

**THE 25th IMP CONFERENCE
Marseille, 2009**

**CHINESE SUPPLY NETWORKS – AN INTERACTIVE GUANXI APPROACH
FOR PRODUCT DEVELOPMENT**

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Abstract

The research paper discusses the concept of 'network capitalism' (Boisot and Child 1996; 1999) in line with the 'network enterprise' concept developed by Castells (1996) to provide a background of the socio-cultural/institutional environment that characterises the Chinese context. Network capitalism differs from market capitalism or bureaucracies in terms of its adaptive mode to complex environments. In China the mode of complexity absorption is most often favoured over the complexity reduction mode used by Westerners (Boisot and Child 1999). The complexity absorption mode 'entails creating options and hedging strategies, [formally] often through alliances' (ibid. p.237) and informally through guanxi-based trust and close relationships. The latter has important implications for analysing product development within networks in China, as it is related to soft knowledge transfer mechanisms and knowledge articulation rather than codification. This paper views guanxi as a process; not something static. Guanxi is seen as a dynamic resource created through interactive relationship processes. The concept of guanxi is linked to the IMP concept of interaction, which is relevant to the study of supply management and product development within the supply or production networks in China.

Three case studies are conducted in Southern China using qualitative techniques of open-ended interviews with the aim of enhancing understanding of supply or production network formation, development and maintenance in a product development context. The main unit of analysis is supplier relationships among the Chinese; however, multiple relationship levels are analysed incorporating a network approach that takes into account relationship ties, activity links, and resource interdependences among buyers, suppliers and sub-suppliers. The three cases can be distinguished initially in terms of ownership structure, but similarities are also found at the operational level that is most relevant for successful product development. The case studies involve a state-owned company, a family-owned company group and a foreign-owned company.

Keywords: Supplier Relationships, Inter-firm Networks, Product Development, Guanxi, Interaction, China

Introduction

Co-development within supply networks can be analysed through an 'interdependency' and 'interactive' lens (IMP). Co-development usually involves close relationships, allowing companies to rely on each other's resources. Close relationships involve learning and teaching and the transfer of tacit knowledge, but successful transfer is not easy to manage, because it mainly depends on social interaction, which is described by Easterby-Smith et al. (2008), among others, as a complex phenomenon. The research paper discusses the multifaceted

nature of the boundaries, knowledge, cultures and processes involved when analysing social interactions within production and supply networks in China. Initially, it can be claimed that a comprehension of these aspects will significantly enhance understanding of network management in China, and will provide insights about the factors influencing the effectiveness and efficiency of knowledge transfers within Chinese supply networks, which in turn can indicate possible ways of managing both higher and lower order relationships and networks, involving western buyers and Chinese suppliers and vice versa.

In a recent paper, it has been argued that Chinese suppliers are important resource and network providers (Bassayannis & Cronin 2008). The paper examined business-to-business (B2B) relationships between Chinese suppliers and western buyers in a product development context. While the findings support some of the literature discussed, further investigation within Chinese supply networks is required, by looking at the B2B relationships among business actors operating in China. Although the first phase of the research, which was to generate data from western buyers with regard to the relationships with Chinese suppliers in a product development context has been completed, the second phase of the research, which is discussed in this paper, specifically analyses specific relationship patterns within supply and production networks in China. Initially, it can be claimed that apart from sources of cost advantages, Chinese networks can be considered as the main sources of innovations and this research in contrast to existing literature shows that Chinese business networks can be viewed as enablers of product and technology development success. Nevertheless, it is clearly noted that success in product development is attributed to the whole network of relationships, and neither to the supply nor the demand side alone. The study tries to enhance understanding of the processes of interaction within supply networks in China which in turn will provide insights and valuable knowledge – such as the view of *guanxi* as a process of interaction – that is relevant to Chinese and western business actors, who nowadays increasingly depend on Chinese supply networks to improve their product offerings.

The paper begins with a brief description of initial research findings by linking these to the emergent research issues that the current study is drawn upon. This is followed by a detailed analysis of the research background, which connects various parts of literary events relevant to the research problem. Then, a brief section discusses the philosophical assumptions that back up this research and indicate the theoretical development mode as well as the methodological tools that are considered most appropriate to be used in this research. Further, a brief analysis of three case studies that took place in the Guangdong Province, South China, during the first half of 2009 is presented. Finally, research contributions and implications for further research are discussed.

