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# MANAGING THE TRANSITIONS: SUPPLIER MANAGEMENT IN INTERNATIONAL JOINT VENTURES IN CHINA

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# Supplier Management in International Joint Ventures in China—An Exploratory Study

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## ABSTRACT
Attracted by the easier access to local markets, many foreign companies, have formed manufacturing joint ventures in China. One of the key elements of successful international joint venture (IJV) manufacturing in China is the management of suppliers, since the supply chain plays an essential role in contributing to both the quality of finished products and controlling costs. Supplier management in Chinese IJVs is an under-researched area and so an exploratory study of five manufacturers was conducted using a case study approach. The results show the difficulties faced by IJVs which are in attempting to maintain quality levels at the same time as trying to reduce costs by purchasing materials and components locally. In addition to identifying important implications for companies, the research shows the need for further investigation of the contextual aspects of good supplier management.

## KEYWORDS
Supplier management; international manufacturing; China; IJVs

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## INTRODUCTION

Over the past two decades, the Chinese economy has undergone considerable growth and the gross national product has increased annually by nearly 9% (Economist Intelligence Unit, 1998-99). This growth, low labor costs and a fast developing domestic market (Chan *et al*, 1997) have all led to significant foreign investment in the People's Republic of China. Consequently, more than one hundred *Fortune 500* companies have operations in China, and many other businesses have also invested (Lu and Wang, 1996). Over 14 million Chinese are employed in enterprises created or supported by foreign investment (Management World, 1996a) and many of these are international joint ventures (IJVs) in the manufacturing sector (Schroath et al., 1993). As a result of the high level of foreign investment in Chinese manufacturing, over 50% of manufactured goods exported from China in 1994 came from enterprises supported by foreign investment (Management World, 1996a). Therefore, IJVs have significant production capacity but, surprisingly, few studies have been made of operations management issues in China.

Investments in manufacturing in China are often made because of the strategic benefits they can bring. However, IJV manufacturing operations in China do not always perform effectively. For example, problems have been reported at many manufacturing IJVs (Management World, 1996a, 1996b; Han and Xu, 1995), many foreign partners are dissatisfied (Beamish, 1993), and failures are common (Robb and Xie, 1999). Much of this dissatisfaction is related to problems in managing operations. For example, IJV partners often have different expectations, achieving high-quality production is difficult, and finding good local suppliers is challenging (Bruijn and Jia, 1993). Although both Western and Chinese management researchers have investigated the strategic aspects of IJVs, they have largely ignored operations (Zhang and Goffin, 1999). Consequently, operational issues warrant investigation, including supplier management (ibid).

This paper focuses on supplier management at IJV manufacturers in China and the research aimed to:

- Investigate supplier management at an exploratory sample of companies
- Identify the most important contextual factors influencing the development of effective supplier management and determine key lessons for operations managers in China

The results of the research have strong implications for all companies operating in China—who will face the need to effectively manage "the transition" to local suppliers. However, before these results are presented a short review of the supplier management literature will be given, followed by a detailed explanation of the research methodology.

## SUPPLIER MANAGEMENT

Supplier management has been defined as "organizing the optimal flow of high-quality, value-for-money materials or components to manufacturing companies from a suitable set of innovative suppliers" (Goffin, et al, 1997). Practitioners recognize that suppliers play a vital role in improving manufacturing performance (Monczka et al, 1998). Effective supplier management reduces costs (Asmus and Griffin, 1993; Christopher, 1997; Davis, 1993) and leads to higher quality (Burt, 1989; Larson, 1994). Other benefits include better delivery performance (Christopher, 1998) and support for new product development (Ragatz et al, 1997); both of which lead to competitive advantage (Monczka et al, 1993). Supplier management has attracted the

interest of researchers and, from a review of the literature, five main areas were identified as pertinent to the current research:

- Supplier selection and evaluation
- Sourcing strategy
- Developing relationships with suppliers
- Contextual issues influencing supplier management
- Supplier management in Chinese IJVs.

**Supplier Selection and Evaluation**

The term supplier base refers to a manufacturer's total number of suppliers (Monczka et al, 1998; Goffin et al 1997) and a key recent trend has been to reduce this number (Christopher 1998). Many companies in a number of sectors have adopted this approach (Lamming 1993; Goffin et al 1997), because a smaller supplier base allows them to focus on obtaining top performance from their remaining suppliers (Asmus and Griffin, 1993).

Supplier selection is an issue that is relevant to both practitioners and researchers (Pearson and Ellram, 1995) and the criteria used to choose suppliers are a fundamental part of this process. Traditional approaches have prioritized *price*, *quality* and *delivery* (Smith *et al*, 1963), however, current thinking proposes a wider set of criteria (Lamming, 1993). Researchers have identified various new criteria, including the design capabilities of suppliers (Pearson and Ellram, 1995). Recent studies have shown that manufacturers are using "soft" criteria—such as the perceived quality of relationships—and not just "hard" criteria such as delivery performance (Choi and Hartley, 1996). The performance of chosen suppliers must be regularly evaluated. Normally the criteria used for monitoring supplier performance are related to the selection criteria (Pearson and Ellram, 1995; Weber *et al*, 1998).

During supplier selection, trade-off decisions are necessary (as some suppliers will have high performance on certain criteria but lower performance on others). Studies in this area have largely been conceptual. For example, Min (1994) and Barbarosoblu and Yazgac (1997) developed models for making trade-off decisions. However, empirical support for the validity of such models is lacking and, in general, trade-offs have received too little attention (Katsikeas and Leonidou, 1996).

