly not only activity links and resource combinations but also firm bonds. In high-tech sectors, although networks are more complex, interpersonal relationships and the actors' guanxi interaction influence significantly the formation of activity links, resource interdependences and firm bonds among second- and third-tier supplier relationships, which usually involve business actors in China. It is found that especially these relationship patterns in the multiple product development networks examined provide the main source in the development of new products or technological components. Overall, in both low- and high-tech sectors, with regards to the product development process, it is found that the few central actors, who cross organisational borders, nurture and develop inter-organisational relationships through on-going interpersonal interaction processes, taking advantage of previous interaction of both business and non-business nature.

Interpersonal relationships significantly influence knowledge-based resource interaction, which in turn may directly explain the combination of economic and technical resources and the formation of activity links. In high-tech sectors, where direct business interaction plays a key role and company actors may be seen as network hubs by suppliers' actors, non-business interaction processes are considered to be highly important not only for the nurturing of business relationships with buyers but especially for the relationships between first- and second-tier suppliers within project networks involving business actors

based in China. Here, it should be acknowledged that although there are limitations in terms of the ability of this research to generalise, deep insights are generated by analysing inter-subjective actors' perceptions of relationship evolution and interpersonal interaction effects. The next chapter analyses findings and assess the value of the proposed theoretical framework in the light of findings, presented in this chapter. The implications of the theoretical framework for the business network approach, product development, supply network management as well as studies on Chinese management are also discussed in the next chapter.

Chapter VI

DISCUSSION OF FINDINGS

6.0 Introduction

The first part of the discussion of findings chapter analyses empirical observations and notions developed from open-ended interviews with participants which investigated various relationship patterns under the context of ten product development networks. In particular, the analysis of empirical observations is based on the proposed two-dimensional framework⁴³. The proposed theoretical framework, which emerged from a thorough review of literature on the topic of interaction effects on product development networks in China, is further developed in the light of specific phenomena that emerged from the interaction of the researcher with participants. Analysis of findings follows an epistemic approach where notions and concepts developed from empirical observations are systematically analysed and positioned in the structure of the framework, vertically, based on relationship characteristics, and horizontally, based on the relationship phase or level. Through a parsimonious selection of findings and a search for similarities in empirical observations, without neglecting the value of distinguished or extreme observations, the theoretical framework for interpersonal or guanxi interaction in business networks in China is validated.

The second part of the discussion of findings chapter discusses the implications of the theoretical development to existing network theory and network research. In general, it is suggested that a guanxi interaction approach in business networks should be taken under consideration in research applying Western models in Chinese settings. The significant role of interpersonal relationships in China is acknowledged and the direct and indirect effects of such an acknowledgement to theory development and model building are assessed. The ARA model of interaction is taken as an example of a Western-based network approach. It is argued that it would be beneficial for research employing the ARA model to acknowledge the cross-cutting pattern of the concept of interpersonal interaction in China in analysing business relationships in terms of firm bonds, activity links and resource ties. The discussion goes on to explain how essential a holistic concept of interpersonal interaction is for research conducted in China and beyond. It is also argued that by accounting for interpersonal interaction and guanxi thinking and acting, researchers can build more flexible models and holistic analytical frameworks. An

⁴³ The proposed theoretical framework is presented in table 2.6, page 92.

example is provided through the introduction of a proposed supplier network performance model, which takes into account non-measurable variables, such as fluid and dynamic interpersonal relationship characteristics alongside measurable parameters.

6.1 Analysis of Empirical Findings – Case Study 1

CS1 examined different sets of embedded relationships under the context of four product development projects. Although there were many cross-cultural relationships involved, comparison among actors' perceptions of buyer-supplier and supplier-buyer relationship types is enabled. Initially, findings show that the UK buyer delegates suppliers to manage their own local networks without many interventions being identified. An important finding in CS1 is that the power of interpersonal bonds assists in overcoming competitive forces and dyadic exclusivity agreements. In particular, it is shown that exclusivity agreements can be broken in favour of stronger indirect interpersonal relationships that might exist in the network.

An analysis of interpersonal bonding among Chinese actors explains how central actors in business networks can be both competitive, yet understand and help each other. Chinese business actors show a sense of patriotism and belonging towards their networks, and this is explained by the complex sociological concept of *guanxi*. Although the two suppliers in Shanghai remain competitors, they exchange knowledge resources, related to quality standards and production techniques. In particular, the QC2 actor has been mobilised enabling the synthesis of a new horizontal network. This major change in network formation emerged through evolving multi-level interpersonal interaction among centralized actors. However, this mobilisation was informal and exchange of knowledge resources among the two suppliers was not disclosed to all network actors. It could be claimed that in Western-based networks such a mobilisation and subsequent network integration might seem impossible. The latter would have never been realised without the high trust and commitment that characterized the interpersonal relationship between the HOFI CEO and UK Head of Buying. As mentioned in the empirical findings section of CS1, the HOFI CEO employed a traditional *guanxi* practice by offering gifts in exchange for favours. In the views of the counterpart, reciprocity characterized this relationship, which is explained by the disclosure to the supplier of new designs, sketches and other confidential and internal information, which was in turn used to satisfy the UK buyers' preferences.

Lastly, responses from key informants to the question on how they reacted to the economic downturn since 2008 and reduced orders from Western customers also show that a different approach in terms of maintaining relationships is used by actors of

indigenous Chinese suppliers. For example, the Chinese CEO of the supplier decided to visit key customers' central actors all over the world, whereas the Western supplier in China organised an exhibition in Singapore to nurture new relationships and tackle the loss of business from existing buyer relationships.

Table 6.1: Analysis of Empirical Findings in CS1

Analysis of Empirical Findings in CS1			
Level of Relationship	CULTIVATION	DEVELOPMENT	MAINTENANCE
<i>Relationship Characteristic</i>			
<i>Co-operation</i>	Evidence of network capacity and indirect connections influence initial cooperation	Centralized actors as linking agents Actor mobilisation and network synthesizing	Friendship and close professional ties underpin interaction
<i>Knowledge-sharing Intensity</i>	Depending on previous direct interaction	Exchange of gifts increase knowledge sharing	Confidential and sensitive information is disclosed
<i>Conflict</i>	Conflict can be resolved without contract	Face-to-face visits for resolution is preferred Voice over exit	Interpersonal agreement over conflicts; no need for contract modification
<i>Exclusivity</i>	Exclusivity can be promised Actors ready to adapt	No need for contractual agreements on exclusivity (Oka-Kenas)	Exclusivity can be broken if not strong interpersonal ties are maintained
<i>Power/Dependence</i>	Evidence of network capacity at the company level	Network capacity of individual actors	Established distribution of power and expertise
<i>Trust</i>	Indirect connections influence trust	Delegating network actors to manage indirect to the PD project relationships	Understanding and helping each other in critical situations
<i>Commitment</i>		Understanding and helping each other in critical situations	Understanding and helping each other in critical situations

6.2 Analysis of Empirical Findings – Case Study 2

An initial finding from CS2 is that access to a supplier or customer can be gained via indirect relationships with business actors, whether interpersonal or organisational. Empirical observations show that during initiation of a business relationship, individual actors might trust each other due to relationships with third parties. In particular, the Strix Asia Sales manager referenced an indirect interpersonal relationship to nurture a direct interpersonal relationship in high-tech business networks. Further, it is also found that to go beyond the interpersonal to the business-related interaction requires capability, which also includes networking capacity and know-who. Once network actors identify mutual benefit the business relationship is moving towards a development level, which in turn increases the frequency of knowledge transfers. Findings show that in terms of co-development and knowledge-based inter-organisational resource interaction, the development of guanxi aspects in interpersonal relationships seem to be influential as they rejuvenate the whole network at the time of critical interaction episodes. CS2 shows that guanxi interaction increases the ‘tacitness’ of the content of knowledge transferred.

The socializing events organised by the foreign-owned high-tech company in China involving actors from a strategic partner should be elaborated here. It could be argued that non-business interaction is highly valued and respected in the same way direct business interaction would do. As an interviewee noted: ‘a game has many aspects... we do not care the result... we do not want the customer lose face’. The attitude of Chinese actors in non-business interaction episodes manifests a highly extroverted behaviour or an orientation towards ‘others’ and towards the whole network. This may well explain the difference between Chinese and Western business culture and in general the way of thinking and acting in terms of developing interpersonal business relationships. All employees from the customer’s side actively participated in this kind of socialising and interpersonal relationships among business actors from both sides were rapidly developed. Here, it can be generally claimed that there is a difference in perception towards soft knowledge transfer mechanisms by Chinese actors, who are most likely to act in favour of the whole network. Drawing from the above, a clear difference is shown between the nature of guanxi-ing and the nature of networking. Simply, the former enables, or at least does not distort the development of interpersonal relationships, whereas the latter has no specific purpose and will possibly work the same way only

when there is an existing static but common view of the world, and not one that is commonly developing or ‘becoming’.

Table 6.2: Analysis of Empirical Findings in CS2

Analysis of Empirical Findings in CS2			
Level of Relationship	CULTIVATION	DEVELOPMENT	MAINTENANCE
<i>Relationship Characteristic</i>			
<i>Co-operation</i>	Know-who and access to resources important	Socio-cultural events and behaviour support collaboration	
<i>Knowledge-sharing Intensity</i>	Actors are open and share basic knowledge, especially know-who	Knowledge becomes tacit and project based	Interpersonal interaction enables the development of complex knowledge
<i>Conflict</i>	Conflict is avoided	Face-to-face resolutions over conflicts	Face-to-face problem resolution even for minor issues
<i>Exclusivity</i>	Company actors sign agreements	Individual actors’ relationships strengthen firm bonds	
<i>Power/Dependence</i>	Know-who and know-how is power	Relationships with third parties	
<i>Trust</i>	Alter-casting; indirect interpersonal relationships	Network capability should be proven	
<i>Commitment</i>		Openness and interaction increase commitment	

6.3 Analysis of Empirical Findings – Case Study 3

CS3 has shown that due to interpersonal relationships firm actors can be mobilised and gain access in business networks. The Chinese Operations manager mentioned that a friendship with an agent of Samsung in Korea, who was a Chinese national, opened the door to a whole new network and opportunities for the Chinese supplier in the high-tech sector. Based on interview data, guanxi is a dynamic resource, also in the high-tech sector, in a way that is created beyond the boundaries of the firm and beyond organisational resources alone, but alongside a mix of interpersonal and inter-organisational knowledge-based resource interaction.

Findings in CS3, with regards to the product development project with Nokia, may also imply that although there might be inter-organisational interaction and visits to each other's sites what really matters to a Chinese business actor is the level of interpersonal relationships. Under the context of the failed product development project, initially, it was a challenge for both partners in China, as there were no existing relationship ties characterised by established resources among them; meaning that interpersonal relationships were weak. Here, it should be noted that there was no specific interpersonal characteristics that could be identified. Nevertheless, it should be mentioned that although actors from the Sichuan supplier have not been interviewed, findings refer to the difficulties of knowledge sharing and creation within the investigated dispersed high-tech network.