Research Background

Previous research suggests that *guanxi* practice or Chinese relationships should be reflected into theoretical developments, such as the development of the actor level of the AAR model of interaction (Hakansson & Snehota 1995) which can then be used to analyse specific relationship patterns under a product development context in China (Bassayannis & Cronin 2008). These developments of the AAR model are considered

necessary as Kriz and Fang (2003:8) note that 'Westerners applying current IMP descriptions to China could be excused for taking the AAR model and applying it and failing'. Bassayannis and Cronin (2008) developed the actor level of the AAR model of interaction by complementing to the relationship properties that the actor level of the model is based on, the guanxi concept and its properties. The authors suggest that guanxi-based thinking and acting provides a complementary solution to network-based thinking, and that guanxi should be incorporated into the interaction model when considering business networking that embraces China. The guanxi concept, together with its associated concepts, broadens the validity of the interaction model, in terms of geographical diversity, and deepens its theoretical base (*ibid.*). In practice, empirical research shows that in Chinese networks, which compose the world's largest social system, guanxi is a central constituent of intensive relationships and is often related with increased knowledge transfers, especially tacit, and access to others resources, or simply put, efficiency and success in product development.

The current study seeks to further explore and validate initial findings that clarify the importance of guanxi as a process, in product co-development, both at theoretical and practical levels. Having established the link between guanxi and network concepts previously, the current study tries to link guanxi and interaction processes in theoretical terms, and to provide insights of the social processes taking place within business networks in China. The aim is to understand the guanxi dynamics within Chinese supply networks, which are seen as outcomes of these processes. In this way the research tries to decipher possible ways that could foster and promote co-development of products and/or technologies in China. Research outcomes have important managerial implications for Western companies with regards to managing the B2B relationships with the Chinese and in general the supply or production networks in China.

The study provides a response to theoretical and practical concerns raised by previous research in the field, filling literature gaps. Extant literature lacks of theories and explanations of phenomena, such as product development within Chinese supply networks. The research purpose is not to come up with a universal approach, with regard to product development within cross-boundary supply networks, involving Chinese business actors, as this would be a reductionist approach, not complying with the philosophical assumptions of network, interaction and IMP-based thinking. Rather, a more flexible approach is necessary, focusing on the process of interaction and change, and recognising that the terms networks, culture, and knowledge and associated concepts are contested labels; they are not independent realities, but are language constructions; narratives. For instance, for an associated concept to networks, that of network dynamics, one may realise that paradoxical interpretations emerge out of the same word (e.g. Morais 2008). Hence, it is maintained that the theoretical concepts used in this research, such as guanxi, network and interaction, are better understood as complex, multilayered, and multifaceted discourses. It is also maintained throughout the paper that especially for the case of China a processual focus is more appropriate.

The research views supply networks as knowledge networks, especially when the unit of analysis is the network of relationship patterns involved in co-development projects. Different approaches for managing knowledge and the supply side can be more or less effective, depending on the context and dynamics of each particular part of

the process. This implies that structure and posture of the supply base of a company should vary (i.e. Gadde and Hakansson 2006), implying a network enterprise. Therefore, research for network management should represent important new approaches to the problems of innovation and network operation, especially when examining Chinese supply networks. The discussion that follows represents a polyvalent new approach to network and supply management for product development in China.

Network Capitalism & the Network Enterprise

As Boisot and Child (1996:623) argue ‘the roots of networking as an institutionalised practice are ancient and extensively developed in China’. In accordance with the topic of the 25th IMP Conference, the paper initially discusses ‘network capitalism’, a distinctive institutional form, identified by Boisot and Child (1996), which is based on the limited extent of codification of information in China, in terms of ownership and transacting, and the significance of close relationships and 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 (bureaucratic) 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 uncoded’ 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 demise of the western market capitalist system, which together with its decoupling effects has caused the whole economic globe to enter into a deep recessionary phase.