**Sourcing Stratgey**

Related to supplier selection is sourcing strategy—whether more than one supplier is required for each material or component. The possibilities include single-sourcing, multiple-sourcing and single-active sourcing (where only one supplier normally delivers parts but where another supplier is capable of supplying at short notice, should problems arise). Goffin et al (1997) showed that manufacturers were reluctant to use single-sourcing because of the perceived risks. Richardson and Roumasset (1995) argued for multiple-sourcing, whereas others argue that single-sourcing is preferable in certain circumstances (e.g. Lau and Hurley, 1997; Weele, 1994). There are some contradictions in the literature on the relationship between sourcing strategy and selection criteria. Some research suggests that the sourcing strategy largely determines the choice of selection criteria (Swift, 1995). Other research implies that it is the past performance of suppliers, which influences a company's future sourcing strategy (Min, 1994; Richardson and Roumasset, 1995; Pearson and Ellram, 1995).

**Developing Relationships with Suppliers**

Once suppliers have been selected, relationships need to be developed. Much of the previous research has focused on the automotive industry and stems particularly from the work of Lamming (e.g. 1993), who recognized the competitive advantages resulting from close buyer-supplier relationships—*partnerships*. Dyer et al (1998) identified two typical types of relationships, "arms-length" and partnerships, and showed the importance of only developing partnerships with suppliers of strategically important purchases.

Krause and Ellram (1997) showed that manufacturers could raise suppliers' performance by setting challenging goals and actively assisting them to achieve these goals. In another study, Hartley and Jones (1997) identified two different approaches to supplier development. They found that a "process-oriented" approach (in which a manufacturer works closely with a supplier on process issues) was more effective than a "results-oriented" approach. Overall, the factors that determine whether partnerships will be formed include the degree of mutual dependence, the extent of joint projects, the approach to problem-solving, and the degree of economic satisfaction with the co-operation (Landeros et al, 1995; Monczka et al, 1995; Scott and Westbrook, 1991). In any event, the literature clearly shows the importance of relationships in supplier management.

**Contextual Issues Influencing Supplier Management**

Previous studies indicate the contextual nature of effective supplier management. Many factors influence manufacturers, including their size, the type of purchase involved and the competitive environment (Pearson and Ellram, 1995). In addition, factors such as the organizational culture (Goffin et al, 1997); the national origin of the organizations involved (Taylor and Wiggins, 1997; Chang and Kim, 1995); and the nature of the political situation (Templin and Norffsinger, 1994) influence supplier management. However, the nature of an industry and its competitive environment has the greatest influence (Pearson and Ellram, 1995). Unraveling contextual influences is difficult, complicated by the fact that most studies of supplier management have been in one sector (automotive) and the majority of empirical data are from the US. The only previous investigation of supply issues in a developing country is a single case of car production in Malaysia, which concluded that multi-sourcing was a useful practice to avoid supplier complacency (Simpson et al, 1998).

**Supplier Management in Chinese IJVs**

Although few empirical studies have investigated the operations management issues faced by IJVs in China (Zhang and Goffin, 1998), the trade and management press frequently mentions difficulties with quality control (e.g. Business Asia, 1996); production capacity (e.g. Lerner, 1996); and supplier management (e.g. Business China, 1993). Relationships with suppliers form a crucial part of IJV manufacturing management in China (Martinsons and Tseng, 1995a and 1995b; Tsang, 1995)

The "sourcing of materials and components is a serious issue for IJVs in China" (Pan et al, 1995), and so IJVs often try to combine the strengths of their foreign and Chinese partners by integrating their different supply chains (Lu and Wang, 1996; Yan and Gray, 1994). However, due to the quality problems with local (i.e. Chinese) suppliers, IJVs buy many of their materials overseas and this can lead to higher-than-expected production costs (Campbell, 1989).

A rare empirical study in China by Chao et al (1993) investigated supplier selection practices. It found that Chinese managers used similar criteria to Western

companies in the selection of their suppliers. Although this paper gives an interesting insight on selection criteria, it did not discuss how supplier relationships are developed. In addition, it did not cover the contextual issues which others have identified as important, such as local government (Chan, 1996), *Guanxi*—personal connections (Martinsons and Tseng, 1995a), and technology transfer (Bennett, et al, 1997).

### Conclusions on Previous Research

From the extant literature it can be seen that:

- Supplier management is an increasingly important aspect of competitive manufacturing.
- Supplier management in Chinese IJVs is an important area for research, due to the prominence of this sector in China, the lack of previous research and the general need for more understanding the contextual issues which influence on supplier management practices.
- Within an exploratory study, suppler selection, sourcing-strategy and development of relationships are all important topics to investigate

Consequently, the central research question was: *how do manufacturing IJVs in China select their suppliers, and manage relationships with them?*

## RESEARCH DESIGN

### Choice of Methodology

The research question was "how" in nature and, according to the classification of Yin (1989), the research is descriptive, exploratory and proposition-generating. Possible approaches to such a research problem included a postal survey of purchasing managers at IJVs in China, or telephone discussions. However, the risk of low response rates and the complexity and emergent nature of the issues involved, weighed against these approaches. Therefore, the exploratory nature of the research and the problems of conducting research with companies based in China (where researchers may often be regarded with suspicion [Zhang and Goffin, 1999]), led to the choice of case study methodology. Case studies allow an objective, in-depth examination of contemporary phenomena, where the investigator has little control over events (Yin, 1989). However, if they are rigorous and well designed, case studies can offer a truly scientific research approach (McCutcheon and Meredith, 1993; Miles and Huberman, 1994).

A multiple-case approach was selected, for which 4-6 cases are ideal in order to allow analytical generalization of the findings (Yin, 1989). To conduct effective case studies, on-site visits were planned by a native Chinese speaker (one of the researchers). These enabled manufacturing operations to be inspected, detailed discussions to be held with multiple informants (managers) and company documentation, products and processes to be seen first-hand. This made a range of data available to the researchers. The visits were often deliberately spread over two days, with an afternoon allocated to inspecting manufacturing facilities and building a relationship with interviewees (i.e. reducing the levels of suspicion mentioned earlier), before the formal interviews were held on the second day.