An analysis of findings from CS3 does not show how interpersonal relationships are nurtured and developed within specific relationship patterns and the network effects of interpersonal relationships in Chinese business context. However, significantly important to product development is the understanding of the process of developing interpersonal relationships alongside inter-organisational resources. Drawing from this case study, it could be argued that in high-tech industries interpersonal relationships and social interactions, although might be important to the feasibility and sustainability of product development networks, are less significant when compared to low- and medium-tech sectors, as findings from CS1, CS4 and CS5 clearly show. Hence, it can be concluded in line with the view of the CNI Sales Manager that small and medium-sized enterprises (SMEs) are likely to rely on interpersonal interaction for combining knowledge-based

inter-organisational resources, compared to large companies, especially those in high-tech sectors.

Table 6.3: Analysis of Empirical Findings in CS3

Analysis of Empirical Findings in CS3			
Level of Relationship	CULTIVATION	DEVELOPMENT	MAINTENANCE
<i>Relationship Characteristic</i>			
<i>Co-operation</i>	Individuals as linking agents connect companies	Previous interaction or project collaboration necessary	
<i>Knowledge-sharing Intensity</i>		Lack of interpersonal relationships can distort knowledge-sharing	
<i>Conflict</i>		Lack of interpersonal do not resolve conflicts	
<i>Exclusivity</i>	Actors ready to adapt depending on indirect relationships		
<i>Power/Dependence</i>	Goal compatibility necessary in high-tech	Network capacity of company actors	Established distribution of power and expertise in different areas
<i>Trust</i>	Indirect interpersonal relationships increase trust	Previous interaction increases trust	
<i>Commitment</i>	Network capacity and relationship evidence affect commitment		

6.4 Analysis of Empirical Findings – Case Study 4

In CS4, the set of relationships examined are simpler compared to the high-tech networks examined in CS2 and CS3. The number of business actors involved is comparatively lower than the number of people involved in high-tech product development networks, and such settings, which are similar to the networks examined in CS1, allow for deeper insights on how interpersonal relationships evolve through time. Similarly to CS1, in CS4 both sides of the key relationship pattern have been investigated in terms of perceptions to each other's side and the network as a whole. However, it should be reminded that this relationship type offers insights into the relationship among a Western supplier and a Chinese buyer. Within this product development network, the identification and mobilisation of key actors who indirectly assist the nurturing of relationships and the formation of the network is discussed. In particular, this mobilisation was based on the development of interpersonal interaction between the GF general manager and the key actor from the Chinese delegation, who provided access to various Chinese business actors in the Chinese national tobacco corporation.

In this case study, beyond the nurturing of relationships, findings show that the power of indirect interpersonal relationships can both enable and distort network performance and sustainability. As discussed, initially the interpersonal relationship between the general manager of the foreign supplier, GF, and a Chinese actor who had both political connections and interpersonal relationships with actors from the CNTC headquarters, and who assisted the supplier to enter into negotiations and then into contractual agreement with one of CNTC's manufacturing units was crucial to the development of the product development network. The case analysed other critical events and interaction episodes, such as how indirect relationship patterns can influence the stability of the whole network. In particular, although a change in the management team of the Western supplier resulted in limited business relationship among company actors, the power of interpersonal relationships preserved business interactions and brought increasing business transactions once the surrounding environment was stabilized, a few years later. Hence, the case shows that although the volume of influential network actors was small, a few key relationships characterized by commitment, trust and exclusivity, might be sufficient to develop and maintain inter-organisational relationships in the long-term.

Table 6.4: Analysis of Empirical Findings in CS4

Analysis of Empirical Findings in CS4			
Level of Relationship	CULTIVATION	DEVELOPMENT	MAINTENANCE
<i>Relationship Characteristic</i>			
<i>Co-operation</i>	Individuals as linking agents connect companies	Few centralized actors are involved	Friendship and close professional ties underpin interaction
<i>Knowledge-sharing Intensity</i>	Actors develop a common mind-set	Mobilising network actors and gaining access to other relationships	
<i>Conflict</i>		Interpersonal agreement over contract	Interpersonal agreement over conflicts; no need for contract modification
<i>Exclusivity</i>	Actors ready to adapt	Concessions made by parties for mutual benefit	Long-term orientation over that of other relationships
<i>Power/Dependence</i>	Goal compatibility not necessary	Know-who is power	
<i>Trust</i>	Due to indirect non-business (governmental) interaction	Individual actor identity increases trust; Interpersonal relationship with third-parties	Understanding and helping each other in critical situations
<i>Commitment</i>	Commitment to general interaction	Personal commitment to business interaction	Commitment to long-term growth of relationship

6.5 Analysis of Empirical Findings – Case Study 5

Drawing on lessons from the investigated relationships patterns in CS5, it can be initially suggested that supply networks and relationships with suppliers should be formed at an early stage, due to emerging difficulties in cases where buyer-supplier agreements have been negotiated just after the design phases or during production. Based on empirical observations from CS5, it can be argued that underestimating the value of interpersonal relationships may be one of the reasons that could explain why a supplier in China does not wish to follow contractual agreements and agreed production plans, not only with Western business actors but even with Chinese business actors. Another matter that emerges from the above is the risk of being dependent to a single supplier. Especially in low-tech sectors, a supplier can easily provide services throughout the whole supply chain – from design to logistics. Based on case findings, it can be argued that although it may cost cheaper to use a single supplier, this approach has high dependency risks. However, one sub-case in CS5, which is not included in the ten product development networks studied in this research, shows that through development and maintenance of interpersonal relationships with a supplier's actors, dependence risks and problems will become interdependent as long as activity links and resource ties are formed among partners.

Building a supply network for the production of a new product range implies interdependencies and interaction among all business actors involved. These interdependencies should also be managed through actors' interpersonal interactions. The formation of complex supply networks is a usual phenomenon for high-tech product development projects. In low-tech sectors, during the design and sampling phases, inter-organisational relationship patterns in the network involve fewer but central business actors. In particular, the multiple case studies research has found that the more business actors involved in an inter-organisational network, the more complex the interaction effects to various relationship patterns are, and thus, the more difficult is to develop and maintain interpersonal relationships. In general, for some relationship patterns within inter-organisational networks, guanxi interaction is useful for nurturing, developing and maintaining relationship resources. However, although for some relationship patterns in the network, interpersonal interaction is not very significant to network performance, it might be beneficial among key relationship patterns involving central actors.

Nevertheless, it should be noted that the above conclusion is rather general and will be elaborated in the following parts of this chapter.

Table 6.5: Analysis of Empirical Findings in CS5

Analysis of Empirical Findings in CS5			
Level of Relationship	CULTIVATION	DEVELOPMENT	MAINTENANCE
<i>Relationship Characteristic</i>			
<i>Co-operation</i>	Individuals as linking agents connect companies	Centralized actors are involved Relationship-based transactions	Friendship and close professional ties underpin interaction
<i>Knowledge-sharing Intensity</i>		Mobilising network actors and other relationships	
<i>Conflict</i>	No need for contracts and long negotiations interact	Interpersonal agreement over contract	Lack of interpersonal relationships can break contracts, even during the project implementation
<i>Exclusivity</i>	Actors ready to adapt	Concessions made by parties for mutual benefit	Long-term adaptation over that of other relationships
<i>Power/Dependence</i>	Know-who is power	Interpersonal relationship is power	
<i>Trust</i>	Low levels of trust	Individual actor identity increases trust; Interpersonal relationship with third-parties	Understanding and helping each other in critical situations
<i>Commitment</i>	Low level of commitment	Personal commitment to business interaction	Commitment to long-term growth of relationship

6.6 Comparative Discussion of Findings

The multiple case studies research has examined different sets of relationships, in terms of relationship types, such as buyer-supplier, supplier-buyer and buyer-sub-supplier among other peripheral relationships. Most of relationships are of cross-cultural nature, such as UK-Sino, Sino-UK, and even Sino-Sino; the latter type includes affiliations that involve actors from different Chinese regions. The product development networks, which basically provide the context upon which the embedded set of relationships are investigated, are also different in terms of industrial sectors or the volume of central actors involved in the process. Findings have been analysed systematically in previous sections and notions developed through the interplay of existing concepts and concepts developed through the researcher's interaction with participants have been positioned in the structure of the proposed framework for each case study separately. This section introduces another consolidated table that demonstrates how the analyses of the five case studies compare with each other. Table 6.6, presented below, positions specific phenomena and notions developed from findings in the theoretical framework's structure and includes references to the cases at the end of each phenomenon reported, such as CS1, CS2 and so on.

The analytical framework for interaction in business networks in China has been built under a theoretical 'cloud' consisting of premises of the IMP-based business network approach and the heuristic guanxi network approach. According to expectations in terms of theoretical development, this study does not conclude with a standard theoretical framework for guanxi networks or a theory for business networks in China. Rather, it offers an explanation of interaction in China's relationship-centred world, which can be seen as a cross-cutting pattern to the pattern of interaction in IMP-based business networks. Specifically, the nature of network links; simply what flows within relationships at different stages of the networking process, or relationship level, is described. Multiple case studies have examined the interpersonal interaction and network effects on the cultivation, development and maintenance levels of relationships. Consequently, an effort has been made to place the network links, namely the relationship characteristics alongside the three main relationship phases, with a purpose to match existing theoretical constructs with concepts developed from data. The following

paragraphs enhance the value of the theoretical framework through a comparative discussion of findings.

Companies often follow a transaction-based strategy to nurture and develop cross-boundary relationships, meaning that they engage in cross-boundary business relating without the need to cultivate relationships at the interpersonal level. This is usually the case in every industry and line of business and it is a common practice for both Western and Chinese business actors. However, based on findings, this research argues that in China inter-organisational relationships are much more likely to be cultivated based on indirect and direct interpersonal interaction and maintains that a sole company-to-company approach is never enough to develop interpersonal relationships among individual actors and leverage co-development of complex interfaces and combination of knowledge resources. For instance, CS3 offers an example of inter-organisational collaboration failure due to lack of established interpersonal relationships. In addition, findings from CS1 and CS5 show that exclusivity and cooperation agreements can break in favour of other indirect nodes to relationship patterns in the network, which are characterised by stronger interpersonal relationship ties. Simply put, a lack of established interpersonal relationships can reduce the strength of firm actor bonds, distort mobilisation of individual actors and knowledge transfers and provide the main source of problems to inter-organisational relationships.

