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MANAGING THE SUPPLY SIDE FOR PRODUCT DEVELOPMENT IN CHINA: A GUANXI NETWORK APPROACH

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ABSTRACT

Based on the IMP research tradition this paper regards relationships and networks as key issues in the product development and supply management agenda. Within business networks, co-development is only possible to be analysed when emphasis is placed on interdependences and interactive relationships. Co-development usually implies close relationships that allow companies to rely on each other's resources. Close relationships imply interdependences, which may improve companies' technical and product development. By looking at the actual interactions – between a UK company and its Chinese suppliers – that led to an innovative solution and a successful product launch, evolving relationship patterns are identified and analysed in a case study. Both the literature review and case study findings highlight the importance of the 'guanxi' concept (meaning interpersonal relationships in Mandarin) when analysing business-to-business networks in China. Hence, it is suggested that guanxi-based thinking and acting should be incorporated into the interaction model when considering business networking that embrace China. 'Guanxi' broadens the validity of the interaction model, in terms of geographical proximity, and deepens its theoretical base. The case study provides valuable insights for supply management under a product development context in China. In practice, the main point of interest is that Chinese suppliers are important 'resource' providers as well as 'network' providers. Hence, it is suggested that guanxi practice should be reflected into theoretical developments.

Keywords: supply management, product development, guanxi network, network evolution, case study

INTRODUCTION

According to IMP view, 'relationships and networks that extend across borders are key explanatory factors for internationalisation and development of foreign markets' (Welch and Wilkinson, 2004:216), as well as for product and technology development. Companies in the west, increasingly nowadays, interact with innovative companies in emerging markets, and their main mutual purpose is to make the most of these relationships and differentiate their product offerings. But seen from a commercial or hierarchical market-based perspective it is very hard to explain co-evolution, co-design or co-creation of products and technologies. Seen from an industrial network perspective, international business-to-business (b2b) relationships 'transcend the actions and characteristics of individual companies, in both time and space' (Ford and Hakansson, 2005:5), and thus it is possible to identify co-development, through an 'interdependency' and 'interactive' lens. Companies seek dependence when they are unable to gain technological independence. Although purchasing managers do not like to depend on suppliers, interdependence means that they can use their resources and innovate. Through outsourcing, previous in-house operations from different parts of the value chain, buying companies have opportunities to improve their offerings (Gadde and Jonsson, 2007). When suppliers provide components and partly or complete systems, a company's in-house activities should focus mainly on system integration, network operation and product characteristics (Chiesa et al., 2000; Karlsson, 2003:47). Hence, it is argued that vertical product offerings and technologies can increasingly be sourced externally.

In line with Gadde and Jonsson (2007), who 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' (p.9), we agree that 'teaching suppliers is an important managerial issue of the buying company' (Gadde and Jonsson, 2007:19). But, in terms of product development, we additionally argue that teaching, bound with learning, is a two-way process (e.g. Gadde and Hakansson, 2008). This is due to the fact that once operations are outsourced, the process of business still needs to be integrated by the buying company, always in relation to the supplier or suppliers involved and vice versa. This integration calls for interactive relationships which in turn, if managed well, may produce positive outcomes, such as the establishment of strong social ties and bonds between the actors involved. In this way, b2b relationships might reach an intensifying stage, where processes are fully integrated. Nonaka and Konno (1998) call this 'ba'; a shared space for emerging relationships (e.g. access to resources through the supplier) and a necessary context for knowledge creation (Nonaka and Konno, 1998; Nonaka et al., 2006). But their view is based on new knowledge, where the unit of analysis is the organisation, and is not amplified to inter-organisational and network levels.

Seen from a network perspective, 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 and Hakansson, 2006; In Gadde and Jonsson, 2007:12). Relationship ties and actor bonds will promote innovation and call for managing within networks. In Chinese networks, guanxi is a central constituent of intensive relationships. Reviewing previous work on the guanxi concept, 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'. Langenberg (2007:134) argues that guanxi-based exchanges may prove 'superior in terms of resource quality, prices, payment terms, and access to information'. Moreover, guanxi relationships provide access to other resources and other networks. Yet, discussions of b2b outsourcing to China emphasize cost incentives rather than the higher order benefits of learning and innovation.