### Sources of Data

The primary interviewees were purchasing and materials managers and two or three managers were interviewed at each company. They were encouraged to talk openly by

the assurance of anonymity for their company and the formal interviews typically lasted one hour. During each interview detailed notes were taken and, if the interviewee agreed, tape recordings were made to enable the use of direct quotes in the data presentation. At two companies, additional interviews were possible with other staff (e.g. an R&D engineer). Inspecting company documentation on organizations, purchasing processes, etc. enabled data triangulation. In all cases, telephone discussions were held with the companies post-visit to clarify issues that required further exploration. In addition, case study descriptions were also checked for accuracy by the interviewees.

**Questionnaire Design**

A semi-structured questionnaire was developed for the interviews, based on the literature, previous research by the authors (Zhang and Goffin, 1999), and covering five areas:

1) Company backgrounds and the role of supplier management (organizational details, the role of foreign partners and expatriate managers, etc.)
2) Supplier selection and evaluation
3) Sourcing strategy
4) Developing relationships with suppliers
5) Contextual issues (including the most important and problematical issues).

To ensure that the questions were easy to understand and relevant to managers, the questionnaire was tested in pilot interviews with managers at one IJV manufacturer in Beijing. At the end of these interviews, interviewees were asked for their suggestions for improving the questions and coverage of the different topics. A number of suggestions were received and the questionnaire was modified appropriately. It should be noted that mainly open-ended questions were used to capture managers' views and experiences.

**Case Study Sample**

Lists of IJVs in China were obtained by visiting local government offices (e.g. Foreign Trade Departments) in China. Details of more than 1,000 companies were obtained and from these, an exploratory sample of 40 IJV manufacturers was selected based on five criteria. The IJVs selected had:

- Run manufacturing operations in China for several years
- Achieved a strong market position
- Included a range of nationalities of foreign partners
- Covered a range of industries
- Operations which were reasonably accessible (to enable the fieldwork to be cost-effective)

From the 40 companies contacted, nine agreed to co-operate in a larger study of supplier management and five were selected for the exploratory study described in this paper. All five had state-owned Chinese IJV partners because, as identified in the literature, only public companies in China may form IJVs with international partners (Zhang and Goffin, 1999).

**Data Analysis**

Following recommendations in the methodology literature (e.g Miles and Huberman, 1994), the case study analysis consisted of three stages: within-case data reduction using the five categories used in the questionnaire; data display and cross-case analysis; and drawing conclusions. To ensure the robustness of the analysis, data

reduction and interpretation were performed following an independent review of the data by each researcher. In addition, following the recommendations of Stake (1995), as new issues became apparent from the data, the frame of analysis was accordingly changed.

## RESULTS

### Company Background Information

As the companies were promised anonymity they will be referred to as *Switch-Co* (a manufacturer of digital switches); *Telecom-Co* (telephone equipment); *TV-Tube-Co* (TV tubes); *Color-Dis-Co* (color displays); and *Eleva-Co* (elevators). Table I gives the main characteristics of each of these five companies and summarizes the results of the cross-case analysis. A diverse sample is appropriate for exploratory studies and it can be seen from Table I that the companies have various foreign partners (European, Japanese and US companies are all represented) and cover a range of industries. All five IJVs are over 10 years old, have been in full production for several years and are currently among the market leaders in their sectors in China. For all of them, supplier management is key—purchased parts account for between 40 and 65 percent of costs (at the four companies that were willing to divulge data on manufacturing costs). In addition, the influence of suppliers on manufacturing performance was clear, for example Switch-Co recognize that they will need to improve their supplier management, in order to meet customer demands for faster delivery.

As might be expected because of their greater experience in supplier management, the foreign partners of all five case companies have played a leading role in determining how suppliers are managed in the IJV. In each of the IJVs supplier management was initially the responsibility of an expatriate from the international partner, and processes at the IJVs (such as selection procedures) were all based on the foreign partner's approaches. This fact was identified by the interviewees and verified by inspection of IJV documentation. For example, the Assistant Manufacturing Manager at Color-Dis-Co confirmed that in "this ... international alliance ... we Chinese gain operations management experience from them [Japanese]". Similarly, a manager at Telecom-Co said, "we learn new skills and approaches [from the international partner. Then]... we set up new directions for purchasing and supplier management". In each of the IJVs, bilingual documentation was found that was used in managing suppliers. These documents, which originated from the foreign partner, had been translated so that Chinese staff in the IJVs could apply the processes. This documentation made it easier for Chinese and foreign managers to work together on supplier selection, for example.

Chinese managers now carry the main responsibility for purchasing and supplier management in four out of the five case companies. In the remaining case (Color-Dis-Co) a Chinese assistant manager is working in close collaboration with an expatriate-purchasing manager. Other departments, such as finance and technology management, tend to be are managed by expatriates. Therefore, it appears that foreign partners have recognized advantages to having a Chinese manager in charge of supplier management because in their early years, all had expatriates in charge of purchasing. The Chinese interviewees reported that their organizational structures had been designed to promote close interaction with managers from the foreign partners. For example, three of the Chinese purchasing managers (at Switch-Co, Telecom-Co, and Color-Dis-Co) report directly to a manager at the foreign partner. In addition, Telecom-Co has been integrated into its foreign partner's "purchasing group", which

consists of purchasing managers from their many subsidiaries and alliances. This group works together with international suppliers to ensure competitive prices and quality.