Table 6.6: Guanxi Interaction in Business Networks

GUANXI INTERACTION IN BUSINESS NETWORKS			
Level of Relationship <i>Relationship Characteristic</i>	CULTIVATION	DEVELOPMENT	MAINTENANCE
<i>Co-operation</i>	Individuals as linking agents connect companies [CS2;CS3] Network capacity and relationship evidence affect initiation [CS1]	Centralized actors are involved [CS1] Sociocultural events and behaviour support collaboration [CS1; CS2; CS4]	Friendship and close professional ties underpin interaction [CS1] Relationship-based firm relating and transactions [CS1; CS4; CS5]
<i>Knowledge-sharing Intensity</i>	Knowledge exchanges based on previous interaction [CS1]	Actor mobilisation via interpersonal relationships [CS1; CS4]	Interpersonal interaction increases complexity of knowledge [CS2]
<i>Conflict</i>	No need for contracts to interact or to overcome conflicts [CS1; CS4; CS5]	Interpersonal agreement over contract [CS1; CS4; CS5] Voice over exit; and face-to-face visits [CS1; CS2; CS4]	Interpersonal agreement over conflicts; no need for contract modification [CS1; CS5] Voice over exit; face-to-face visits [CS2]
<i>Exclusivity</i>	Actors ready to adapt depending on relationships with third parties [CS1; CS3]	Concessions made by parties for mutual benefit [CS1; CS4]	Long-term adaptation over that of other relationships [CS1; CS4; CS5]
<i>Power/Dependence</i>	Goal compatibility not necessary [CS4] Know-who is power [CS4]	Network capacity of individual actors [CS1; CS4]	Established distribution of power and expertise [CS1; CS2]
<i>Trust</i>	Depending on networking capacity [CS2; CS4]	Interpersonal relationship with third-parties [CS1; CS5]	Understanding and helping each other in critical situations [CS1; CS5]
<i>Commitment</i>	Commitment to general interaction [CS4]	Personal commitment to business interaction [CS1; CS4; CS5]	Commitment to long-term growth of relationship [CS1; CS4]

In the cultivation of inter-organisational relationship level, it is found in CS1 and CS3 that a relationship of a business actor with a third party in the network, such as the relationship of a supplier with a sub-supplier, is positively affected by the relationship of the supplier with a large buyer. These observations support Chua et al.'s (2009) findings with regards to increasing trust due to relationships with third parties. Cultivation of inter-organisational relationships is enabled when there are established interpersonal relationship resources among two actors in the network. Further, in CS2, it is shown that access to new networks can be gained via indirect interpersonal relationships that are related to direct relationship patterns. For instance, the Sales manager of the UK-owned high-tech manufacturing company in Guangzhou, a university classmate and close friend with a manager at Haier, was introduced to the Haier purchasing director and treated as an insider. Therefore, findings from CS2 show that to nurture a direct interpersonal relationship in high-tech networks, a business actor can reference an indirect interpersonal relationship, which is also known as altercasting (Langerberg 2007). However, in developing this particular relationship the new network entrant exhibited the foreign-owned company's local networking capacity, in terms of its strong ties with many suppliers and OEMs in China. Hence, it could be argued that to go beyond the interpersonal to inter-organisational interaction requires capability, which also manifests a large network capacity and know-who base.

A common lesson is that nurturing and developing inter-organisational relationships depends on non-business interpersonal interaction and also on individual actors' relationships with third parties. Findings stress the need to understand the significance of non-business interaction and its effects on direct business interaction. Non-business interaction effects to product development processes as well as to structural formation changes in networks were found in CS1, CS2 and CS4. Based on empirical observations, non-business interaction includes both interpersonal interactions of business actors as well as interpersonal interactions of non-business individual actors, such as governmental actors. For example, in CS2 and CS4, governmental actors were utilised to nurture and develop actor bonds, which in turn promoted the development of inter-organisational resources. Findings further demonstrate that strategic decision-making, such as setting up formal alliances and building or expanding manufacturing operations, may involve structural and political *guanxi* with local authorities. However, studies on political *guanxi* mainly discuss corruption and the social or economic implications of bribing and thus are

out of scope in studies discussing interaction effects on product development networks. Nevertheless, it is recognised that political or strategic guanxi may indirectly affect operations and thus product development, as it is shown, for instance, in CS2 and in particular, the UK-owned manufacturer in Guangzhou, where political ties were nurtured and developed for the expansion of the foreign-owned manufacturing base in China.

Another lesson is that cultivation and leverage of inter-organisational relationships and the formation of product development networks can be explained by analysing indirect social interfaces and previous episodes of interpersonal non-business interaction. Although the suggestion for relationship development is invitations or visits to each other's sites, especially in China, face-to-face meetings in and out of company sites are extremely important. While it is found that invitations and visits to company sites usually take place during critical events, such as negotiation issues or problems with production samples and quality, meetings outside company sites are not always associated with direct business interface development. Hence, it could be argued for the guanxi interaction approach in business networks that it refers to direct business interaction of specific nature, indirect social interface development, and especially non-business interaction that takes place off company sites.

As a business relationship evolves via ongoing interpersonal interaction, the frequency of knowledge-based resource interaction increases. Although this finding is supported by all case studies except CS5, CS1 and CS2 strongly demonstrate this. In other words, it is shown that interpersonal interaction increases the 'tacitness' of the content of knowledge-based resource interaction. Findings also show that product quality is improved indirectly as guanxi interaction intensifies. In CS1 and CS2, it is shown that close interpersonal relationships among business actors motivate network members to put more effort into the product or technological project. Hence, this research argues that business actors in China become increasingly important resource providers, especially when relationship resources, such as trust and commitment alongside knowledge-based resources are developed in interaction. However, the above clearly implies that the development and maintenance of multi-level interpersonal interactions is a challenge for practitioners. In other words, there are limits in terms of networking capacity and the establishment of interpersonal relationship resources in a variety of relationships is a complex activity.

With regards to the argument that interpersonal relationships increase the tacitness of knowledge transfers, it is found that interpersonal relationships assist not only in product development success but also in supplier relationship performance evaluation and optimal horizontal integration within supply networks. The latter is strongly demonstrated in CS1, but also in CS2 and CS5, where there were optimal horizontal integrations of the supply base. Also, in crisis situations, given the existence of interpersonal relationships ties among various relationship patterns in the network, identification and mobilisation of key actors towards the achievement of some kind of horizontal integration and knowledge sharing within the network can emerge through interpersonal interactions. This is clearly demonstrated in CS1 where there was a mobilisation of a key actor - the QC2; a move that showed commitment in the relationship and reciprocal mentality of involved actors towards the network. Findings from CS1 clearly demonstrate how past interaction episodes and the development of relationship resources in key relationship patterns can allow for mobilisations of single actors and their positive effects on the whole network. In particular, in CS1 specific interaction episodes horizontally integrated part of the supply base of the UK buyer and caused major structural changes of the network.

Under the tip of the iceberg and the actor's mobilisation, which was basically proposed during a face-to-face meeting in London, involving business actors from both sides there were developed interpersonal relationships among key network actors. In this case, the UK Head of Buying, a Chinese national, who had established interpersonal relationship resources with individual actors of both suppliers in Shanghai, proposed the mobilisation of the quality controller from one supplier to another supplier. The aim was to integrate and standardise activities of the two suppliers with regards to quality control, transfer knowledge-based resources and achieve the leverage of the 'weak' supplier's performance in terms of quality and overall, the whole company's supply network performance. It should be noted that the proposal came after the UK buyer rejected the production samples of its supplier in Shanghai, which led the CEO and PD manager to travel to London to meet face-to-face their partners in order to discuss possible ways for quality improvement. The initiative of the supplier's CEO to visit the customer's site in London, which was based on the interpersonal relationship with the UK Head of Buying, showed how committed the supplier was to the relationship with the buyer. Besides, this move was appreciated by all actors of the UK side, and resulted in unanimous mobilisation decision; a solution, which is perceived by all actors in the network as more

than a second chance, as it points towards a long-term orientation towards a horizontal network.

Overall, a parsimonious selection of findings has provided the basis of the discussion about the difference between the nature of guanxi interaction and the nature of regular interpersonal interaction in the West. This section concludes with another two narrations of interpersonal interaction in China drawing from findings in CS2 and CS4. The first regards interpersonal interaction in the high-tech sector and the second regards interpersonal interaction in the low-tech sector. In CS2, the UK-owned high-tech manufacturer in Guangzhou organised football games with its local Chinese customer, Midea. The participants were specifically the business actors involved in the second 'thermostat' project investigated in this case study. As the Strix Asia Sales manager explains in an interview, 'we sometimes try to lose... Maybe you lose the game but you win the relationship'. This implies the difference in terms of the sociocultural behaviour towards interpersonal relationships in business networks. The second example is drawn from CS4, where indirect relationships of few central actors form an initial network, which is then amplified inter-organisationally. In particular, the general manager of the Western supplier nurtured an interpersonal relationship with a local actor; a member of the Chinese delegation that visited the Southern European country. Through time, they developed interpersonal relationship characteristics of mutual understanding and trust. The local actor assisted the foreign company to set up a subsidiary office in Beijing in order to promote the product to various business units of the tobacco state-owned monopoly corporation and gain access into the Chinese local partner's networks. In other words, this indirect interpersonal relationship assisted in the identification of key local business actors and influenced the nurturing of direct business relationships, which in turn had an impact on inter-organisational activity links and exchange of resources, and which led to a new product development. Drawing from the above, it is specifically argued that in China a close relationship with a local actor is necessary to grant access to a foreign buyer or supplier into the local actor's networks.

6.7 Guanxi as Process of Interaction

In practice, the interaction process of developing relationship resources within a complex environment of network patterns does not actually reflect any standard theoretical approach as much depends on the context. This is also the case for the development of relationship resources through guanxi interaction processes. The establishment of management mechanisms for guiding guanxi interaction is considered to be even more complicated. This is due to the association of guanxi interaction process with culture, which is in turn seen as a processual and inter-subjective phenomenon. Following Capra (1997), this research maintains that any culture is seen as the process of life, which requires a focus on social interactive processes in order to at least partly understand what flows within network links, and thus explain evolution of relationship patterns in networks. Findings show that relationship resources are created or at least continuously ‘negotiated’ among individual actors, acting in networks, through continuous interaction processes. As such, relationship resources or characteristics are context-specific and could metaphorically describe the identity of a relationship or network of relationships.

The comparative discussion of findings demonstrates that in product development network contexts in China, the guanxi aspects of interpersonal relationships increase the frequency of interaction, the ‘tacitness’ of the content of interaction and the complexity of knowledge exchanges among business actors. Guanxi resources are developed through interactive processes and particularly face-to-face interactions. Further, findings show that guanxi is activated especially during critical events, such as problems in product development network design, inter-organisational integration issues as well as technical issues with regards to quality and approval of production samples. In the case of critical events, crisis situations, or philosophically speaking, when the network processes are far from equilibrium, actors usually but not necessarily increase in numbers, and an atmosphere is created, where interpersonal relationship resources among individual actors are utilised and developed.

Interpersonal interaction in business networks in China, or guanxi interaction, metaphorically, could be described as a central constituent of interactive business relationships that is strongly associated with increased knowledge transfers, mobilisation of actors and access to others’ resources and networks. In other words, this research argues that guanxi interaction is directly associated to product development efficiency

and inter-organisational relationship success. In practice, knowledge exchanges and resource combinations become more tacit and complex as interpersonal relationship resources are developed. However, findings demonstrate that in guanxi interaction the process of activating actors' interaction and realizing interpersonal relationship characteristics and resources, such as trust, commitment and intensified knowledge transfers require specific behavioural characteristics that value the network, the whole and the socio-cultural environment surrounding specific interpersonal relationships.