The study analyses product development processes where network actors are heterogeneous and where optimum change and relationship redefinition is hard to be successful. It discusses product development and Chinese supply management, under a network approach incorporating the guanxi concept (Luo, 2000, 2007; Langerberg, 2007) into the interaction model (Hakansson and Snehota, 1995). In order to analyse the product development processes we need to look at the interactions that have taken place. Therefore, the study focuses on the evolution of b2b networks and the key role actors' relationships and knowledge play for co-development. First, these issues are discussed more thoroughly in terms of existing literature, and then the theoretical findings are challenged by a case study. Finally, the paper concludes with a discussion of implications for future research.

LITERATURE REVIEW

'Inside the networks new possibilities are relentlessly created...Outside the networks survival is increasingly difficult' (Castells, 1996:187; in Walusszewski, 2005:102). Relationships and networks are considered as paths for the transfer of knowledge to economic resources (Waluszewski, 2005). However, managing product development in global networks is a complex and dynamic process (Johnsen and Ford, 2007:301). Scholars view the management of knowledge creation as 'an interactive process, which involves a diverse range of actors with different backgrounds, cutting across organizational boundaries, and

combining skills, artifacts, knowledge and experiences in new ways' (Swan et al., 2002:48). But this view of diversity implies weak ties, and that knowledge creation is a product of a network by itself (e.g. Swan et al.'s (2002) communities of practice). Furthermore, it is argued, without neglecting the importance of weak ties that knowledge is created when strong bonds and social ties are established and developed within such a 'network'. Thus, knowledge creation and especially co-creation cannot be separated from network processes.

Nonaka and Konno's concept of ba is conceived as 'the frame in which intangible, boundaryless and dynamic knowledge is activated as a resource of creation' (1998:41). They 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.). They further argue that the development of strong social ties and bonds among network actors may lead to the establishment of a shared mental system (Nonaka and Konno, 1998); a necessary context for knowledge creation (Nonaka et al., 2006). But to establish a knowledge creation context a redefinition of relationships is needed through dialogue, experience sharing or simply thick interaction. 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). It is mainly argued for product co-creation that 'the process of technical innovation is mainly a process of redefinition of relationships' (Ford and Redwood, 2005:2). Hence, interaction processes might explain how knowledge exchanges between actors in the network influence the nature of the relationship as well as some of its properties, such as long-term orientation, commitment and trust, which are considered as the main enablers of knowledge dissemination and co-creation. Although tacit knowledge may be regarded as the root of all organisational knowledge (e.g. Gourlay 2006), the sharing of tacit knowledge, vital for co-development, lies within individuals, and this is basically why this study looks at the evolution of actors' relationships.

The industrial network approach, in contrast to the resource-based view, focuses on relationships as the basic unit of analysis, and conceives knowledge as an activity rather than a resource. Young and Denise argued that 'while knowledge is a resource that is embedded in activity, knowledge is more – it cannot be separated from the processes of creation' (2000:1). Within industrial networks, an important distinction is usually made between network structure and network process, but IMP scholars (e.g. Araujo and Easton 1996; Ford and 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) argues 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'. Furthermore, Ford and Hakansson (2005:4) argue for an interactive view of business:

'We cannot hope to understand business activity if we view it as a process directed by companies towards some homogeneous groups with names like suppliers, retailers or competitors. Even more importantly, the tangible characteristics of business such as companies and their products, purchases and sales are no more substantial in an interactive world than the apparently ephemeral relationships that exist between those companies'.

Networks are systems of interconnected exchange relationships among business actors (Karlsson, 2003). Any single exchange relationship is embedded within the system of interlinked activity patterns, resource constellations and actor webs' (Hakansson and Snehota, 1995; In Welch and Wilkinson, 2004:216). This study incorporates the actors-activities-resources (AAR) model of interaction (Hakansson and Snehota 1995), which 'allows us to catch network effects of resource combinations, activity chains and actor bonds' (Waluszewski, 2005:80). One of the basic premises of the AAR model of interaction is underlined by Ford (1990:3), who noted that 'the second generation of IMP research that of industrial or business networks, resulted from a key finding of the first: that a single buyer-seller relationship cannot be understood in isolation from the pattern of relationships which surround it' (In Welch and Wilkinson, 2004:216). This premise, in terms of product development, implies that the knowledge creation capabilities of relationships and the networks in which they are embedded exceed that of individual firms or dyadic relations between firms. Although the first IMP model focused on such dyadic business relationships and the second emphasised the whole network of relationship patterns, it is proposed that when analysing evolving relationships with Chinese suppliers, the IMP model should incorporate, at the actor level of its framework, the concept of guanxi and some of its inter-subjective premises, such as reciprocity, trust and commitment, which are similar to those of relationships, and which are distinctive elements of these relationships.