Despite the close links between Chinese managers and foreign executives, the foreign partners of Switch-Co and Color-Dis-Co maintain the power of veto over supplier selection decisions. Therefore, they review all proposals made by the IJV on the suitability of both local and overseas suppliers. Across the sample, it can be seen that the foreign partner has largely determined how suppliers are managed by the IJV.

**Supplier Selection**

All the five companies operate strict supplier selection, in terms of the criteria and procedures used, and the emphasis placed on price, quality, delivery and payment conditions. The selection of suppliers typically takes place in three stages:

Stage 1: identifying and short-listing potential suppliers

Stage 2: assessing and approving qualified suppliers

Stage 3: keeping up supply performance of and modifying existing suppliers.

Each IJV is constantly searching for and evaluating new suppliers. The selection process for local suppliers at each of the IJVs tends to be long, mainly because IJVs are skeptical about local suppliers' performance. At Switch-Co it takes about eight to ten months and at Color-Dis-Co the process consumes around 2,000 to 4,000 working hours. At Eleva-Co, it takes six to twelve months. A typical comment was, the "process of auditing suppliers is actually a process of training them... they have gradually learnt new ideas and new methods... you never expect them to do things perfectly at the beginning. It takes time to improve" (Eleva-Co). In addition, managers at Switch-Co, Telecom-Co and Eleva-Co suggested that the IJVs themselves did not always have the expertise to deal with sophisticated new products and this slowed both the selection process and the elimination of problems in local manufacturing.

**Sourcing Strategy**

All five IJVs avoided single-sourcing for local purchases because it was considered too risky (since a single-supplier might fail to deliver the required quality at the required time) and unlikely to reduce costs (through reduced competition).

Talking about quality issues, a manager at Telecom-Co said, "the basic principle is that I have two or three suppliers for a purchase, so I can prevent risks and promote performance" (Purchasing Manager). Telecom-Co's local supplier of capacitors had passed selection criteria but following first shipments, "its quality control was not strict so that a serious quality incident occurred, so the order and the certificate had to be cancelled immediately" (Vendor Selection Manager).

Discussing costs the Purchasing Manager at Eleva-Co said, "we have to have a second supplier to back-up our purchasing ... [also] it is easier to negotiate the prices if we have multiple sources... it has proven to be a very hard task to cut the price with single-source suppliers." Having more than three suppliers was considered by the sample IJVs to be counterproductive. Consequently Switch-Co, Telecom-Co and Eleva-Co use dual-sourcing with orders shared equally between two suppliers, whereas Color-Dis-Co used a back-up sourcing strategy, with the main suppliers providing 80% to 90% and a second supplier the remainder. TV-tube-Co typically buys from two or three local suppliers.

In addition to local purchasing, all five IJVs maintained an active international supplier base. The international suppliers used by IJVs were, as might be expected, largely based on their foreign partners' supply chains and were used particularly for

high-tech components. Interviewees gave three main reasons for this. Firstly, almost all products manufactured in the IJVs were adopted from their foreign partners (albeit with some localization). Therefore, IJV purchasing management in the IJV is dependent on the international supplier base during the early stages of production (before there is an opportunity to qualify local suppliers). Secondly, by being in contact with overseas suppliers, IJVs have an opportunity to learn from these companies' practices. (Explaining this, a manager at Telecom-Co said that for the transfer of production and management skills "we need to open a window to the world".) Thirdly, IJV partners can help international purchases to be made at lower cost. For example, Switch-Co had the advantage of purchasing at a volume discount rate calculated for the total demand across all the IJV partner's subsidiaries.

**Developing Relationships with Suppliers**

In the literature the value of long-term relationships with suppliers—including so-called partnerships—has been strongly advocated. Across the IJV sample, however, relationships with local suppliers were mainly short-term and contracts were for no longer than one year. Orders were, in most cases, placed on either a weekly or monthly basis and relationships could be terminated at any time because of incomplete deliveries, or if a more competitive offer (in terms of price or services) was received from another supplier. None of the sample IJVs trusted their local suppliers enough to have given full responsibility for quality. Therefore, strict incoming inspections of materials and components were the norm.

All case companies monitored their suppliers' on various criteria including quality, delivery, service and price. The main reason for this was to maintain standards. Additional criteria included the supplier's financial and technical performance and how crucial the materials or components are. For example, Switch-Co linked supplier performance with purchasing volumes and, accordingly, grouped them into three major categories: "preferred" (good performance, large volume); "critical" (poor performance, large volume); and "strategic" (good performance, small volume). TV-Tube-Co considered "partnerships" as having been established with suppliers that not only have good delivery performance but also co-operate on price reduction and give good technological support. More information was shared with these suppliers, including price trends and product design data. Color-Dis-Co frequently revised its list of critical materials, for which the relationships with suppliers are more important. These relationships were closer and based on longer-term agreements. For non-critical materials or components, opportunistic purchasing and tendering were used.

Purchasing managers face a dichotomy in their relationships with suppliers. All of the IJVs wanted to work long-term with their suppliers because they recognized that selecting suppliers is time-consuming. In addition, they saw that long-term suppliers can contribute to product innovation (some international suppliers do cooperate on product design). However, because local suppliers were often unreliable in terms of delivery and quality, IJVs favored short-term contracts. Furthermore, this also helped IJVs to take advantages of downward trends in local markets, in order to exert pressure on suppliers to reduce their prices.

**Contextual Issues**

Across the sample IJVs, two major contextual issues were identified from the cross-case analysis: problems with local suppliers and the "transition" from international to local procurement.

*Problems with local suppliers.* This was a major issue for all the sample IJVs. Although purchasing in China has potential advantages, all of the case companies had experienced significant problems with the quality; delivery performance and insufficient technological expertise of their suppliers.