Beyond the special features and effects of guanxi interaction to direct business relationships, the conceptual framework of guanxi interaction process exhibits phenomena of non-business and indirect interpersonal interaction that in turn explain direct business interaction. From the multiple case studies research a holistic concept of guanxi interaction has emerged, which enhances the understanding of the nature of interpersonal interaction in China and how it might influence the evolution of inter-organisational relationships, activity links and resource ties. In contrast to previous research on guanxi (e.g. Luo 2007, Langenberg 2007), this research shows that guanxi can be seen as a process of social interaction and reject conventional views of guanxi as something static based on hierarchical structures and power relations. In a Chinese context, guanxi interaction or 'guanxi-ing' – an action, reaction, enaction, or simply interaction – points towards the processual paradigm within social science research due to its inter-subjective nature. The concept of guanxi interaction seen as a processual phenomenon provides the key for integrating the IMP-based interaction approach with the Chinese approach to interaction in business networks. Hence, this research argues that integration is only possible when the role of the guanxi interaction concept to IMP-based business network theorising is acknowledged.

Guanxi as an interaction process, creates an atmosphere through time; a context characterised by guanxi aspects of relationships, where co-creation can emerge. Guanxi interaction can be seen as a process of organising for interaction in business networks. Guanxi is neither static, based on hierarchical forms, nor can guanxi be acquired through arm's length relationships, based on market forms of organising. Rather, guanxi is created (i.e. negotiated) through social interaction in multi-level networks, and this interaction is a process of cognition. Through language and communication, actors bring forth a world, which they communicate. In Chinese business networks guanxi interaction is a self-making process that keeps the network alive, by giving it new forms and patterns. A

network theory that works in the Chinese context and surpasses failures of the past should enable a combination of Western and Eastern studies on interactive relationships. The next section discusses the benefits that can be drawn for an IMP-based business network theory that takes into account the guanxi interaction as a cross-cutting pattern to IMP-based interaction and the new possibilities of an enhanced business network approach to supply management, customer relationship management and product development research.

6.8 Theorising for Business Interaction in China

This section stresses the difference between the guanxi interaction approach and the interaction approach, or business network approach of the IMP research group, and argues that the two are complimentary to each other in analysing business interaction in China. These two views of the world can be incorporated in studies of business networks due to their common focus on process and change; basically, interaction. Whether interaction is direct, indirect, business or non-business, it is in interaction where the evolving nature of network links in product development network contexts can be identified and analysed. In general, interaction in business networks creates relationship contexts in which networking processes, including adaptations, mobilisations and resource combinations take place. Overall, this research has identified and analysed various relationship types in different network contexts. Valuable insights have been generated and discussed that bring value to the guanxi interaction process, which is seen as a cross-cutting pattern to the IMP-based interaction process. The following parts of this section discuss how a guanxi interaction mode of network theorizing enriches the IMP business network theory and enable researchers and practitioners to capture and interpret what is under the tip of the iceberg and in particular what are the background forces of direct interactive processes.

It should be acknowledged that although at an initial stage of the research process it was unclear how to incorporate the concept of guanxi primarily due to problems with regards to its definition as a standard concept, research findings show what works best for the formation of the concept of guanxi as an interaction process and its significant effects on inter-organisational networks in China. Guanxi interaction and the practical ways of nurturing, developing and maintaining actors' relationships in China are all reflected on notions and phenomena positioned in the analytical framework of guanxi interaction in business networks. The analytical framework for guanxi interaction offers a holistic approach as all of its associated notions and phenomena manifest the philosophical premises of process, change and context-specificity. Further, it could be noted that a visualisation of the guanxi interaction process does not make sense as it would have had to either be based on a sequential possible process with unlimited scenarios or refer to standard characteristics of interpersonal relationships. Instead, it is suggested for researchers and practitioners to employ the analytical framework for guanxi interaction

alongside the analytical ARA framework in order to analyse relationship patterns in business networks. As this research maintains, since there is no standard relationship pattern in networks, an analytical framework for guanxi interaction should offer flexibility and should not be built in order to provide specific solutions to standard phenomena.

The terms industrial, inter-organisational, cross-boundary, cross-cultural, knowledge, learning, innovation, supply, product development and production networks have been used interchangeably in this research. However, the most used term throughout this research is the product development network. Nevertheless, it is clear that this research does not attempt to develop a specific theory for product or technology development or supply networks. Its purpose is to enrich the business network paradigm by taking into account the development of guanxi interaction as a concept of organising for interaction in networks. Guanxi interaction is found to be the main pattern of interpersonal network structures and an influential socio-cultural mechanism to business network processes in China.

Findings from case studies confirm the complexity of the sociological concept of guanxi. Thus, the following discussion explains why the guanxi network should better be seen as a metaphorical context – instead of a rigid theoretical framework – that hosts the different Chinese world compared to a Western world, in terms of interpersonal interaction in business networks. This comparison is feasible only when the pattern of interpersonal interaction in China is distinguished from the pattern of IMP-based interaction. Although, the guanxi network approach seems to offer a complementary beneficial approach to IMP-based business networks when applied to studies analysing interactive relationships in China, a guanxi network approach⁴⁴ has only guided this research heuristically and cannot be directly associated with business networks, due to the unavoidable influence and involvement of social, cultural and political systems. However, it has provided an appropriate context enabling the development of a guanxi interaction concept that enhances the understanding of interaction in business networks and explains its multilevel indirect and non-business effects.

⁴⁴ The heuristic guanxi network theory can be found in table 2.4, p. 80.

In China, the realisation of resources or aspects of interpersonal relationships, such as trust (in Chinese language: *xinren*) and commitment (in Chinese language: *renqing*) among others, operates differently to the realisation of trust and commitment in Western relationships. The differences can be found by analysing the evolution of interactive relationships and in particular the processes of interpersonal interaction in business networks. Findings show that relationships are very fluid in China. Therefore, this research argues that relationship resources in a Chinese context, or *guanxi* resources, are not static, standard entities at any of the stages of the product development process or at any stage or phase of interpersonal business relationships, as they are directly associated to and dependent on on-going social interaction processes in complex networks. Thus, they cannot be placed in a *guanxi* network theory as standardised theoretical constructs. Rather, the aim should be to describe the conditions under which relationships occur in terms of general characteristics or phenomena.

Conceptually, the crucial need for an enriched business network theory incorporating empirical findings of Chinese interpersonal interaction processes arises from the differences found in practice between Chinese interpersonal relations and those in the West. In contrast to Langenberg (2007), this research does not accept a view of the *guanxi* network as an approach by itself. In contrast to Mathew-Watkins (2001), this research does not equate Chinese interpersonal networks with social or cultural capital. Rather, *guanxi* interaction is used metaphorically to characterise the nature of the interaction process within interpersonal networks in China. Findings strongly support the use of the metaphor as a representation of interpersonal interactive processes in China. Hence, this research argues that a *guanxi* interaction pattern can provide valuable insights to researchers when is used alongside the pattern of the IMP business network approach rather than being the primary characteristic of the pattern of a *guanxi* network, which as a system by itself cannot totally explain business or product development network processes, where measurable and tangible parameters influence substantially the formation of relationship resources at the actor level and thus the evolution of adaptations and resource combinations at the inter-organisational level.

It has been shown that in order to understand the difference it is useful to analyse the socio-cultural features of interpersonal interactive relationships and how these cause an impact on knowledge and resource combinations, which in turn influence network

formations and thereby innovation. In other words, the socio-cultural features of interaction influence the development of relationship resources and have significant effects on the nature of network links, such as knowledge sharing and cooperation levels. To conclude, what emerged from the discussion of findings is the conceptual link between indirect and non-business phenomena in business networks and knowledge-based interactions among actor bonds. Heuristically seen, in Chinese networks, the concept of guanxi interaction can be seen as a network pattern embodied in guanxi network structures through guanxi interaction processes. The next section discusses in particular how the guanxi network pattern adds value when incorporated to the interaction pattern in business networks.

6.9 Complementary Modes of Analysing Interaction

This research argues that the concept of guanxi interaction offers a cross-cutting pattern to business interaction when analysing phenomena in business networks. The argument lies on the fact that there are particular points of vulnerability in the ARA analytical process in terms of identifying episodes of guanxi interaction in business networks and thus guanxi interaction effects to direct business interaction. This section elaborates on how the business interaction process that can be captured by the analytical ARA framework and the guanxi interaction process that can be captured by the analytical framework developed in this research interact with each other. Some of the aspects of business interaction and especially those with regards to direct business interaction seem immutable and are ephemeral without reinforcement from the guanxi interaction process.

From the comparison between the IMP-based business network and guanxi network approaches, presented in the literature as well as discussed above, it is argued that the nature of network links is based on and influenced by relationship resources, such as commitment, trust, cooperation, exclusivity, and long-term orientation among others. However, the key differences can only be generated by analysing interaction and thus it is concluded that the establishment of the guanxi interaction concept separates from, and at the same time links the guanxi network approach with the business network approach used in the West to analyse relationships in networks from an industrial marketing and purchasing point of view.

The IMP business network approach provides the theoretical context for the ARA model of interaction and assumes interdependent resources among companies, which are usually, framed by ownership and intellectual property agreements. Business relationships are considered as resources based on direct business interaction. In contrast, in Chinese interpersonal networks, resources are the characteristics of relationships, which may also be developed through non-business interaction processes among individual business actors. As far as the actor level of analysis is concerned, this research argues that what distinguishes the two is how relationship resources are nurtured, developed and maintained in practice.

In IMP-based business networks, at the nurturing stage of actors' relationships the network links, at the actor dimension of the ARA model of interaction, are characterised

by limited commitment, and trust, and no adaptations take place. Although actors can become interdependent when contractual agreements are signed, management is likely to employ rigid measures to control performance as trust is relatively low. In contrast, in guanxi networks commitment and trust are not limited and actors are prepared to adapt, even before completion of contractual agreements. This might depend on previous non-business interaction or indirect relationships among actors not directly involved in the current network. When the relationship moves to a developing stage, business actors' interaction, in the business network concept, depends on competence-based trust and middle management is involved to manage inter-organisational product development network processes. On the other hand, in guanxi networks, trust is based on the networking capacity of partners and the gatekeepers or centralised actors are mainly directors and high-level managers. This is found to be the case in the low-sectors, no matter the size of the companies involved or the number of network actors. In the maintaining stages of relationships, there are also differences between the two complimentary approaches. For the business network pattern, there are formal knowledge transfer mechanisms, such as IT platforms and scheduled meetings, guided by contractual arrangements and alignments on performance targets. In contrast, in guanxi networks, meetings are less formal and usually take place offsite. Also, face-to-face interaction is preferred even for less critical issues. It is also suggested that in guanxi networks, cooperation is placed on top of conflict and voice is exercised more than exit. However, the latter is also regarded as one feature of the pattern of interaction in IMP-based business networks.