According to Boisot and Child (1999), clan-type networks exhibit higher levels of cognitive and relational complexity than market or hierarchical transaction structures. The authors 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). Further, they argue that relational complexity can be reduced ‘by keeping the numbers down to what can be managed in face-to-face situations’ (ibid.). However, the above suggestion to reduce relational complexity seems even more difficult in China’s socioeconomic system today, which is increasingly comprised by multiple business systems (state-owned, collective and private – with varying governance structures) and many regions with different cultures and negotiation styles. Further, the high level of cognitive complexity and uncertainty in China poses potential difficulties not only for foreign companies managing their supply bases in China, but also for local Chinese themselves. Thus, as Boisot and Child (1999:246) note ‘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'. Trust within the increasingly extensive clanlike networks is based on what the Chinese know as *guanxi*; however the paper discusses *guanxi* in the next section. Here, it refers to the network enterprise concept developed by Manuel Castells (1996), in order to enrich the understanding of Chinese networks.

Initially, an alignment of Castells' (1996) and Boisot and Child's (1996; 1999) views should be noted because it signifies the movement from structures such as fiefs, markets, or even hierarchies towards the clan-type networks. As Castells (1996:172-3) notes, Hong Kong's (HK) export success was based for a long period (1950s-1980s) on the region's small business networks, and 'over 85 percent of HK's manufacturing exports up to the 1980s originated from Chinese family-based firms...These small family-based networks exported through the HK's trading companies, which in turn was also small, also Chinese, and also family-based'. According to Castells, as HK prospered, many of the SMEs merged, refinanced, and grew bigger, linking up with large western buyers to become their surrogate producers. Yet by then medium-large businesses in HK, subcontracted much of their own production, transferring knowledge and resources to firms across the Chinese border, and specifically in Guangdong Province, where by the mid-1990s, 'somewhere between 6 and 10 million workers were involved in these subcontracting production networks' (Castells 1996:173). Thus, besides the classical examples of Silicon Valley and the Italian industrial districts, a good case in point is presented in this paper examining the Southern Chinese production and supply networks.

Castells based his analysis of the network enterprise concept on the 'movement from the rigid mass production system to the flexible production system; the crisis of the large corporation – structured on principles of vertical integration and hierarchical management; and the resilience of SMEs as agents of innovation' (1996:168). According to Castells (1996:175), 'in the new global economy the large corporation is no longer self-contained and self-sufficient'. Overall, the structure of industries in the world is a complex web of alliances, including formal and informal agreements in which large and SMEs are interlinked. This kind of network model – at the production level – is 'an intermediate form of arrangement between vertical disintegration through the subcontracting arrangements of a large firm and the horizontal networks of small businesses...It is a horizontal network, but based on a set of core-periphery relationships, both on the supply and the demand side of the process' (Castells 1996: 174). Relevant to the Chinese context and in line with Castells this paper emphasises two forms of organisational flexibility, characterised by inter-firm linkages: the multidirection network model enacted by SMEs and the decentralised decision-making which makes possible the transformation of the corporation to a network.

A shift from vertical bureaucracies to horizontal networks emphasises network strategies such as organisation around process, flat decentralised decision making and teamworking. According to Castells, although network strategies add flexibility to the system, decentralised horizontal networks is the only way to internalise the benefits of network flexibility, which leads to the benefits of adaptation. Decentralised networks should use adaptability on top of flexibility (i.e. Castells 1996:178; Boisot and Child 1999). Strategic objectives of these

decentralised networks are issues such as efficiency enhancement from location economies, and cooperation through partnerships, which in turn provides access to scarce resources. '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...Under the conditions of fast technological change, networks, not firms, have become the actual operating unit' (Castells 1996: 187). For Castells, the network enterprise is:

'a type of organisation in which goals, and the change of goals, shape and endlessly reshape the structure of means...The components of the network are both autonomous and dependent vis-a-vis the network, and may be a part of other networks, and therefore of other systems of means aimed at other goals...The performance of a given network will depend on two fundamental attributes of the network: its connectedness, that is, its structural ability to facilitate noise-free communication between its components; and its consistency, that is the extent to which there is a sharing of interests between the network's goals and the goals of its components' (Castells 1996: 187).