As mentioned earlier, due to the quality problems with local suppliers, all five case companies conduct strict incoming tests. Switch-Co terminated their business with 10% of their local suppliers because of quality issues. Similarly, at Eleva-Co only 70% of capacitors pass incoming tests and some quality problems were only discovered after products had been installed. Consequently parts, which had previously been purchased in China, had to be imported again. Since Eleva-Co has been manufacturing in China for 15 years, this demonstrates how difficult it is to establish a reliable local supply chain. TV-Tube-Co faced similar issues and said, "there is always an uphill battle with local suppliers [to get them to deliver with a consistent quality]" (Materials Manager).

The inability of local suppliers to consistently meet delivery deadlines was a major concern for all IJVs. Local suppliers' production was susceptible to serious disruptions—water and electricity shortages, machine failure and poor management were common causes identified by the interviewees. Another problem was the propensity of local suppliers to commit to more than they can deliver. Consequently, it is common practice for Chinese suppliers to rank their customers in terms of delivery priority and so the purchasing managers at IJVs often attempted to identify their own organization's position in these "priority lists" (Switch-Co, TV-Tube-Co and Color-Dis-Co).

Managers acknowledged that most local suppliers do not have strong technological capabilities. This inhibits local purchasing of many of the parts used in new products. As the Purchasing Manager at Switch-Co explained, every time new products were introduced, the percentage of local materials dropped dramatically. Consequently, the case companies are cautious in approving new suppliers and take a considerable time over this, as noted earlier.

*Transition to local procurement.* During the fieldwork a key issue emerged—all five case companies have tried for a number of years to increase the percentage purchased from local suppliers. As shown in Table I, for example, Telecom-Co initially purchased only 5% in China but is now purchasing 50% locally. Eleva-Co has gone further, having increased local purchasing to 92% by value today. Locally purchased materials and components offer potential cost savings but what is surprising is the length of time taken to achieve significant levels of local supply.

Figure 1 shows in detail how the local content in individual products has changed over time. As might be expected, local purchasing increases faster for recently introduced products (indicated as Prodt 2) than with products introduced earlier (indicated as Prodt 1). For example, Color-Dis-Co, took five years to raise the percentage of local purchasing of early products from 20% to 85%, while only two years were needed for more recently-introduced products to achieve similar levels because of the existing contacts to Chinese suppliers. All of the interviewees agreed that new products initially required the greater use of foreign suppliers, until the local ones could provide the capabilities required. For example, the approval of existing suppliers to produce parts for new products took about ten months to complete at Switch-Co.

Figure 1 also shows that the percentage of local purchasing increases to a certain level and then remains constant at a "plateau value". In Eleva-Co, for example,

the local content of the product (indicated as Eleva-Co Prodt 1) reached 92% for more thaan six years, before the product was discontinued late in 1998. Interviewees at each of the IJVs thought that the local content could theoretically be higher. In Telecom-Co, for instance, the potential local purchasing was around 70% for Prodt 1 while the actual local purchasing was currently 50%. Managers at the case companies agreed that the full local-sourcing was difficult and not worth the effort due to the problems encountered—"it is impossible and unnecessary to purchase 100% from the domestic market" (Assistant Purchasing Manager, Color-Dis-Co). Typical materials, which were seen as better purchased overseas, were high-tech components that are crucial to the quality and reliability of products. International purchasing was also perceived as contributing to an image of high quality (Switch-Co) and opening a window to advanced technology (Telecom-Co).

From Figure 1, two key differences can also be identified. Firstly, there is a big gap between two groups: TV-Tube-Co, Color-Dis-Co and Eleva-Co, and Switch-Co and Telecom-Co in terms of percentage of local purchasing. The former purchase over 85%, while the latter purchase below 50%. A possible reason for this difference is that the latter operate in the Chinese telecom industry, which is at an early stage of development. Local suppliers are not advanced in terms of technology and operations management so "the increase in local content depends on the development of the whole high-tech industry [in China]" (Purchasing Manager, Switch-Co). Secondly, the local content of the earlier products is higher than that of the recently introduced products but the latter increased faster than the former.

In summarizing the research findings on the transition from international to local purchasing, Figure 2 gives a conceptual representation of the shift to local suppliers. The IJVs start local purchasing at relatively a low level (5%-35%). It takes 4-10 years to reach a higher level (35%-92%). Then a plateau is reached, the level of which is largely determined by the availability of technological expertise at local suppliers. Then the local content of products remains constant, although theoretically it could be further increased. Local content can also be increased faster for later products.(compared to the earliest products manufactured at the IJV).

## DISCUSSION OF THE RESEARCH FINDINGS

As the first detailed study of supplier management in Chinese IJVs, the research identified the challenges of trying to shift to a higher percentage of local procurement. IJVs need to manage this transition effectively and so it is important to identify the factors that have most influence over local purchasing.

Normally IJVs start with a low percentage of locally purchased materials and components, and it can take years to increase this percentage significantly. This clearly indicates that the performance of suppliers in China is much lower than their international counterparts in areas such as technological capability and process control. IJVs know the limitations of local suppliers but are keen to try to achieve the potential cost savings of local procurement. Many factors can influence the transition to local purchasing. Table II summarizes the main factors identified from the literature review and the fieldwork. Some factors tend to accelerate the transition to a higher percentage of local purchasing, whilst others inhibit it. For example, the lower cost of locally purchased materials and components is a key motivating factor for IJVs to source in China. Local purchasing is potentially cheaper (by 25 to 75%) and faster (1/3rd to 1/10th of comparable international delivery time). All of the case IJVs are

currently adopting just-in-time production, with the need for weekly or daily delivery. Therefore, proximity of suppliers will be a key factor.