A conclusion is that the 'individual' actor dimension has significant effects on the three ARA dimensions used to analyse business relationships in networks (e.g. Fang and Kriz, 2000). Beyond this general conclusion, this research argues that guanxi interaction processes manifest a cross-cutting pattern to interaction processes in business networks. The former aims to develop more holistic and wide interpersonal relationships and networks, whereas the latter is narrower and very specific in focus. In other words, guanxi interaction as a process could be regarded as a more proactive and holistic way or method to understand and manage relationship development. Metaphorically, guanxi could be seen as general oil which leads to beneficial high-value outcomes in terms of all three dimensions of the ARA model, whereas 'specific' Western networking only gets the low-hanging fruit.

6.10 A Model for Evaluating Supplier Network Performance

Since interpersonal interaction is not a standardised phenomenon and can only be captured by its effects in specific contexts, researchers should strive to develop flexible frameworks and models allowing a more holistic understanding of their business networks and enabling variety, complexity and context-specificity. This section shows how the guanxi interaction concept can be taken into account in the context of supply network performance management. As mentioned in the literature and shown in the case studies, ‘companies [try to] manage the relationships of a myriad of actors’ (Johnsen et al. 2010: 2). Further, Gadde and Johnsson (2007) argue that there is no standard model or tool to measure supplier network performance. In other words, although the ARA model can be used to analyse relationships, it cannot be employed to evaluate relationships with suppliers.

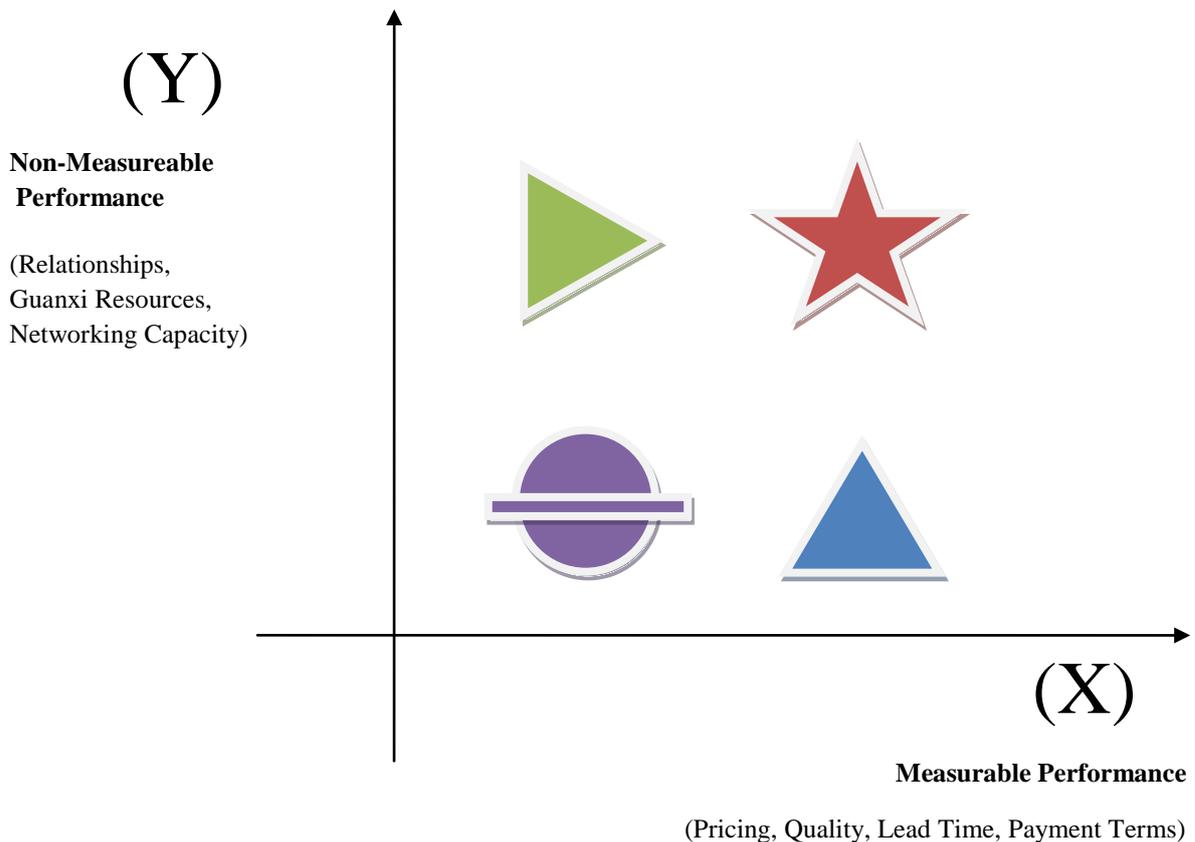
In particular, Johnsen et al. (2010) argue that the interaction model provides a conceptual structure to analyse customer-supplier relationships rather than a framework to evaluate the performance of relationships. As has been noted, Johnsen et al.’s (2010) model is quite static referring to each separate networking phase and it seems more close to traditional approaches rather than network-like tools. This study argues that a supplier evaluation model that also reflects business practices in China should take into account actors’ guanxi interaction effects. The above argument is based on findings which showed that relationship resources or characteristics at any stage of the process are dependent on other relationships, business and non-business, upstream and downstream connections, which combine other resource interfaces, and which, in turn, may enable or distort the development of relationship resources and thus future co-development activities.

This chapter closes with a discussion of a flexible approach that can be used alongside conventional techniques to evaluate supplier network performance. The supply network performance (SNP) matrix is discussed as a flexible model to evaluate and influence future supply network performance. The SNP matrix can also be used alongside other, more standardised tools to evaluate and leverage supplier relationship performance. The SNP matrix takes into account guanxi interaction effects as well as other important non-measurable parameters that have been identified in this study as influential factors to relationship performance, such as networking capacity and actors’ relationships with third

parties. The matrix can be used as a network-like technique in business network research and practice. Although, it is generally suggested as a complementary analytic tool to the ARA model of interaction when investigating relationship patterns in business networks, further research should be called to examine its usage and effects in practice.

Based on the researcher's experience and interaction with participants, the researcher has made an effort to design a model, which can be used in a flexible way, meaning not systematically, to evaluate supplier relationship performance. The SNP matrix was initially designed to be used as a story eliciting device in the data generation process during fieldwork. Hence, the image has been tested extensively during interviews as a methodological tool and it is proposed as a useful tool that assists on contextualising research participants into the discussion, and encourages them to narrate critical events that have shaped the evolution of interpersonal and inter-organisational relationships in product development networks. This research takes this newly developed methodological tool one step further and proposes its usage as a model for evaluating suppliers' performance by taking into account a specific set of measurable and non-measurable performance indicators.

Figure 6.1: Supply Network Performance Matrix as Model



Source: Developed by the researcher

There are standard Western approaches used by business actors in China but beyond these there are non-documented practices to evaluate a supplier's or a supply network's performance. A relational approach is discussed drawing from findings of the multiple case studies research. In China companies usually evaluate suppliers on a case-by-case basis without employing any standard supplier evaluation models and tools. However, some of the companies examined use one-dimensional Western-based models and tools to evaluate their suppliers' performance, in terms of measurable performance variables. Based on findings with regards to how business actors in China evaluate suppliers' performance, this research suggests that the SNP matrix can be used as a qualitative technique to analyse and evaluate relationships with suppliers and in particular suppliers' performance. The SNP matrix can be applied on various suppliers' categories or on a case-by-case basis where each supplier is positioned on the matrix according to its performance in terms of both measurable and non-measurable variables.

Having located each supplier on the matrix, business actors from the buying side can organise for future interaction with business actors from the supplier in order to discuss possible ways of improvements, adaptations and resource combinations. However, a major issue is that by knowing the supplier and having established strong interpersonal relationship ties, the positioning of a supplier on the SNP matrix will be more accurate and thus possible future interaction with the supplier will be more likely to improve the quality of the relationship and leverage its performance, and thus the performance of the whole product development network. Knowledge sharing with regards to networking capacity of a partner, which possibly increases the chance for product development sustainability through access to others' resources and networks, can be more realistic through established close relationships accompanied by continuous and transparent knowledge exchanges. Further, it is possible to position on the matrix all suppliers involved in a product development project or even the whole supply base of a company. Nevertheless, it should be noted that the SNP matrix as a tool for supplier performance evaluation should be used in line with other more standardised and systematic approaches. Lastly, here, it should be noted that the newly developed SNP matrix is considered as a significant contribution to management practice, given the current premature stage of the area of supplier risk management and supply network performance both in the West and in China.

6.11 Conclusion

The discussion of findings chapter has analysed the most valuable insights generated from multiple case studies in a systematic way and provided explanations for the different but complementary concepts of interaction processes. The boundaries between the two different angles of analysing interactive relationships in China are overlapping. Hence, the business and guanxi interaction modes of managing and influencing the development of relationship resources in networks should be taken under serious consideration in business network research and practice. The difference is found in the pattern of the interaction process compared to the IMP-based interaction pattern. In particular, the discussion of findings has demonstrated the importance of indirect social interfaces and non-business interaction to the initiation and evolution of direct business relationships in product development network contexts.

Some dimensions and mechanisms of guanxi networks, such as non-business interaction, as well as the networking values that business actors in China exhibit cannot be captured by the ARA model of interaction and this is exactly the value offered by the framework of guanxi interaction in business networks. The analytical framework offers cross-cutting support to the interaction model and the IMP-based business network theory, which is enabled to capture and analyse both business and non-business interaction effects. In other words, a direct business interaction process approach based on interdependences is benefited by taking into account the indirect interpersonal approach for organising business and non-business interaction in Chinese networks. An interpersonal approach positioned alongside the business interaction approach offers a much more holistic approach to innovation studies as it takes into account the socio-cultural characteristics of relationships and networks.

Chapter VII

CONCLUSION AND FUTURE RESEARCH

7.0 Introduction

Based on in-depth insights drawn from multiple case studies, spanning across industrial sectors and geographical regions, theoretical, methodological and managerial solutions are provided for organising interaction in China. The solutions offered aim at enabling researchers and practitioners to capture and interpret critical episodes of interpersonal interaction and to analyse their effects on the development of inter-organisational resource interfaces in the context of product development.

The final chapter is presented in three parts. In the first part, the value of this research and specifically, the theoretical contributions of this research are reported. Drawing from the theoretical development – the enrichment of the IMP business network approach with the concept of guanxi interaction – the second part discusses managerial implications of this research and offers possible ways to interpret and manage business relationships in product development networks. Lastly, the third part refers to new topics and areas, which are yet uncovered and where future research endeavour can be built upon.

7.1 Theoretical Implications

This research argues that guanxi-as-interaction process is relevant addition to our view of business as networks of business relationships. Building on the conclusion that guanxi is seen as a process of interaction through which relationship resources, such as trust, commitment and knowledge-sharing intensity among others are nurtured, developed and maintained; the final sections of this thesis spell out the outcome of the research in terms of added value, new insights and additions to IMP-based business network theorizing.