Guanxi is distinguished from network theory in that while network theory identifies relationships between business actors and transactions between actors, guanxi centres on the mediation of transactions by interpersonal relationships. Guanxi affiliations are considered to be the 'dominating business activity throughout China' (Lovett et al., 1999:231; In Langenberg, 2007:2). In contrast to market-based exchanges, which are dictated by purely economic motives, guanxi exchanges 'entail affection, face, gifts and favours' (Chen Hong 1997:113; in Langenberg, 2007:2). Thus, guanxi adds a 'second currency' (Luo 1997:51) to the market-based system in which it is 'unlikely that unidimensional business strategies appropriate in the Western context will work' (Langenberg, 2007:2). Yet, guanxi properties are similar to those of relationship properties, such as commitment, trust and reciprocity, and, like network studies, research on guanxi is normally multidisciplinary (Langenberg 2007; Luo 2007). Further, sinologists argue that 'guanxi can indeed provide firms with an imperfectly imitable resource that can yield a competitive edge' (Standifird and Marshall, 2000; in Langenberg, 2007:16). This view is consistent with the IMP view, which identifies a company's unique identity by looking at its network of relationship patterns; a uniqueness that can be hard to imitate. Thus, combining guanxi and network concepts is likely to be useful to both network theory and the study of supply management in China.

Relationships within networks have their own dynamics and they are subject to complex interactions, which may lead to their development or even disappearance. A general conclusion for supplier relationships is that there is no best strategy, implying that the nature of 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 and Jonsson, 2007:19). This study emphasizes the important effect of high-involvement relationships to product development and productivity, in line with recent advances in the b2b 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 and Jonsson, 2007:8). In contrast to arm's length relationships, high-involvement relationships establish substantial activity links, resources ties and actor bonds with suppliers (Gadde and Jonsson, 2007). Through close relationships an outsourcing company may improve both in terms of cost rationalisation and technical development by relying on supplier resources. Within the evolution of relationships, systematic influences and

adaptations on design, manufacturing, logistics, and administrative operations take place. Mutual adaptations between buyer and supplier companies provide the sources of future growth and benefits for both (Gadde and Hakansson, 2001; Gadde and Jonsson, 2007). 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 the supplier's network through close relationships with the supplier.

Recent research has shown that inter-organisational adaptations can also be tacit as well as economic, varying in form and complexity. This research in line with Brennan and Canning (2004: 2) argues that the concept of adaptations 'is substantially more complex than that of transaction-specific investments, and is grounded in the biological metaphor of evolution'. However, when referring to Chinese suppliers, adaptations are mostly conceived in terms of 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. We argue that Chinese suppliers can be important 'resource providers' but also important 'network providers'. As has been noted, it is extremely hard for a company to develop its own technological or design capabilities necessary for the whole production. Hence, buying companies should rely on suppliers as sources of technical development and product design (e.g. Nonaka and Takeuchi, 1986; Johnsen and Ford, 2005; Gadde and Jonsson, 2007) and these interdependences should be managed accordingly to have optimum outcomes.