All the IJV managers interviewed said that they thought it was important to buy a significant amount of Chinese materials. This view might reflect partly the pressure from authorities. Previously, the local government asked IJVs to meet strict goals for reaching "local content" percentages and nominated local suppliers. Nowadays, the intervention of government has diminished but is still a factor, which enhances the transition to local purchasing. Two other factors, which enhance the transition to local procurement, are local knowledge of purchasing managers (e.g. Chinese language and culture, etc.) and the simplicity of transaction with local suppliers. Therefore IJVs "need us Chinese managers in understanding the Chinese legal frameworks and in communicating [effectively] with governmental officials and local suppliers" (Color-Dis-Co).

The results do not confirm the conclusions of previous research on two factors. Firstly, the strong influence of *Guanxi* was not idenitifed. None of the interviewees identified it, although they may have deliberately omitted to mention it. Secondly, IJVs used to have to balance their foreign exchange. The current research shows that the IJVs do not face this issue anymore—they can now freely buy and sell foreign exchange in the local market set up in China.

The research provided consistent evidence across the sample of the inhibitors to a fast transition to local purchasing. First and foremost is the poor performance of many Chinese suppliers - variable quality, poor delivery reliability and insufficient technological expertise - severely inhibits IJVs from purchasing more locally.

**Limitations of the Research**

The limitations of the research need to be acknowledged, so those researchers active in this field can address them in the future. The main limitation derives from the small exploratory sample, which covered a range of industries and national origins of the foreign partners but is unlikely to be representative of IJV manufacturing in China. This, of course, limits the external validity of the research. In addition, the five companies were all formed more than ten years ago and it may have introduced a degree of bias in the results because large survivors were studied. However, the sample was deliberately selected to give a "historical" perspective on supplier management in China.

Another limitation results from the methodology. At each case company only two to three managers were interviewed and the findings are largely based on "manager reported" issues (although these were triangulated where possible against documentation). Achieving the co-operation of IJVs and access to more interviewees (particularly expatriates) is difficult (Zhang and Goffin, 1999) and so, in the context of exploratory research, this limitation had to be accepted.

**Future Research**

Recognizing the contributions and limitations of the current study, five main areas for further research can be identified.

- A wider survey is required to determine whether the issues faced by the five IJVs are typical and investigate the differences across various industrial sectors.
- A useful comparison would be a follow-up study of five more recently formed IJVs, to see if their supplier management practices were significantly different.

- Further studies need to investigate supplier management in more depth—through, for example, making longitudinal studies of the development of suppliers and investigating Chinese suppliers' perspectives' on their relationships with IJVs.
- In many other countries there is a strong move towards involving suppliers in NPD. Under what circumstances this is possible in China needs investigation.
- Finally, future research needs to explore other national contexts. As determined by the literature review, the majority of studies of supplier management have been in the US. Studies from other national contexts will increase the understanding of supplier management. It would be particularly interesting to know whether the transition to local purchasing is a major challenge for IJVs in other developing economies.

Based on the insight gained from the current research, three research propositions can be generated that require further investigation:

Proposition 1: It takes several years IJVs several years to transition to a higher percentage of locally-purchased parts and, each time a new product is introduced, the local content will drop temporarily.

Proposition2: Many factors influence the move to local purchasing. From these, the main accelerators of the transition are the lower prices and potentially faster delivery, whereas the main inhibitors are the variable quality, poor delivery performance and lack of technological expertise of local suppliers.

Proposition 3: The highest percentage of local purchasing achievable depends on the maturity of that industry in China—i.e. the extent to which a reliable supplier base exists. (For some products it will be around 80%, for others much lower.)

## SUMMARY

The research showed the difficulties faced by IJVs in China in trying to reduce costs through purchasing a significant percentage of their materials and components locally. The results have two main implications for practitioners. Firstly, any new IJV in China will take a number of years to achieve high levels of local purchasing and the potential cost savings that this can bring. Therefore, one of the perceived major advantages of manufacturing in China—lower bought-in costs—takes much longer to achieve than probably most companies new to China believe. For manufacturers dependent on technology such as telecommunication devices, there may be no existing supply chain in China and this will take even longer to develop. During the time that a local supply chain is being developed, IJVs need to plan for international sourcing of the majority of their parts and components. A surprising result of the research was the level of incoming quality and delivery problems that IJVs suffer, even after years of operating with their Chinese suppliers. This means that caution is necessary in trying to increase the locally purchased percentage. It also means that costly inbound quality tests are needed.

The second main issue for managers at IJVs is that they need to take a proactive approach to developing both technological and management expertise in their local suppliers. Technological expertise is essential for supporting new products, and better managerial skills are needed at suppliers, if quality and delivery problems are to be eliminated. With increasing international evidence that manufacturers can use their suppliers to enhance their own competitiveness, it will be interesting to see if IJVs in China are able to achieve this with their local suppliers. It will be a challenge but, as one respondent said, "the survival and prosperity of the company [IJV] depends to a large degree on effective supplier management".

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Readers should note that confusion might arise in referencing Chinese publications. This is because the Chinese normally write their family name first, followed by their given name. Therefore, some Western researchers make mistakes in shortening references to surnames and initials. Further confusion arises when Chinese researchers "Westernize" the order of their names (i.e. with the family name second). In the following list of references, Chinese surnames are given with initials and, for example the first author's name is Zhang Lihong and this is correctly shortened to Zhang, L. To avoid any confusion, the authors of this paper have underlined their family names and encourage the adoption of this practice.