This research provides an IMP development as it relates to personal relationships and networks and their effects on managing buyer-supplier relationships in product development contexts. The contribution to IMP draws from the significance of the guanxi-as-interaction concept to network theory. In other words, guanxi and network thinking can be combined at the interaction level, and guanxi and network concepts are interrelated in terms of actor bonds, and thus should be integrated when analysing phenomena in Chinese business networks. Findings from case studies show that business actors in China think and act network-like. However, there are no existing theories or models that can be applied to analyse interactive processes in business networks as far as product development in a Chinese context is concerned. Previous studies on guanxi in business view guanxi as something static based on hierarchical and power relationships. Only a few studies view guanxi as a process but these do not associate it with the networking processes of knowledge creation and innovation. The case studies conducted offer valuable insights, which fill in gaps in the literature to date that does not offer solutions in managing product development networks in China.

Within a networked world of asymmetric yet dynamic relationships, this study views guanxi as indirect and direct interaction, business and non-business interaction process that takes place at the individual actor level, which in turn gives life to actor bonds, activity links and resource ties at the inter-organisational level. In Chinese networks, guanxi interaction metaphorically represents interpersonal interaction, which can be seen as a network pattern embodied in business network structures through guanxi interaction processes. Through an interaction lens, this research has shown that in a Chinese context, business and guanxi network forms of organising are interrelated and one can be found in another. In other words, they represent two complementary perspectives for analysing interactive relationships in business networks.

Thus, a significant contribution is made to the theoretical knowledge of Chinese management with respect to guanxi or guanxiology by looking at the sociological concept of guanxi through different lenses than previously used. Findings suggest that at a far-from-equilibrium level, where product development mainly lies, guanxi should not be viewed as something given and static based on hierarchical or market structures and asymmetrical power relationships. Rather, guanxi is seen as a process of interaction, through which relationship resources, such as trust, commitment, reciprocity and affection among others, are nurtured, developed and maintained. Findings show that guanxi aspects of relationships create a necessary space, where new knowledge or knowledge combinations emerge. This research suggests that product co-development is primarily based on the interplay between socio-cultural and knowledge-based resources, which are both developed in interaction. However, in practice this interplay is even more complicated because culture is paradoxical in its nature; it is interactive culture, with characteristics of new order and emergence; an emergence of guanxi resources and access to new knowledge and networks.

With the enrichment of the IMP-based interaction concept with the developed guanxi interaction concept, which involves both business and non-business interaction, the understanding of firm bonds, resource ties and activity layers of any single relationship analysed by employing the ARA model, is more holistic. Although guanxi premises can only be established among interpersonal relationships, findings show that a consequence of developed guanxi resources among individual actors is the transformation of activity links and resource interdependencies among company actors. Hence, this research argues that when considering business networking that embrace China, guanxi-based thinking and acting should be aligned with Western business networking and together they can be applied to analyse the evolution of specific relationship patterns alongside the evolution of knowledge-based resource interactions. Further, the above argumentation is also aligned with the cultural-convergence principle of our modern societies. By establishing the concept of guanxi interaction and explaining its usage, this research has broadened the validity of the IMP-based business network approach, in terms of geographical diversity and deepened its theoretical base.

7.2 Managerial Implications

This study argues that instead of a transactional approach based on market exchanges or a business network approach based solely on interdependences, an interpersonal approach to managing interaction in product development networks in China is necessary. The transactional approach is closely related to the traditional, structural and ‘rational’ approaches to new product development, which can be associated with the Cooper ‘school of thought’ and its Stage-Gate model. On the other hand, an interpersonal approach, which lies closer to the network approach, is a much more holistic approach as it takes into account the socio-cultural characteristics of relationships and networks under consideration. The managerial implications of an interpersonal approach to product development stress the need to employ soft knowledge transfer mechanisms to nurture, develop, and maintain relationship resources among business actors. With regards to management practices in networks, knowing, influencing, mobilising and synthesizing are more significant to the practices of planning, implementing and monitoring. Most importantly, this study argues that in Chinese business networks, the management practices of an IMP perspective to business networks can only be achieved when acknowledging the socio-cultural environment or simply the guanxi interaction processes, which in the Chinese case can be referred to as ‘guanxi-ing’. The latter is a prerequisite of and thus a major addition to the management practices of IMP-based business networks.

The differences between guanxi-ing and networking are discussed based on general lessons drawn from case studies presented in the discussion of findings chapter. For example, the soft knowledge transfer mechanisms employed by management, such as the organising of events and other kinds of socialising that takes place outside company sites, have different causes and effects on the Chinese in contrast to the Western side. The former aims to initially develop interpersonal relationship resources, such as trust, reciprocity and friendship, whereas the latter aims to develop inter-organisational actor bonds, with an aim to link activities and tie organisational resources. The attitudes of Chinese business actors towards interpersonal relationships are normally not given special attention by Western theorists and practitioners. However, successful Western actors doing business in China exhibit some of those characteristics and value socialisation and the importance of interpersonal relationships. Based on the above, a general suggestion might be to recruit people who value relationships and who are able to

socialise with suppliers or buyers based in China; people who share similar characteristics for developing and maintaining aspects of relationships in Chinese settings.

Research findings show that the most important issues in product development networks come from managing the supply base in China and organising for interaction with buyers, suppliers and sub-suppliers in China. It is found that Western buyers and even Western suppliers in China face difficulties in managing their relationships within the Chinese supply base and not really from managing their relationships with the buying side in the West; a Western side that usually follows conventional business modelling and relatively standardised ways of business interacting. The aim of this research is to contribute significantly to academia and practitioner communities since the implications of interpersonal interaction to managing product development have received limited attention in the literature, and very few studies place their focus on knowledge-based resource interaction within cross-cultural inter-organisational networks, and especially interaction in product development networks in China.

Findings show that the majority of business actors in China do not employ any network-like theories or models to analyse real world phenomena and to assist them on organising for interaction in product development networks. Paradoxically, findings also show that in practice business actors in China think and act network-like. It can be inferred that a lack of interaction models in use and theories in the field of organising for interpersonal interaction in China is due to the high cognitive and relational complexity found in Chinese *guanxi* networks. Nevertheless, findings provide a clearer view of *guanxi*, which paved the way for theoretical development to take place in the grounds of an integrated theory for business networks that takes into account the newly established concept of *guanxi* interaction and acknowledges its implications to the IMP paradigm and network research.

Findings drawn from this primary research offer an analysis of the practical ways that enable and distort product development within networks that involve Western buyers and suppliers in China as well as networks of business actors operating in China. This research suggests that interpersonal relationships should be highly valued by management. Management should encourage people to take advantage of their own interpersonal networks. Further, management should encourage business actors who cross

organisational borders to identify key persons at partner companies and exchange knowledge not only with regards to the project under consideration but also beyond business issues. Both parties should try to understand each other and make clear their own targets as well as those of the counterpart. Even at a preliminary relationship stage, where there has been made no agreement, formal or informal, the exchange of knowledge should be characterised by high transparency in order to encourage the establishment of trust and commitment. Each party should share knowledge with regards to its networking capacity both in terms of the supply and demand sides. As a general conclusion, guanxi interaction represents a more 'proactive' way in managing interaction compared to a 'reactive' nature of interaction in Western business networks.

In terms of knowledge-based resource interaction, it is found that the guanxi aspects of interpersonal relationships increase the frequency of interaction, the 'tacitness' of the content of interaction and the complexity of knowledge exchanges among business actors. Guanxi resources are developed through interactive processes and particularly face-to-face interactions. However, findings show that guanxi is activated especially during critical events in product development projects, such as problems in network design, inter-organisational integration and also technical problems, such as sampling issues and defections. In the case of a critical event, actors usually but not necessarily increase in numbers, and an atmosphere is created, where guanxi resources among individual and company actors can be nurtured and developed. Findings show that this can also lead to the identification and mobilisation of key actors towards the achievement of some kind of horizontal or vertical integration and especially knowledge sharing within the supply base.

Further, exploration has shown that product quality is improved indirectly as guanxi interaction intensifies. An established guanxi relationship among business actors motivates network members to put more effort into the product or technology development project. This effort can be interpreted into mobilization of other relationships and synthesis of new network formations. Therefore, it can be argued that supply and production networks in China become increasingly important resource providers, only when relationship resources, such as trust and commitment, alongside knowledge-based resources, are developed in interaction. Overall, guanxi is a central constituent of interactive relationships and is associated with increased knowledge

transfers, especially tacit, and access to others' resources and networks. In Chinese supply networks, guanxi interaction can be directly associated to efficiency and success in product development.

As has been mentioned above, the soft knowledge transfer mechanisms employed by management, such as the organising of events and other kinds of socialising that takes place outside company sites, have opposing effects on the Chinese side in contrast to the Western. The former initially aims specifically to develop relationship resources, such as trust, reciprocity and friendship, whereas the latter aims more to develop economic, organisational and technological resources. The attitudes of Chinese business actors towards interpersonal relationships are normally not given special attention by Western theorists and practitioners. However, successful Western actors doing business in China exhibit some of those characteristics and value socialisation and the importance of interpersonal relationships. A simple way may be to recruit people who value relationships and who are able to socialise with suppliers or buyers based in China; people who share similar characteristics for developing and maintaining aspects of relationships in Chinese settings. This is because guanxi is a kind of art and the guanxi interaction process is trivial.

Finally, managerial implications might vary depending on the industrial sector. Findings show that in low-tech sectors interpersonal relationships directly influence knowledge-based resource interaction, which in turn may explain the combination of economic and technical resources and the formation of activity links. In contrast, in high-tech sectors, where Nokia or Samsung are seen as network hubs under a static network perspective, guanxi interaction processes are considered to be important not only for the nurturing of high-order inter-organisational relationships but especially for the relationships between first- and second-tier suppliers in product development networks that involve business actors based in China. Overall, there are significant managerial implications of the guanxi interaction process in business networks, supply network management, new product development, and Chinese management, which have been all, directly and indirectly, elaborated throughout this study.

7.3 Future Research

I acknowledge that this is not the end. Rather, it is just a new beginning for further exploration of our continuously evolving cosmos. The more we study interaction in product development networks, the more we come to realise that such complex problem cannot be comprehended in isolation. Understanding product development, means understanding culture, network, language, and communication among others, which are considered as systemic problems, meaning that they are interconnected and interdependent. Ultimately, systemic problems must be seen as just different facets of one single crisis; 'a crisis of perception' (Capra 1997: 4). That above implies that future studies can examine different network contexts and come out with a different set of conclusions and theoretical developments. This in turn implies the limitations of the research findings in terms of generalizability criteria, as they are all based on specific contexts.

A major implication for future research is that any theory, framework or model should take into consideration the concept of guanxi-as-interaction or guanxi-ing, when applied to Chinese settings. As the enriched actor dimension of the interaction model assists on interpreting the formation of activity links and resource ties in Chinese business networks, the consideration of guanxi interaction by theorists will influence other elements of their theories and models, and will result to a totally different set of managerial implications and conclusions. Drawing from this research, there are numerous implications for future studies on supply network management and product development as well as Chinese management. For example, future research should examine multiple sides of relationship patterns in Chinese networks and do not rely on single-sided investigations, whether it involves a comparative examination and analysis of horizontal networks in networks in other industries or other Chinese regions.