The emphasis on the cost influence on outsourcing to Chinese firms also helps explain why many western companies have been unable to achieve a prominent position through their relationships in China. Misperception of Chinese business culture is commonplace, reinforced by much research simply applying western-based models to Chinese cases (Luo 2007; Langenberg 2007). Also, in practice, Chinese companies are often viewed as interchangeable with western companies and as a result, western companies often fail to discern the unique guanxi traits. Guanxi properties include renqing, which refers to human feelings; xinren, which represents trust; and mianzi representing social identity or face. For example, Chinese business people often use the expression: 'if you don't know how to manage the relationship, you'd better not do business' (□□□□□□□□: buzhi renqing bu jingshang). Overall, guanxi-based theorizing provides an enhanced understanding of how the Chinese think and act within and across networks of relationships. The literature review concludes in the same vein that it started but now instead of a western sociologist we quote China's prime sociologist Fei Xiaotong, (1992 [1947]: 66) who argued that '[guanxi: network] is the fundamental organisational principle of Chinese society, irrespective of social strata: for some people, survival is a matter of guanxi (He Y et al. 1991: 58; He XM 2000: 19). Outside the network they have a general feeling of discomfort' (In Langenberg, 2007: 1).

CASE STUDY DESIGN

A network perspective emphasizes interdependences, processes, relationships, and interactions among others (IMP). Interaction and change under a systemic network approach should be explained by looking at the perceptions and notions of both sides of b2b relationships. This case study examines the relationships between a UK retailer and its supply network in China. The case analyses a technology and product development project involving a western company which develops its distinctive products interactively with a network of suppliers in China. The unit of analysis is the b2b relationship for product development rather than the business unit or organisation of neither the buyer nor the supplier. Nevertheless, the product development project is taken as a context issue rather than a unit of analysis (e.g. Johnsen and Ford, 2002). The study shows how business actors can tap, directly and indirectly, into the creativity of each other. It looks at the evolution of

relationship patterns within the network during the development of a particular project and at the knowledge exchanges that took place until successful completion of the new product, which will be launched this summer.

To understand global product development processes the qualitative study looks 'behind current patterns of interaction to what has preceded them and framed their evolution' (Ford and Hakansson, 2005:8). 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' (Ford and Hakansson, 2005:8). Thus, as the two authors suggest, researchers should be interested in 'the evolving views of the actors' (ibid. p.9). Hence, the objective is to examine evolving patterns of social interactions, with an emphasis on product development processes.

The collection of primary data through qualitative techniques, such as open-ended interviews, examining both sides of the b2b relationship provides more complete insights of the particular network context. Informants included the product development manager as well as a few business actors from selected suppliers. The network of customer and supplier relationships could also have been depicted on a map, identifying the major actors involved in the product development project (e.g. Johnsen and Ford, 2007) and the components or technologies they contributed. The process of collaboration and relationship evolution during the project is analysed together with the nature of the situations in which there is some degree of intervention or delegation coming either from the buyer, the supplier or the sub-supplier. Finally, the case analyses interaction and guanxi-based effects for the particular product development project as well as the business relationship itself.

CASE STUDY ANALYSIS: UK Company & Chinese Supply Network

The UK upmarket home design group is a multi-channel retailer with 13 outlets across the United Kingdom, alongside a rapid growing mail order, online and trade service. In 2008, the company expands rapidly based on its well-managed supplier relationships, and it now considers further growth options, such as franchising in other geographical regions. Currently, it has over twenty, first-tier, suppliers in China, five of which are considered to be main suppliers. The case study analysis focuses on basic and contemporary issues highlighted in the literature review. Initially, it should be noted that the UK Company, in line with current supply management trends (see Gadde and Johnson, 2007), having realised the high handling costs associated with having many high-involvement relationships, is trying to reduce its number of suppliers in China.

The product development project under consideration involved the identification of an appropriate supplier of a technically specialised fabric to meet UK and US safety standards (fire retardant, waterproof, stain resistant and colour fasting to sunlight). The innovative fabric had been introduced to these markets in 2006 by a US manufacturer. However, the UK company had no knowledge of which of its own established suppliers were capable of sourcing the required materials. Once the project had been approved internally, the product development department started to identify potential suppliers in terms of their characteristics and capabilities, which in turn would leverage the systematic combination of resources. The most appropriate candidates would be a few 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 developed. The buying company contacted four potential suppliers, half of them new contacts.