These works (Castells 1996; Boisot and Child 1996; 1999) provide an understanding of China's network system, and imply that 'the nature of the social processes sustaining networking in China is quite different from those in western countries' (Boisot and Child 1999:624). Thus, the purpose of this paper is to examine the nature of these social processes and knowledge based resource interactions within Chinese supply and production networks in contexts of new product development. In line with Castells (1996:177) it is maintained that 'the actual operating unit becomes the business project enacted by a network, rather than individual companies or formal grouping of companies'. However, what is crucial to be discussed is that 'forms of economic organisation do not develop in a social vacuum: they are rooted in cultures and institutions; each society tends to generate its own organisational arrangements' (ibid. 188). Further, for the case of China the author argues that 'the more a society is historically distinct, the more it evolves in isolation from other societies, and the more its organisational forms are specific' (ibid.). Lastly, although agreeing with Castells (ibid.) that 'we need to consider the historical specificity of cultures [and] the historical trajectories of institutions', this research has more to do with the operational specificity of Chinese network forms in terms of co-development of product and technologies. To conclude, Castells gives us an understanding of the similarities of Taiwanese and Hong Kongese business networks back in the 1990s and how they expanded their network horizons into the Southern regions of China, where the three case studies took place to examine how these network enterprises operate and manage their relationships with manufacturers in the region nowadays.

Guanxi Interaction & Product Development Processes

Since knowledge-based resources are 'rooted in practice, action and social relationships' (Swan et al. 2002:8), understanding knowledge creation within networks of relationships should focus on the social processes of actors' interactions, through which knowledge is continuously re-created and re-constituted (Swan et al. 2002:107). This view is in line with Mason and Leek (2008) who note that inter-firm knowledge transfer should focus more on knowledge articulation rather than codification. Knowledge articulation is 'concerned with how

individuals and groups figure out what does and what does not work' (ibid. 778). The two authors note that management cannot control and codify the co-creation of new knowledge (ibid. p.792). Rather, the focus of managers should be on the creation of learning spaces, such as inter-organisational communities of practice, that allow soft knowledge transfer mechanism to emerge.

What really matters is that knowledge cannot be developed in isolation from the social context and culture (Tsoukas 1996). Culture, is seen as 'the shared understandings through which [it] is actively created (i.e. negotiated) by means of social interaction' (Fang 2005/6:73). An interactive view of culture is significantly important for studies on product development, as knowledge creation mainly involves tacit knowledge or knowing, which in turn is developed through cultural interactions over time. An interactive culture determines the identity of the relationship, which in turn determines possible meaning actors give to explain actions and interactions at specific moments of time. Further, in line with Fang (2005/6), a dialectical view of culture is emphasised, in order to explain the guanxi dynamics within Chinese supply networks. A dialectical view, which is in accordance with synthetic thinking, draws basically on ancient Chinese philosophy – yin and yang, and can be used to explain paradoxical and contradictory views of culture, identity, and meaning (Fang 2005/6) of any single relationship pattern within the network.

Taking into consideration the multitude of Chinese cultures, a paradoxical and dialectical view of guanxi-network dynamics, will enrich the understanding of how guanxi is created and maintained in specific contexts. As this research maintains business actors in China view guanxi as an interactive process, through which close ties can be created and a shared mental system can be established among actors. Each individual actor in the network should take into account the existence of higher, or lower, and of wider, or narrower guanxi network levels. Networks exist within networks, and altogether they compose what Boisot and Child (1996) described as network capitalism. Thus, the research incorporates an interactive network approach to analyse guanxi with a focus on social processes, instead of the conventional approach of guanxi, which considers it as something static, based on hierarchical structures. Guanxi as static may imply access to resources, but does not mean that resources can be jointly created. Also, guanxi based on hierarchical structures or structures of fiefs may limit the network horizon, which in turn reduces the chances for joint product and technology creation and also minimises chances of cross-border network formation, valuable for product development. Co-development of resources could become a possibility only when xinren (trust) alongside with nengli (capabilities), and renqing (reciprocity), among other guanxi properties are developed and established through a guanxi-interaction process.

Hence, this paper maintains that in China, social interaction or guanxi interaction is a continuous process, which may or may not lead to high-involvement relationships and the establishment of guanxi properties. Such guanxi-interaction processes are considered to be the 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 and Hakansson 2006; in Gadde and Jonsson 2007:12). The negotiated allocation of resources, and further integration, both depend on the closeness of ties and actor bonds, or simply guanxi, in China. Guanxi will promote innovation and call for management within networks.

