Managing logistics outsourcing to China: business problems and solutions for Australian firms

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This study aims to investigate the outsourcing relationships between firms in Australia and China by using a problem-solution approach, and find out practical solutions. Empirical data from Australian firms were collected by a questionnaire survey and interviews. The survey data were analysed by descriptive statistics and correlation to find the most common problems and related solutions, and then eight case studies were compiled. The results agree that outsourcing can achieve many significant benefits, though it presents a variety of new risks. Solutions found include increasing communication levels, trust and management control.

INTRODUCTION

A notable global trend in manufacturing strategies during the past thirty years was a partial move away from vertically integrated manufacturing to outsourcing, partly due to its strategic benefits (Leavy, 2001). However, Firms currently face new business problems originating from extended supply chain operations due to outsourcing. Outsourcing refers to the contracting of services or products to an independent supplier (Ellram, Tate & Billington, 2008) as a way of achieving the desired supply or as a way of cutting costs (Ross, 2006). Because outsourcing is increasingly a strategic initiative taken by many Australian firms, further understanding of the ensuing problems is the key to improve these operations. Though many studies in the convergent fields of outsourcing have been undertaken (Qu & Brocklehurst, 2003; Young, 2000), further investigation of these ongoing outsourcing issues is needed for Australia-China business relationships.

Based on some studies that have addressed the business problems and risks (Gilley & Rasheed, 2000), this detailed study is developed to illuminate the specific organisational levels of manufacturing outsourcing relationships and management between companies in Australia and China. It is considered that these relationships may have different problems compared to existing research. This possibility leads to the first research question: *What are the main business problems in the extended supply chains when companies in Australia outsource their components and finished products to companies in China?* Given that, the practices under this new structure have a high level of uncertainty and risk, managers need to know how the problems can be solved and decide whether they shall move from a

general make/buy decision to strategic sourcing (Tayles & Drury, 2001). This leads to the second research question: *What solutions are available for the outsourcing problems of these companies?*

This study, therefore, aims to investigate the issues in outsourcing relationships between firms in Australia and China using a problem-solution approach, and find out practical solutions to improve management control.

Hence this study uses a conceptual framework embodying outsourcing situations in Australia. Earlier research has explored issues like unexpected high transaction and administration costs, bureaucracy in China, loss of control of capability, skills and intellectual property, and management control as a whole (Lorentz, Töylia, Solakivia & Ojalaa, 2015). Though the earlier study has identified the drivers (e.g. economic, strategic and environmental factors) and barriers (e.g. loss of control, critical skills, hidden cost etc.) of outsourcing to organisations in China (Lau & Zhang, 2006), or identifying alternative outsourcing locations to outside China (Kumar, Medina & Nelson, 2009), it remains increasingly an important strategy to assist organisations to outsource for competitiveness gain. Therefore this study used a business problem-solution approach for those Australian firms are heavily reliant on China firms. The current research regarding these companies is requires further attention.

The rest of this paper is organised as follows. The section on literature review identifies the key benefits and challenges from doing business with firms in China. This is followed by the research method which involved a questionnaire-survey and interviews. The results of the mixed method study are then discussed. This paper concludes with a discussion of the key findings and elaboration of the implications to theory and practices.

LITERATURE REVIEW

In order to better understand the outsourcing relationships between companies in Australia and China, this review focuses on the choices made in manufacturing structure, and the relationships between purchasers and suppliers. Transaction Cost Economics (TCE) is used to examine the risks and problems encountered in international outsourcing, and management control systems (MCS) is used for performance management and relationships between control and trust.

Outsourcing is an important part of manufacturing strategies, which is used in Australia mainly to reduce production costs. Decisions on whether to outsource or insource, which components and products can be outsourced, where to outsource, who to choose as business partners, and what kinds of relationships are to be formed, are all important choices in achieving business success (Shook, Adams, Ketchen & Craighead, 2009). There is also a need to make adjustments based on evaluations of operational performance. As transaction costs can significantly negate cost saving benefits, TCE has become one of the few theories that can be used to explain why international outsourcing projects are frequently unable to fully achieve their initial cost–saving goals (Platts & Song, 2010). MCS are also the key to the success of outsourcing operations. Lack of control can be a significant reason for failure in outsourcing projects. Therefore, these theories are strongly relevant to the aims of this study and are chosen for review in order to form a basis for its conceptual framework. In addition, current journal articles and business publications on outsourcing studies are reviewed to ensure that the most relevant research is included. The areas reviewed give priority to company-wide issues. These include trade contracts, technology transfer, decision to purchase, trust, and relationships established between Australian manufacturers and Chinese suppliers (Moosavired, Kara & Hauschild, 2014).

Structure of Companies before Outsourcing

In the past twenty years, outsourcing has become a necessary part of manufacturing strategies (Chen, Ishikawa & Yu, 2004). For example, in the study of companies in the USA, Ettlie and Sethuraman (2002) found that fifty per cent or more of the value of components and services of durable manufactured products were outsourced to developing countries. Similarly, outsourcing is also one of the major industry trends in Australia (Benson & Littler, 2002). As manufacturing contracting is important in the field of manufacturing strategies, there are major concerns regarding the strategies for decisions

between vertical integration and outsourcing, what and where to outsource, with whom to collaborate, how to manage outsourcing operations, and how to solve problems and identify business success factors (Anderson & Parker, 2002).