But most significantly, starting with this thesis, future research on business networks should take into serious consideration the specific socio-cultural aspects that characterize actors' relationships in networks. In particular, the IMP business network approach could be localised during the course of examining business phenomena in specific industrial sectors or geographical regions. Multiple localised IMP solutions could be compared and contrasted leading to a holistic, more universal, or even globalised IMP network theory. This thesis has made a first step towards this achievement: a 'universal' IMP network

approach for China. However, in order to reach closer towards a universal network approach for China, future research should be called for a comparative analysis of the nets, such as the Hong Kongnese, Southern Chinese, Northern, and Western Chinese nets. For instance, all respondents in Southern China perceived that the Southern Chinese supply networks are superior to the mainland Chinese. However, interviewees note that future is promising as knowledge is transferred quickly to other regions as the South-Eastern side becomes more technologically orientated and thus more costly. The future for Chinese supply and production networks looks promising as the relationship patterns increasingly involve Chinese buyers and of course Western suppliers. More empirical research should be called to examine the directions this will take in the near future, in terms of regionalisation and globalisation of production activities as well as consolidation of knowledge-based resources. A call for further research could also be made to analyse other managerial aspects of the rationale and processes of guanxi network formation, development and effects, such as human resource management, which is considered particularly important to product and technology development.

Another emergent issue concerns the level of technological complexity, and its association with extensive networks. Research findings suggest that in high-tech product development networks the volume of actors involved is larger and the key brokers are managers and assistants, compared to the low-tech networks examined, where the key brokers are directors and CEOs and the networks are centralised around them. However, do the above findings imply that the highest the level of technology the larger the network and, thus, will the relationship ties be characterised by measurable factors? Future comparative research is needed to shed more light on the interpersonal interaction processes in both high- and low-tech networks in various industrial sectors.

To conclude, with my personal experience of this research journey and to pave the way of moving forward with future research endeavours... Given the inter-complexity of network thinking, paradoxical and contradictory findings are beneficial in the formation of a holistic understanding of complex phenomena.

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APPENDICES

A: Literature Review Methodology

Given the multidisciplinary nature of the topic, the methodology of the literature review has been driven by the need to survey and critically evaluate a substantial amount of literature. Three linked approaches have been incorporated simultaneously rather than sequentially. However, for presentation purposes these are discussed sequentially. Initially, keywords were identified on the subject areas of knowledge, networks, supply management, product development and culture, based on prior experience and a form of brainstorming. They included, for example, supply network, product development, knowledge management, inter-organisational networking, knowledge-transfer, -creation and -sharing, collaboration, supply management, innovation, organisational change, trust, and guanxi among others. The keywords were also constructed into search strings, such as [Knowledge AND Network, OR Learning, OR Innovation].

A search of the primary journal database, Emerald Journals, was undertaken using the basic search strings. The search was limited to the period 1996-2010 in order to ensure contemporary coverage. Additional words, such as social capital, community, embeddedness, complexity, interdependence and interaction were found to be relevant and they were therefore added to create new keyword search strings. Moreover, a secondary journal database was used to confirm citation trends. Although yielding fewer results, the Sage Journals database search proved to be a useful check on the validity of the Emerald data as well as providing a broader base to the review. Overall, although all interrelated terms found in various articles come from different backgrounds, and disciplinary ‘homes’, they are all related more or less to work produced by international business, marketing and organisational scholars.

An analysis was carried out, by reviewing the primary citation database, using all search strings identified. The citations identified were reviewed according to inclusion and exclusion criteria (e.g. Pittaway et al. 2004). The titles of the articles were shortlisted according to exclusion criteria. The abstracts of those remained were read and a decision was made as to whether to include them in the main article database. Further, all relevant articles including those provided from direct interaction with university scholars and indirectly from participation in conferences and seminars were read thoroughly and sessions were written as the articles relevant to particular themes were reviewed. Consequently, the challenge of this review is to synthesize literary events from a range of

disciplines. Definitions of networks, knowledge and culture are inherently ambiguous. Hence, this study does not wish to show undue emphasis to a narrow set of definitions. However, the literature review pervades the whole thesis and a descriptive analysis of all relevant theoretical concepts and constructs is necessary.

It is also important to be mentioned here that the literature review has evolved over a long period of time, and has been influenced by work presented at the 24th and 25th IMP international conferences, at Uppsala University (Sweden, 2008) and Euromed University (France, 2009), respectively. A summary of the literature review of the dissertation of the Doctoral training degree (MSc in Management Research) was presented at the Doctoral Consortium of the 23rd IMP Conference, which took place at the Manchester Business School (UK, 2007). Further, latest research output was discussed in an open review at the Industrial Marketing and Purchasing Journal seminar at the University of Uppsala (Sweden, 2011). Feedback during Question & Answer sessions took place at presentations as well as informal discussions during conferences have all influenced the direction and quality of this research. Another major influence and refinement of the study, in terms of expanding and narrowing the research focus, has also been the pilot study and of course the fieldwork. Finally, it should be mentioned that recommendations and comments from supervisors and discussions with internal advisors as well as external people to the business school have been valuable for the evolution and completion of this research.

B: Example of Interview Transcript

Interview with the Regional Sales Manager of Strix UK in Guangzhou, China (Case Study 2)

I am here with the Sales manager of Strix and I would like to thank him for enabling access to the company site in Guangzhou and introducing me to key informants in this case study.

Yesterday I visited the company site and conducted the first two interviews with the purchasing manager and an operations employee. The interview meetings helped me learn a lot about the R&D and manufacturing transfer process from the UK to Guangzhou and also a new customer base in China.

Have your company's Western customers transferred the supply and manufacturing bases in China too?

Yes, but my customers are in China.

Which are the key customer accounts that you manage in China?

It is basically Haier, Midea and also some international brands, such as Teffal and Phillips.

Would like to draw a network of Strix as a hub showing the links to customers?

(As he draws a first simple network map the informant narrates...) We have two types of customer relationships; one is direct customers and the other is OEMs. OEMs are used by international customers. Strix supplies the components to OEMs which make appliances like kettles, which are then sold to international brand names, which sell them globally under their brand names. Although, international brands have their own factories in China, they use OEMs for cost reduction purposes, as it is more costly to produce in their own premises.

Is it also for innovation sustainability apart from cost effectiveness?

The foreign-owned factory is competitor to the local OEM, they don't cooperate but they compete...

What is your role to increase cooperation between your end customer and the OEM. Can you give an example?

For example, one main customer in China is Haier; they don't produce kettles. So, I have to visit both Haier and the OEM during the project.

Since both customer and OEM interact with you, I wish to understand more about a specific project that involved Strix, Haier and a local OEM. Could you draw a network map that depicts Strix's business actors involved in it?

My focus now is different... we see Sales department as the customer interface - a communication center. Within the sales team we have technical support for the customer. Technical support has two kinds of roles: one is responsible for OEM or customer support, the other is application engineer. Because we are involved a lot in the product development of our customer as we are experts for core components and experts for appliance such as kettles. So, we must provide know how and expertise to the customer. The OEM support type of job is to manage the project, for example if the customer would like to design a new type of kettle, from industrial design to production.

First, we wanted to convince Haier to develop a new variable temperature kettle....

What is this new technology exactly?

The customer can customize the boiling temperature. For example, if the customer wants to drink different types of tea customer can adjust the temperature and also save time. This feature brings a lot of value to the product.

How you convinced them?

If we have new technology, new features, which adds extra value we can convince them.

I mean how you initiated the relationship with Haier? Were you involved?

Haier is an existing customer. They are experts for selling, branding etc. We had to introduce them a good OEM, in terms of quality, capacity and lead times etc. When the OEM is accepted by Haier then the project planning can commence.

Do you recommend just one OEM or you provide a bunch of them for Haier to decide?

We always recommend a few suitable candidates and we discuss with the customer to decide which one is the best.

How you started the relationship with Haier is what I would like to know but shall we finish the network mapping for this project involving Haier, OEM and Strix? Would you like to tell me more about this project or think of another product development project?

Yes, let's talk about Haier. As we said, we have a Sales team to convince Haier of the new variable thermostat. Once they are convinced then some of the job is transferred to the technical team. For this project all managers were involved, I as the regional sales manager, the OEM/Customer support manager and the technical engineer manager. Remember that all mentioned roles involved in the project belong to the sales department, and form the interface between customer and Strix.

We have sales managers globally. I am the regional Sales manager for China; there is one for Western Europe and one for Eastern Europe. Also, the Sales director is located in UK, but just moved to HK, because the focus is moving to Asia.

Let's continue on the map with Haier, and maybe later talk about another project where the customer has some kind of requirements or specifications, not a ready innovation to market, some product development project that involved inputs and collaboration with the network. For example, yesterday I discussed on a plastic quality improvement component, something more complicated, where we can see the whole network interacting, not just market innovation where Strix is obviously the hub of the network. Let's do the Haier project network mapping first... We also have the Sales director...

He communicates with the whole team?

Basically he communicates with me.

How you started the business relationship with Haier?

At the very beginning it was very official and formal. We got the contact. But I have a classmate in Haier but in a different division... So I asked my classmate which one is the key person to speak in order to initiate the relationship. Of course, he gave me the right contact. So, I just called the key person and told him that I am a very good friend and classmate of your colleague and I introduce myself.

When did this happen?

About five years ago. You know the personal relationship is very important. If you call without any reference you will be ignored. But after I introduced myself as a very good friend of one of his colleagues... then the situation is better, so he was trying to listen what I am doing and what I have to offer to the customer.

Would you call this guanxi in China?

In China this is a kind of guanxi. But after that we must do more to make the other side understand what we do in this industry, what we offer... like the 'map of supply chain' [shown in the company website]... we offer the customer not only the core components but also full service throughout the supply chain, from industrial design to engineer, also other knowledge of key component suppliers and technological transfer, even marketing support.

But OEMs have their own design, right?

We are different, 50% of the design come from Strix. We have our small design team in Guangzhou with the R&D Head office in the UK. Do you know the difference between engineering design and industrial design?

Please explain.

Engineering design is about construction and technology and industrial design is the appearance of the product.

Do you think Strix has connections with universities or other research centres in the UK?

UK team has strong connection with UK local design house, and we may buy some nice industrial designs from them.

The engineering design of the variable temperature was an innovation of Strix UK or the China R&D team?

Strix UK developed this new technology.

The business actor at Haier was in the purchasing team of appliances? And since then with how many people have you met and for this specific 'variable temperature' project with who you cooperate?

We must convince first the decision maker, so we mainly met the general manager.

I would like to understand how you introduced the different OEMs and how a successful decision was made?

First of all, Haier is convinced of our expertise in Kettle appliances based on our long-term relationship.

When was the kick-off date of this project we are investigating?

Almost 3 years ago.

So, after two years of working with Haier you introduced a new technology?

We actually introduce new technologies on a yearly basis to our big customers.

Where the Haier HQ is based?

Haier is based in Qingdao.

How many OEMs you introduced to Haier for the variable temperature kettle?

Three OEMs, and of course we brought Haier to visit them all. Haier has its own system for OEM assessment and one OEM was selected.

Can you name the approved OEM?

XBO.

How many years has the relationship with XBO lasted?

More than ten years. XBO is actually the world's biggest OEM for kettle. They are making every year more than 10 million kettles.

So it is not a choice of surprise...