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**Table I:** Company Background Information and Cross-Case Analysis

| Topic Area | Switch-Co | Telecom-Co | TV-Tube-Co | Color-Dis-Co | Eleva-Co |
|---|---|---|---|---|---|
| **Company background (products; years of operation; employees; organization of supplier management** | • Sino-German digital switch manufacturer, 10 years, 2000 employees<br>• Chinese Purchasing Manager reports to German and Chinese production managers<br>• German process documentation translated into Chinese version<br>• Veto by German partner over supplier selection. | • Sino-Belgian telephone equipment manufacturer, 15 years, 3000 employees<br>• Chinese Purchasing Manager reports to a Belgian General Manager<br>• Specifications, procedures, selection criteria all introduced by the Belgian partner. | • Sino-Dutch TV tube manufacturer, 10 years, 4000 employees<br>• Chinese Materials Manager reports to a Chinese General Manager<br>• Purchasing process documentation is in Chinese – translated from Dutch partner's documentation. | • Sino-Japanese (JP) color display manufacturer, 10 years, 4000 employees<br>• Japanese Purchasing Manager and Chinese Assistant Purchasing Manager report to Japanese General Manager<br>• Adoption of Japanese partner's approaches, local suppliers had to be visited often. | • Sino-US elevator manufacturer, 15 years, 2000 employees<br>• Chinese Purchasing Manager reports to Chinese Manufacturing Manager<br>• US documents with Chinese version on qualification of local suppliers. |
| **Interviewees** | • Chinese Assistant Production Manager<br>• Chinese Purchasing Manager. | • Chinese Purchasing Manager<br>• Chinese Vendor Selection Manager<br>• Chinese R&D engineer. | • Chinese Materials Manager<br>• Chinese Manufacturing Manager<br>• Chinese Assistant Materials Manager. | • Chinese Assistant Manufacturing Manager<br>• Chinese Assistant Purchasing Manager. | • Chinese Purchasing Manager<br>• Chinese R&D / Assistant Materials Manager. |
| **Supplier Selection and Evaluation** | • Common Auditing Criteria: quality, price, delivery time, payment conditions<br>• Differences: control over suppliers (Switch-Co), information sharing (Telecom-Co), quick respond to buyer's problems in manufacturing (Colour-Dis-Co) | | | | |
| **Sourcing Strategy** | • Dual sourcing for local purchasing<br>• Use German partner's supplier base for high-tech and new parts | • Dual sourcing for local purchasing<br>• Member of Belgian partner's "purchasing group" | • Mixed sourcing for local purchasing<br>• Most of overseas purchases made at Dutch partner's suppliers. | • Back-up sourcing for local purchasing<br>• Overseas purchasing via Japanese partner, mostly from Japan. | • Dual sourcing for local purchasing<br>• Overseas purchasing mainly via US partner. |
| **Developing Relationships with Suppliers** | • Short-term contracts and strict incoming tests, but would like to achieve long-term co-operations with suppliers.<br>• Suppliers are categorized according to their performance. | | | | |
| **Problems with** | • Suppliers lose track of | • Few high-tech materials | • Uphill battle to achieve | • Takes thousands of hours | • Incoming quality failure |

| | | | | | |
|---|---|---|---|---|---|
| **local suppliers** | product changes / versions<br>• Unstable quality (every 3-5 batches delivered)<br>• Deliver less than committed. | • Inconsistent quality<br>• Suppliers are less flexible and responsive. | quality levels required for each new product<br>• Poor technical support<br>• Local supplier base changes frequently | to approve a new supplier, yet some still fail after selection<br>• Poor after-sales technical support<br>• Are achieving some price-reduction agreements. | rates still 30-50%<br>• Have to develop new suppliers for new products<br>• Need a supervisor to constantly co-ordinate supplies. |
| **Local Purchasing** | • Started with: 5%<br>• Plateau: 35%<br>• Theoretical-max.: 40% | • Started with: 5%<br>• Plateau: 50%<br>• Theoretical-max.:70-86% | • Startcd with: 5%<br>• Plateau: 85%<br>• Theoretical-max.: 90% | • Started with: 20%<br>• Plateau: 85%<br>• Theoretical-max.: 90% | • Started with: 35%<br>• Plateau: 92%<br>• Theoretical-max.: 98% |

**Table II:** Factors influencing the transition from overseas to local purchasing

| | **Factors influencing the transition** | **Enhances / Inhibites** | **Notes** |
|---|---|---|---|
| 1 | Lower costs of local procurement | Enhances | All IJVs want to reduce costs through local purchasing |
| 2 | Potentially shorter delivery times | Enhances | Close proximity of local suppliers increases delivery speed and flexibility with IJVs |
| 3 | Government intervention | Enhances | Local government set local content, help build or find local suppliers, etc |
| 4 | Local knowledge (e.g. Chinese language and culture, etc.) | Enhances | Local knowledge facilitates the communication between IJVs and their suppliers, government officials |
| 5 | Transaction method (process) | Enhances | Procedure is simpler and business contact is easier with local suppliers than with overseas suppliers |
| 6 | Personal connections - *Guanxi* | Enhances | Not as important as reported by previous research |
| 7 | Variable quality | Inhibits | Reported by all sample companies |
| 8 | Poor delivery performance | Inhibits | Reported by all sample companies |
| 9 | Foreign exchange | Inhibits | No longer the serious issue reported by previous researchers |
| 10 | Insufficient technological and management expertise | Inhibits | Reported by all sample companies |
| 11 | Insufficient expertise of IJVs | Inhibits | Reported by three sample companies |