However, it should be noted in line with Kriz and Fang (2003:7) that ‘the notion of guanxi incorporating connections and/or relationships allows for a juxtaposition of strong and weak ties and thick and thin bonds...therefore guanxi and xinren (trust) appears fundamental to success in Chinese markets’, and as this paper argues, guanxi properties and processes are necessary for co-creation and cannot be separated. In other words, Kriz and Fang (2003) argue that guanxi by itself does not necessarily imply close ties. However, rather than separating between strong and weak ties or, to use the Chinese terminology, between xinren and guanxi, this research maintains that guanxi is a process through which deeper actor bonds (meaning interpersonal trust/xinren, or gao guanxi) may or may not be established. This is because the establishment of trust is also dependent on the capabilities and resources of the partners as well as on their networking capacity. As recent research confirms this last point, ‘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]’ (Chua et al. 2009:490). In general, reviewing previous work, Watkins-Mathys (2001:74) notes that ‘all authors agree that guanxi is focused on personal relationships, which are built on long-term trust, involving reciprocity by those in the relationship...By emphasising these traits, guanxi remains a continuous dynamic and flexible process of interaction between individuals within a network’.

Further, knowledge co-creation cannot be separated from guanxi-interaction and network processes. Within a co-development context, a redefinition of relationships is necessary through dialogue, experience sharing or simply thick interaction. Guanxi, like interaction, is likely to develop many aspects of jointness in investment, commitment and intentions (Waluszewski 2005). Hence, guanxi is not given, based on hierarchical forms, nor can guanxi be acquired through arm’s length relationships, based on market forms. Rather, guanxi is created (i.e. negotiated) through social interaction in clan-type 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. In China, networking is sustained through trust-based relationships (Boisot and Child 1996), and trust-networks ‘overcome the uncertainty and distrust that plague economic transactions’ (Luo 2007:107). As a result, guanxi properties, such as long-term orientation, commitment and trust, are considered as the main enablers of knowledge dissemination and co-creation, and as this study argues in a Chinese context these can only be developed through a guanxi-interaction process.

However, it is claimed that for product development, of more substantial value would be an analysis of interactive cultures, identities and meanings, which are considered as re-negotiated outcomes of interactive processes. In order to understand at least partially the dynamic outcomes of interaction processes, the research should examine how business actors construct their meanings (e.g. North 1998). In line with the above discussion, the study follows Morais (2008), who proposes a dialectic process approach, which ‘regards change as a struggle for dominance between contradictory forces – thesis and antithesis’ to explain guanxi network dynamics and paradoxical aspects of relationships. As Hakansson and Johansson (1992; in Morais 2008:5) put it, ‘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'. Concluding, 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). In a few words, dialectic and synthetic reasoning searches for an in-depth contextualisation of the actual phenomena.

Research Philosophy & Methodology

Network or systems thinking is contextual and synthetic thinking. Capra (1997:28), based on Needham, a leading historian of Chinese science, relates systemic thinking to an organismic worldview, which is the basis of Chinese thought. The research, perceives reality 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. From the researcher's point of view, 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'. Also, Lowe et al. (2007:237) influenced by Capra, suggest that 'anything goes as long as it involves...epistemic consciousness; 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 their symbolic and emotional meaning for those involved and to investigate the way meanings are constructed and expressed' (Newton and Smith 2002:viii). Concluding, the research suggests that interactive and network-like approaches are appropriate for capturing the complexities of culture and society (i.e. Capra 1997; Chia 1999; Lowe et al. 2007).

The above philosophical assumptions that back up methodological choices imply that case study research employing qualitative techniques is considered as the most appropriate method. However, methodological triangulation is possible using qualitative techniques supplemented by quantitative, such as surveys or Social Network Analysis (SNA), in order to identify information flows in supply chains and current relationships; but statistical techniques cannot readily analyse critical events of the past, and do not assume systemic change, two things that can explain product development within networks. Hence, in line with the metaphysics of change (Chia 1999) and IMP scholars (i.e. Anderson et al. 1994; Henneberg et al. 2006), this study identifies and analyses evolving relationship patterns, subjective network perceptions and notions of key business actors – by using qualitative field research, such as in-depth interviews – in order to understand interaction and change; always under a systemic network approach.