It was chosen because they have good experience, quality and enough capacity. And also they are more sophisticated in developing new products, such as the new variable temperature kettle.

When this innovation came out in the market, did you also inform XBO about this innovation?

Yes. They knew about it from Strix. Strix is a technological centre, we introduce new technologies to OEMs and the big company brands... then we make the connections between them.

How do you perceive the relationship between Strix and XBO?

We actually have very good connections with all three OEMs and we think that all three are suitable and capable to develop this project.

During negotiations including OEM assessment do you remember some key events?

We made a presentation to Haier about the background of OEM candidates, what are their current customers etc.

What about the OEM's suppliers in China?

They have many suppliers for steel and plastic materials and have both foreign and local suppliers.

Do you ever communicate with any OEM's supplier?

No.

How many people you know in XBO?

20 people, which are in engineering, customer support and production functions.

Can you recall some critical events involving face-to-face interaction?

Face-to-face interaction happens in cases where there is delay; I will visit the factories to explain the importance of the project, and what they can get from delivering fast. Personal interaction is the most important.

So, you visit them in person, an email would not do?

Yes, but face-to-face make people closer. There is personal influence. So, I will visit them to tell them that this is a very good customer and if this project is successful the brand will expand fast in China and take on market share, so they will bring more business.

Shall we talk of another product development project that involved more inter-organisational collaboration?

We wanted to develop a project to address specific local demand. So we had to innovate a core component for the local market. Strix wanted to develop a new thermostat for the China market. So we collected input from Midea, the biggest kettle brand in China; 30 per cent of market share and 3000 employees for kettle appliance division. The Midea Sales team shared knowledge on the Chinese consumer preferences in terms of features. We examined the difference between Chinese and Western consumers on Kettles. Number one is cost; Chinese consumers are more price sensitive than Westerner consumers. Number two is low power consumption. Number three is keep warm capability.

How you get to know the requirements?

Because we are a strategic partner of Midea for five years, and Midea likes to adopt new innovations for the China market which will help them to develop their market value. Midea involved their sales people to share market knowledge. We have a brainstorming meeting. Then we designed a questionnaire, which we gave to Midea. After analysing the data we came up with the specifications. We then transferred the specifications to the UK team to develop accordingly. The Sales director and R&D director were also involved in the development of the required solution, as this is a strategic project for Strix Global. Sales, R&D and Finance directors analysed profitability and risk and whether this will strengthen the partnership with Midea. The decision was to go ahead with the development of the new features and the technology. For this project, Strix developed a completely new thermostat but they needed a new heating element for low power and keep warm features. They searched for a Chinese supplier to provide. They invented a new technology named 'wave' to make the heating element with the local supplier.

How you identified the supplier?

We worked with them for many years. So, we asked them to develop something new. Due to their trust throughout a ten-year relationship, the supplier decided to engage.

But the supplier had to invest on new machinery etc. as they didn't produce this before, how you helped them on this?

It is the technical dept. and the general manager who decided how much Strix would invest. However, they just knew what kind of equipment is required. Strix was not able to provide specific solution but they depended on the supplier's capability on this. The supplier had to invest in an oven and testing equipment and had to contact other sub-suppliers. Some were also visited by Strix technical engineers. After we completed the set-up of the wave technology, together with our thermostat technology we presented this new thermostat as a package. We gave them the whole solution and Midea produced the end product. Midea have a completely new thermostat and a completely new solution for this project, including other information in the package, such as market information collected from Midea as well as other customers.

This approach on innovation strengthened the relationship between Strix and Midea. It strengthened the image that Strix provides innovation consistently and innovation means value.

Innovation brings also value to relationship identity?

It's a huge network; involve the customer (Strix), the supplier and sub-supplier. If in the future we want to recommend an oven testing equipment and the wave technology we will recommend this sub-supplier.

Everyone is located in Guangdong. Are you lucky to have all your suppliers in Guangdong?

Guangdong region has all parts of the supply chain.

How would you compare Southern and mainland China with Hong Kong or Taiwan in terms of capability?

HK companies which also operate in Southern China are superior in terms of technical capabilities.

What about comparing Chinese regions, including Hong Kong with in terms of interaction and negotiation styles?

Fujian guanxi only applies to a small group of people. But Guangdong guanxi is much more open.

What about Shanghainese guanxi? You actually fly to Shanghai tomorrow and you visit often this Chinese metropolis for business, right?

Yes. In Shanghai guanxi is very open because Shanghai is an international city and shanghai people prefer to work with foreign companies.

Let's talk about guanxi and how do you perceive guanxi and how guanxi can be developed?

Guanxi is a kind of art. So I want to have better relationship with everyone in Midea. I found out that Midea people involved in the project would like to play football so we arranged regular football games. During the game the relationship got strengthened and communication was better.

What position you played?

Midfielder

So, you are a central actor in the pitch too. Who organised this socializing event?

It was my idea but the Strix Sales director supported the idea and offered the budget and dinner for the games. We drink together and we get close to each other.

Do you organise socializing events with other customers or only with Midea?

My idea is to organise this with other customers as the Midea people really enjoyed this interaction. After the games we found the relationships between people got closer and everything got easier.

What about the goalkeeper, did he also develop the relationship with the scorers of the opponent team?

You know sometimes we try to lose, because we want to give them face.

How you manage this, the whole team didn't play well or you put the worst goalkeeper you had?

We didn't play well.

But this implies that you didn't enjoy the game.

No, no. A game has many aspects. We don't care about the result... We don't want the customer to lose face.

Yes, if you win 10 – 0 is a problem. But, if I lose I know how to lose, what do you think?

That's the difference between European and Chinese; the result of the game matters. For example, if we win Midea two times they will have two beat us two times. You lose the game you win the relationship.

C: Interview Consent Form

‘University headed paper’

Title of Research: Supply Management for Product Development: A Guanxi Network Approach	
Investigator's Name: Christos Bassayannis	
To be completed by the participant/informant/interviewee (delete as necessary)	
Have you read the ‘participant information sheet’ about this study?	YES/NO
Have you had an opportunity to ask questions and discuss this study?	YES/NO
Based on the information provided, at the ‘participant information sheet’, do you think that you are eligible, in terms of knowledge and experience, to participate?	YES/NO
Do you understand that you are free to refuse to answer any particular questions, and/or withdraw from this study, at any time?	YES/NO
Do you agree to the interview being audio taped?	YES/NO
Do you wish to be given access to a summary of the findings of the study when it is concluded (but have no editorial control over any aspect of the study)?	YES/NO
Do you understand that all information collected will be treated confidentially by the researcher and will only be disclosed to appropriate persons at the University of Greenwich for the purposes of academic supervision of the research or assessment of the thesis?	YES/NO
Based on the above, do you agree to participate in this research?	YES/NO
Signed	Date
Name in block letters	
Signature of investigator	Date
This Project is Supervised by: Dr. Bruce Cronin (Head of International Business Department)	
Contact Details: c.b.cronin@gre.ac.uk, Telephone contact: + 44 20 8331 9786	

D: Participant Information Sheet

‘University headed paper’

I, the researcher, wish to provide you with sufficient information about this research so, as the participant, you make an informed decision about whether to participate in this study. First, I shall indicate that you are free to take part or not, and free to withdraw from the study at any time. Second, it should be noted that this research is undertaken solely as a research project and that any data and information gathered through the interviews will not be used for any purpose other than this research project and associated research publications. Following the Data Protection Act (1998), *‘any personal data which is collected during the course of the research project should be used for academic research. It may be held indefinitely, and may only be made public in a form which identifies individuals with the consent of the individual. It should be held securely according to the principles of the Act’*.

Here, follows a brief description of the research project and what you are required to do. As you may identify from the title, this research takes a network perspective – emphasising interconnections, interrelations, and interdependencies – to analyse product development between foreign buyers and Chinese suppliers, as well as among Chinese suppliers and sub-suppliers themselves. Also, this research views guanxi (Chinese relationships) not as static but dynamic. You are expected to talk about your guanxi experience in business-to-business practice. This research connects innovation and product development with relationships and networks in China. The purpose is to enrich our understanding of cross-cultural business practice relevant to product development. Deep insights can be drawn by incorporating an open-ended approach to conduct the interview, which is appropriate for generating information, in a story or narrative form, and allows us to discuss specific, successful or unsuccessful, cross-cultural product development cases in an exciting, interesting way. Finally, you may be asked to draw some network maps illustrating relationships in a specific product development project.

This Project is Investigated by: Christos Bassayannis (PhD Candidate – Visiting Lecturer)

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This Project is Supervised by: Dr. Bruce Cronin (Head of International Business Department)

Contact Details: c.b.cronin@gre.ac.uk, Telephone contact: + 44 20 8331 9786

E: Open-Ended Interviews

Date of Interview	Company	Position	Interviewee Initials
17.11.07	UK Co.	Product Development Manager	M.L. (not recorded)
18.02.08	UK Co.	Product Development Manager	M.L. (not recorded)
25.02.08	Glory Co. HK	Merchandiser Manager	M.L. (telephone interview)
19.01.09	Hofi Co. Shanghai	Managing Director	S.Y. (not recorded)
02.02.09	CNI Group Co.	Sales Manager	S.L. (not recorded)
14.02.09	UK Co.	Head of Product Development Dep.	M.L.
16.03.09	UK Co.	Head of Product Development Dep.	M.L.
25.03.09	CNI Group Co. Shenzhen	Sales Manager	S.L.
25.03.09	Vitalink Co. Shenzhen	Operations Manager	S.Y.
25.03.09	Vitalink Co. Shenzhen	Product Development Manager	A.H.
25.03.09	Vitalink Co. Shenzhen	Engineer Product Development Dep.	L.L.
26.03.09	CNI Group Co. Shenzhen	Sales Manager	S.L.
27.03.09	Glory Co. HK	Merchandiser Manager	M.L.
28.03.09	CNTC Shenzhen PRC	Operations Manager	E.H.
29.03.09	Strix Co. Guangzhou	Asia Sales Manager	Z.L.
30.03.09	Strix Co. Guangzhou	Asia Purchasing Manager	D.C.
30.03.09	Strix Co. Guangzhou	Logistics Manager	S.L.

Date of Interview	Company	Position	Interviewee Initials
31.03.09	Strix Co. Guangzhou	Asia Sales Manager	Z.L.
03.04.09	Strix Co. Guangzhou	Asia Sales Manager	Z.L.
08.04.09	Hofi Co. Shanghai	Managing Director	S.Y.
09.04.09	Hofi Co. Shanghai	Product Development Manager	A.X.
10.04.09	Angel Silk CO. Zhejiang	Operations Manager	D.C.
12.03.09	Endysis Group Co. Hangzhou	Project Manager	S.Y.
12.03.09	Endysis Group Co. Hangzhou	Operations Director	D.I.
13.04.09	Kenas Co. Ningbo	Merchandiser Manager	W.H.
14.04.09	Kenas Co. Shanghai	Managing Director	M.S.
04.06.09	SEKAP Co. Athens	General Manager	S.T.
04.08.09	Endysis Group Co. Hangzhou	Project Manager	S.Y.