Considering its already well-established relationship with the UK company a Chinese supplier qualified as the best solution for the project, mainly due to its established networks

in China and local knowledge. The two companies and the central actors involved have established good working relationships throughout prolonged collaborative relationships and previous product launches. As a soft knowledge transfer mechanism, the UK company organises yearly presentations for its suppliers in China. Also, its main suppliers are invited to England, and are hosted at the director's home; the sort of action that greatly builds guanxi in China. As has been noted, time is an important issue when analysing relationships; current relationships are, in part, the outcome of past interactions and previous episodes (e.g. Ford and Hakansson, 2001). The selected Chinese supplier is considered to be one of the UK company's main suppliers and has:

'*shown innovative capabilities and a culture that emphasised trust through willingness to learn, efficiency and innovative solutions as well as problem solving through effective communication…Most importantly, the Chinese supplier has established widely guanxi networks in China'* (quotations from interview with the Head of the Product Development Department: UK Company).

The Chinese supplier, who has its production unit in Guangzhou (South China), used its own suppliers to support the product development. The supplier's main supplier provided parts and technical knowledge and had an established close relationship with its counterpart, as well as knowledge of other smaller suppliers and laboratories in China. The sub-supplier, with its headquarters in Taiwan and its production unit in Guangdong (South China), was responsible for providing the main supplier with reports of production and testing procedures, which were then passed to the buyer for evaluation. In terms of resource ties and activity links, it should be noted that the factories of the two companies were located within close geographical distance and as a result operational and logistic costs were eliminated and lead time was shorten. Thus, the main supplier was vital for managing the project and had the capability of mobilising other partners' resources and activities within its guanxi networks.

The UK buyer did not interact directly into the operations of its second-tier supplier, and thus there were no adaptations made between buyer and sub-supplier. But through its close relationship with the Chinese supplier, the UK company gained access to new networks, which played a crucial role for the successful completion of the project. As Brito and Roseira (2007:10) argue, 'firms get different things from different suppliers, products, capabilities and other intangible assets, such as knowledge and access to new networks'. The UK company delegated its main supplier full control over the sub-supplier. It should be stressed that the UK buyer had an obvious lack of control over third party resources and this could potentially constrain future sustainable systematic resource combination for product development. But the intensity of the relationship between the UK company and the Chinese supplier has grown to the point that its selection for this product confirms its trusted status at the centre of the UK company's strategy and brand development (interview with product development manager). As Moules (2008: 27) argues 'developing a product's brand name really depends on successful interaction with main suppliers and efficiency in supply management and operations'. The UK company's performance clearly depends indirectly on sub-suppliers' performance. For the specific development project there was no direct interaction with indirect partners, and the UK company had to depend on its main supplier and to hope that the main supplier manages efficiently its network of relationships on the UK company's behalf. But the UK company could have confidence in this process because of the guanxi that had been built. By adopting a delegation supply strategy towards its main suppliers, the supply base is reduced and sub-suppliers interact with their buyers directly without involvement of a foreign buyer or even a higher-order supplier. This may prove to be a successful strategy for managing the supply side in the 'East' side (see, for example, in Johnsen and Ford's (2002) case study involving a UK retailer and its Japanese supply network, how the UK company failed to implement an intervention strategy towards its supply network).

It took four months from the identification of appropriate suppliers to conclude an initial agreement. The network, in terms of the product development project, proved to be highly centralised around a few individual actors. As a matter of fact, two actors were highly involved in daily 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 a reputation for expertise and responsiveness over time and thus have become critical sources of information (Cross et al., 2001). Also, the two central business actors developed 'an appreciation of each other's unique skills and knowledge' (Cross et al., 2001:111) by working together in previous projects, and this helped to facilitate the interaction process by developing strong actor links. Furthermore, 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' (ibid.).

Guanxi-based acting also explains how central actors in the network can be both competitive, yet understand and help out each other. Chinese business actors show a sense of patriotism and a sense of belonging towards their [guanxi] networks and relationships, and this is explained by the complex sociological concept of guanxi. On the one hand, the product development manager of the UK company, who is originally from China and masters guanxi, liaised with the design department as well as the logistics department, and communicated all necessary information to the merchandise manager of the Chinese main supplier, who, on the other hand, spent half of her time at the production unit in China, where she handled issues involved with production processes. Furthermore, the merchandiser of the Chinese supplier was considered by the buyer as the most important contact between members of the production unit and the rest of the network. Both business actors had the knowledge and expertise that accelerated the relationship redefinition process and assisted in changing some of the relationship's properties, such as trust, and the establishment of actor bonds, which in turn may lead to successful product development. Finally, regarding actor bonds, it should be pointed out that the management of the UK buyer increasingly values guanxi and interpersonal relationships. Additionally, in terms of product development in China, the UK buyer has developed relationships and guanxi properties with their main Chinese suppliers, through employing a range of adaptive processes, including chance, imitation, trial and error (Alchian, 1950; in Brennan and Canning, 2004: 5). In a more abstract level, they always show an understanding and appreciation of their counterpart; an understanding not only of oneself but also of the others.