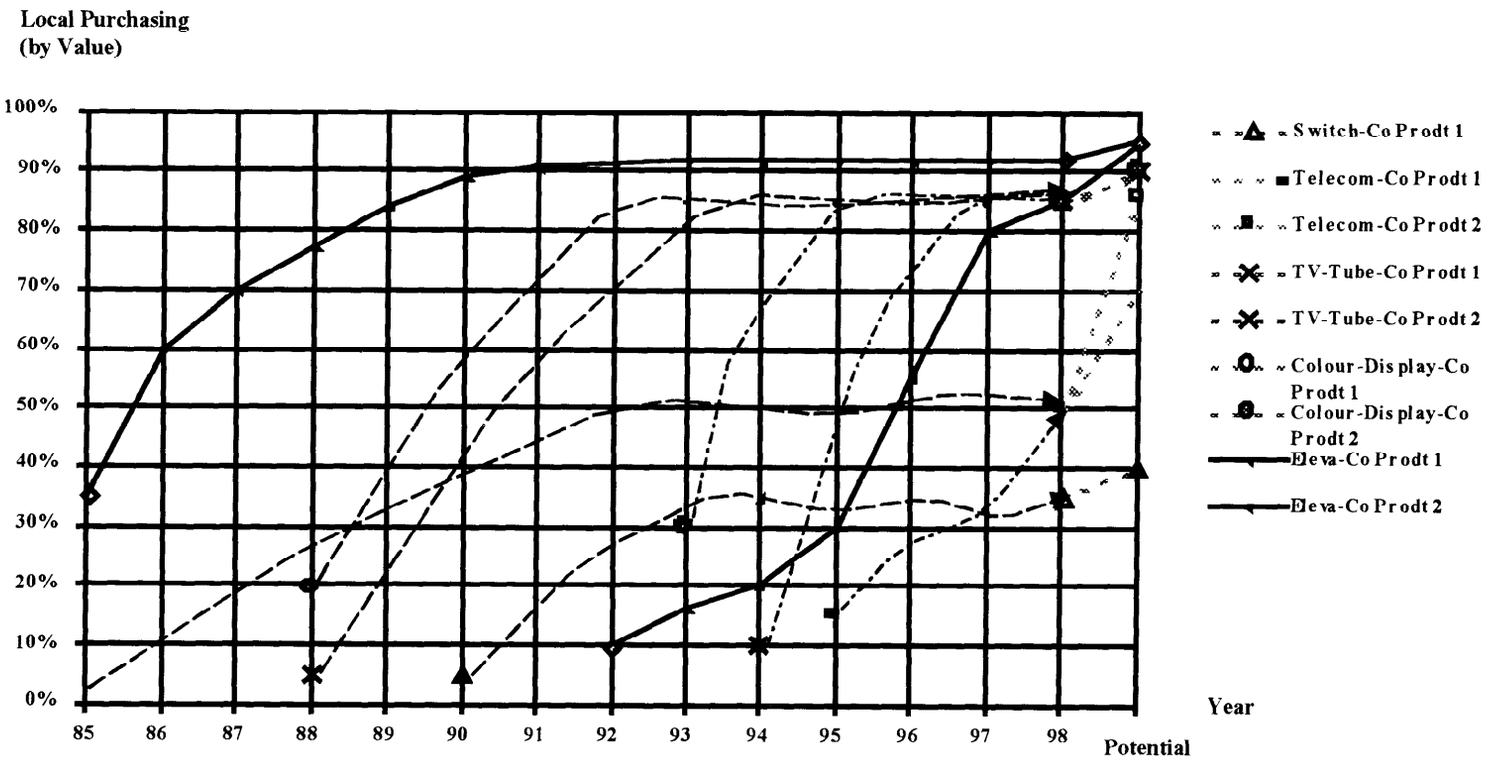


**Figure 1** The switch from overseas to local purchasing

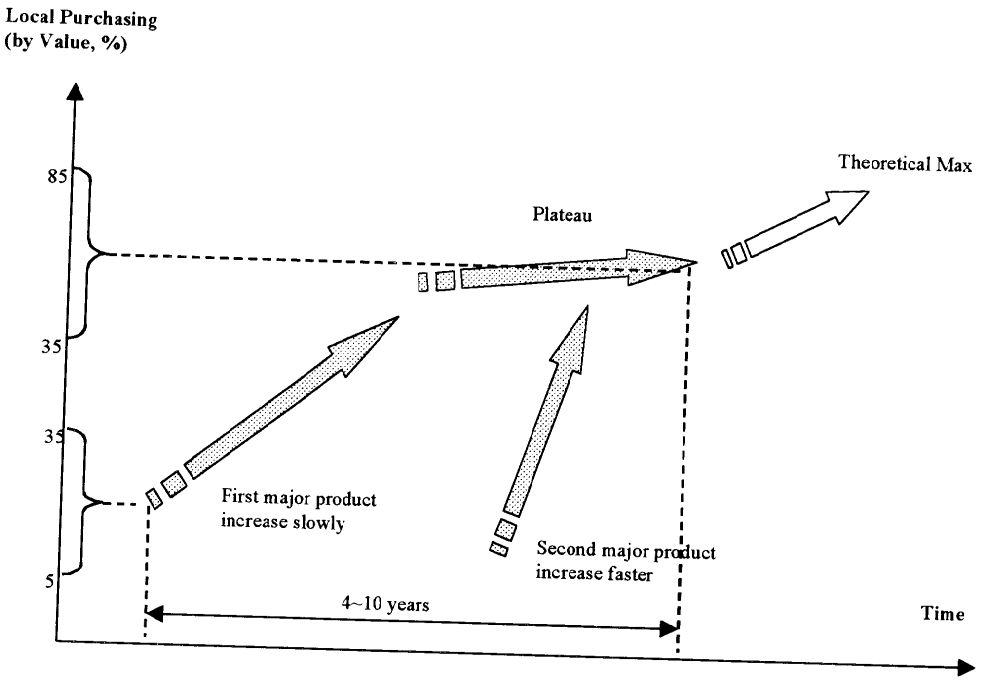


**Figure 2**: Graphical Representation of the Transition from International to Local Purchasing

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