Cross-Sectoral Case Study Research

A multiple cross-sectoral case study research was conducted in Southern China. The research examines social interactions under specific product development projects within Chinese supply and/or production networks. The unit of analysis is the relationship. Product development is taken as a context issue (e.g. Johnsen and Ford 2002). Primary data are generated through qualitative techniques. Open-ended interviews help us to move from the rhetoric of networks to practice and provide us with in-depth insights of the particular network context for specific product and/or technology developments. For each case study a snowball or convenience sampling technique was used to identify key informants, implying that the exact number of participants was not known in advance of the study. However, it is important to note that a researchers' guanxi network is vital for securing access into Chinese supply networks. Informants involved mainly operations managers, product development managers as well as sales managers. Most of them had at least a decade of working experience in China and at least 5 years within their company. Regarding data generation and analysis it should be noted that the two are highly intertwined. Interviews emphasised subjective actors' accounts of relationships, perceptions and notions with regard to the networked relationships for specific product and/or technology development projects. The open-ended approach to interview generated explanations of actors with regards to guanxi network dynamics, and network and relationship evolution in terms of specific product development projects.

The three cases can be distinguished initially in terms of ownership structure. Also some similarities are found at the operational level which is mainly relevant for product co-creation, however it should be noted that every case is different and operates in different industries, as such generalisation of findings has not been attempted. The case studies span three sectors: tobacco manufacturing, mobile communications (hardware), and high-tech parts and components for electronic appliances. All company names remain anonymous. Here, follows a brief introduction of the three case studies:

STI: A division of the state-owned monopolised tobacco manufacturing of China, with its headquarters in Beijing the group has been decentralised in terms of provinces. One of the decentralised units with its own supplier and customer networks is examined under a product development project, which involved a core innovation from a foreign supplier and more than 30 Chinese suppliers.

CN: A horizontal network with its Headquarters in HK. The networked organisation has more than 10000 employees and over 100 suppliers in China, and its customers include Nokia, Samsung, Apple etc. The network group is family-owned. The group is composed by around 20 decentralised and interdependent factories mainly in South China, and just a few JV in China. Also, the group has established a few sales support offices abroad. The researcher has visited two of its core (high-tech) factory sites, one that develops surface treatment by Physical Vapour Deposition (PVD) and another that does metal/powder injection molding (MIM) for precision products. Interviews discussed issues with regards to their B2B relationship with Nokia and Samsung as well as with key suppliers involved in two outstanding NPD projects.

STX: A foreign-owned high-tech manufacturing operation in China (with HQ in the UK), however, some of its key Directors have been recently moved to China and HK. The group has established many close relationships

with factories in the region and through the last ten years has moved 80 percent of its manufacturing from EU to China. Most of the strategic suppliers (first and second tier) are local as well as many of the key customers both first (sometimes OEMs) and second tier customers. The researcher examined the evolution of various relationship levels under a few product development projects.

Discussion

Although all three networked companies operate in the mainland China for many years, and are decentralised at the operational level, which is the focus of this study, the strategic decision-making, such as alliances or setting up factories and expanding manufacturing operations, involves structural (political) *guanxi* with local authorities, but this is out of the scope of this paper. Nevertheless, it is recognised that political or strategic *guanxi* does indirectly affect operations and product development. At the operational level, *guanxi* is seen as a process, both individually and organisationally that evolves through time. When the relationship is seen as important strong ties and bonds are established between actors, which are then amplified at the inter-organisational and intra-organisational levels. In general research findings support the literature discussion presented in this paper.

All case findings note the decentralised character of the companies examined, in their relationships with the headquarters. It should be noted that the state-owned company is decentralised to a lesser degree, however, their product offerings are innovative in relation to other decentralised units of the parent firm. Most importantly, the decentralised unit has localised most of its supplier base. However, the new innovative patent was introduced to the central Beijing office by a foreign government official who represented the western supplier and not to the local tobacco manufacturer directly. Further, the tobacco leaves that are supplied from abroad come through the parent company's headquarters. Thus, one may infer that the degree of decentralisation, because of the ownership structure but also due to the low-tech manufacturing is quite low. Due to the above reasons, the product development processes are simplified compared to the other cases and as a result relationships at the operational level do not involve very thick interactions, compared to the other two case studies. What it is interesting is the *guanxi* interaction process between the central actor of the foreign supplier and the Chinese actor who had local *guanxi* and assisted the supplier to enter into negotiations and then into contractual arrangements with the Chinese tobacco manufacturing company.