A concluding remark that should be made regards the overall relationship outcomes and network effects. Of course, the technology or the product itself is considered as the direct benefit of co-development. But, after successful completion of the project both companies have benefited both individually and as a network. Both have acquired more prominent positions in their unique networks in which they operate. The UK buyer is offering high-performance products to its customers, complying with British health and safety standards. On the other hand, the main supplier has gained knowledge and experience, as well as establishing closer business relationships with sub-suppliers, the UK customer and possibly providing solutions to other customers worldwide. Further, the sub-supplier has improved its own identity in the network and is able to provide similar resources to other partners located in other networks.

A final issue that was stressed during the interviews concerns the agent strategy usually adopted by buying companies in China. However, within the network of relationships analysed, it should be noted that high efficiency and effectiveness was achieved without agent involvement. In terms of product development, the manager perceives that 'agents break guanxi' (interview with chief merchandiser: China supplier), mainly because of

inefficiencies caused through its interference between the company and its suppliers. Also, the use of agents may cause 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). Thus, it could be argued that agents may neglect the long-term possibilities of relationships, including sustainable co-development of products and technologies, which in turn raise overall industry standards. This is an interesting issue which calls for further empirical research.

CONCLUSION

This study focuses on business interaction within supplier relationships with regard to product development in China. First, it can be claimed that it is neither practical nor economic to have a large supply base especially when it is located at a foreign market. The analysis of the case study in line with current literature shows that 'interaction is firmly rooted in the past and will have effects on many aspects and on potential directions of interaction in the future' (Ford and Hakansson, 2005: 4). But the point of interest comes from the fact that the UK buyer had no direct access to sub-suppliers' resources and only by adopting a 'delegation' supply strategy through its main supplier it managed the product development project. Within Chinese supply networks, foreign buying companies should delegate or intervene into the supplier relationships with their Chinese counterparts? This may be an emergent question from the analysis, but it is not necessary to be explicitly answered when analysing Chinese supplier networks from an industrial network and guanxi-based perspective. In terms of product development within supply networks in China it seems better to achieve access to others' resources through the establishment of strong actor bonds, activity links and resource ties with main suppliers. In this way, through mutuality and trust, foreign companies delegate power to their counterparts to manage their own network operations. The power of networking in China has proved to have important implications in product development and supply network management.

A final remark that should be made is that China as the nascent economic giant should not be viewed only as a low-cost country. This is an oversimplified assessment of a country, which as a whole region offers large opportunities for both cost rationalisation and technical or product development. Inside the Chinese regional networks any kind of resource bundles can be made available; outside access for resources is hard to get. Thus, it can be suggested that developing close relationships with Chinese suppliers in order to exploit their business networks is a vital product development strategy. In order to reach an intensifying stage of b2b relationship, 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, is possible.

The study stressed the significance of the guanxi concept to the industrial network approach and highlighted the key role interpersonal relationships play in managing product development in China. In theoretical terms, the guanxi concept should be taken under consideration when researching Chinese supply networks. The literature review found similarities that exist between the guanxi and network thinking, and argued that guanxi and network concepts are interrelated at the actor level, and thus should be integrated when analysing product development within supply networks in China. Based on these, the need to incorporate the guanxi concept into the AAR model of interaction and network theory, in order to analyse supply management for product development, was stressed. The study provides an IMP development as comes to personal networks and their effects on product development outsourced to China. The aim of further exploration and case studies should be to analyse a supply management aspect of the rationale and processes of guanxi

network formation, development, and effects. Finally, it is hoped that the study provides a significant contribution to academia and practitioner communities since the implications of interaction to b2b management for product development have received limited attention in the literature (Ford, 2005), and especially within the Chinese case.

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