Regarding the second case the parent company acts as a brand name and an umbrella company of the horizontal company network. Each company in the network is decentralised, having their own suppliers and customers, but is also interdependent to each other in terms of sharing the suppliers or introducing new customers to each other according to the project under development. Important to note here is the formation of the networked corporation, which is family-owned. With years of history, the group has established very extensive cross-border networks, both internationally and within the Chinese provincial borders. Of substantial value is the cooperation between the group of companies (horizontal network) as well as the establishment of sales offices abroad, close

to the customers, in order to support new product development through close interaction and establishment of trust; a kind of cross-border horizontal networking strategy. In line with the literature findings, continuous product development and cooperation comes from establishing guanxi properties between actors (individual and organisational). Based on interview data, guanxi is a dynamic resource, in a way that is created beyond the boundaries of the firm, through inter-organisational knowledge-based resource interaction.

Findings from the third case also support literature findings in terms of the supply base. That is, each project involves a different network of suppliers. Access to a supplier or a supplier's network can be gained through another company within the network enterprise. Overall the network approach to analyse each product development case proved useful whether it involves the supply side or the customer side. A product development project examined within this case study support Chua's et al. (2009) findings, with regard to increasing trust due to relationships with third parties. Additionally, findings from the third case study show that through a guanxi-interaction process strong ties are established, which in turn increase the frequency of knowledge transfers and interaction quality. In terms of product development, guanxi increases the 'tacitness' of the content of interaction and knowledge transferred, leading to successful business outcomes. One key example, was that face-to-face communication is preferred to long distance communication, even for less important issues. Also, there is a lot of socialisation, such as football matches, where one interviewee said that 'sometimes we let them win so they do not lose face'; an important factor that can boost the guanxi process to higher levels, and was not noted in the current literature. Finally, most importantly for all case studies in all sectors, in Chinese networks, guanxi-based exchanges may prove 'superior in terms of resource quality, prices, payment terms, and access to information' (Langenberg (2007:134). Moreover, as the cases show, through guanxi networks access may be gained to resources in other networks. However, as Chinese civilisation is 'a matrix-civilisation of paradoxical cultural development' (Faure and Fang 2008: 206), guanxi interaction process is trivial.

Research Contribution & Implications for Future Research

Further research could contribute more significantly to IMP research group with a new guanxi-interaction approach that can be applied in the Chinese context, where guanxi is seen as a process more than a structure, nevertheless the two are intertwined. Also, as it has been noted in the empirical level further case study research will contribute to various disciplines, such as supply management, new product development, and Chinese management research, among others. The case studies discussed provide some valuable findings, which fill in gaps in the literature that has not focused on establishing supply management practices for innovative Chinese supply and/or production networks. The managerial and policy implications of the cross-sectoral case study research discussed in this paper as well as research which is on the way will offer an analysis of factors which enable and distort co-creation between western buyers and Chinese indigenous supplier firms, and how they can be managed in the context of complex supply networks.

An emergent issue regards the level of technology complexity, and its association with extensive networks. In contrast to Boisot and Child's (1999: 246) note that relational complexity within Chinese business networks can be reduced by keeping the actors numbers lower than in western business networks, is not confirmed by the findings. For example, in case two and three where the level of technology is high the network of buyers and suppliers and the business actors involved is also high. However, the above findings do not imply that the highest the level of technology and the largest the network then the relationship ties will be weak; rather key relationship patterns at the operational level are dense. It emerges here that more case studies in various industries and regions of China are required to shed more light on this.

Another emergent issue which is under current investigation is the comparison between the Hong Kongnese, Southern Chinese and Eastern or central Chinese regions' supply or production networks. All respondents in South China perceived that the South Chinese supply networks are superior to the mainland Chinese, however they note that the future is promising as knowledge is transferred to other regions and the South side becomes more technologically oriented and thus more costly. The future for Chinese supply and production networks looks promising. More empirical research should be called for examining the directions this will take in the near future.

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