Outsourcing as a manufacturing strategy can reduce production costs, make production lines leaner, and concentrate on core activities and competencies. The improved international trade environment provides good opportunities that make offshore outsourcing available to companies in Australia. Many companies have experienced the benefits of outsourcing manufacturing to China (Gilley, Greer & Rasheed, 2004). However, although outsourcing provides many advantages, not every product is suited to this solution and there are many risks and problems associated with this practice (Liu & Roos, 2006). For example, when an outsourced product requires highly specific components and technologies, or when the environment in the host country is uncertain, the products are less likely to be outsourced (Ellram et al., 2008). In the case of outsourcing to China, generally labour intensive products are more suitable than products that require high technology and capital (Li, Liu, Li & Wu, 2007). The quality of products made and the protection of intellectual property are also major concerns when sending production tasks overseas (Bidanda, Arisoy & Shuman, 2006; Kennedy & Clark, 2006).

Frohlich and Westbrook (2001) further point out that vertical integration and outsourcing, or a combination of these two, has both benefits and risks. Some companies choose vertical integration to retain control and maintain consistency in production, and others choose outsourcing mainly to reduce production costs. For example, when full vertical integration is chosen, owners have high levels of control and information access in operations and logistics management. When the choice is arms-length short-term transactions, there is no common ownership between parties, so that management control and information access between business parties are restricted to operating on trust, business relationships and legally enforceable contracts.

International Trade and Outsourcing

Comparative advantages of production occur when the manufacturing capability and production efficiency in one country has absolute advantage over another. When each side restructures its production, both sides can achieve net benefits. For example, China has many low-cost and low-skilled workers and Australia has technologies and capital. Hence, if Australian companies outsource their labour intensive products and services to China, both sides can benefit (Rexha & Miyamoto, 2000). Lower production costs and product prices in developing countries thus become the main reason for huge increases in offshore outsourcing. With over 3000 Australian companies doing business in China in 2015, the products outsourced to China include both many labour intensive products, such as textiles, clothing and footwear (TCF), toys, shoes, and also some high technology products such as traffic control systems and medical devices (Austrade, 2015; DFAT, 2015).

A common strategy is that in order to have the best outsourcing strategies for the proportion of production to outsource, purchasing companies should outsource peripheral components (Li et al., 2007). In addition, only activities that are not critical to main strategic competencies of company maintenance and growth should be outsourced (Ellram et al., 2008; Gilley et al., 2004). That is, companies in developed countries should mainly focus on outsourcing their non-core, low technology, labour intensive components and products to a developing country such as China (Garner, 2004). Similarly, Gilley et al. (2004) explain that a Transaction Cost Economic perspective suggests that operations that do not belong to firm-specific areas are more likely to be outsourced.

In outsourcing to China, reduction and control of production costs can achieve economy of scale by using large capacity suppliers, accessing specialised skills from suppliers, and reducing product delivery time by making and selling to local markets in China. In addition, by contracting out non-core activities and avoiding internal staff turnover, as well as maintaining the ability to switch suppliers when needed, financial uncertainty can be avoided (Lam & Han, 2005).

According to the literature, the a few examples of specific problems for western companies in conducting business with companies in China include:

- hidden costs which are unpredictable (for example, local government and bank fees in China) (Kennedy & Clark, 2006)
- overloaded bureaucracy, erratic government responses and unclear government policies (Li et al., 2007)
- violation of intellectual property rights in China (Ting, 2004)
- loss of an organisation's confidential information; and extra inter-firm business costs being too high (for example, travel, select locations, contracting, telecommunication and training costs) (Leavy, 2004)

Outsourcing Operations Process

As well as manufacturing contracting, some companies conduct transformational outsourcing. Alternatively, some companies in developed countries conduct their own offshore production for better control of production (Hayes, Pisano, Upton & Wheelwright, 2005; Preston, 2004).

Selection Decisions in Outsourcing

Cao and Wang (2007) indicate certain criteria for outsourcing: whether the activities to be outsourced are core or non-core; the capabilities of suppliers; significant benefits for purchasing companies such as cost savings and other financial benefits; management control levels required; and environmental issues around the outsourcing operations. In addition, consideration must be given to cost and cost reduction, employee transition, suppliers' offers in terms of price and quality, and plans and billing management.

The correct selection of suppliers is an important step leading to success in outsourcing (Wadhwa & Ravindran, 2007). Selection should take into account many purchaser objectives including suppliers' plans, the management of contracts, prices and product quality. Further considerations include whether different suppliers exist, the quality of suppliers, delivery procedures, and opportunities in the external market. The evaluation of outsourcing tenders includes the skills of suppliers, the cost of service, and the ability of suppliers to provide quality goods and delivery on time, for example, staff transition issues and the match with the overall strategy of purchasing companies (Chen, Paulraj & Lado, 2004).

Offshore Production

In choosing to purchase or manufacture components overseas, some large companies choose to build their own factories offshore and relocate their production while still maintaining ownership that is either wholly owned or in joint ventures with local companies. Such choice depends on the desired offshore outsourcing levels of companies, the complexity of their business, their delivery capabilities, and the economic effect on their projects (Tayles & Drury, 2001). Apart from deciding whether to relocate production overseas, there is a need to identify what processes and activities can be moved offshore, thereby determining outsourcing implementation. There is also a need to identify the business terms of management provision, capital, capabilities and the time taken to manufacture offshore. There exist two related factors for setting up offshore production decisions: the company's ability to manage offshore transitions and the extent to which production is to be outsourced. The manager's task is to decide which parts of production should be outsourced, the scope of offshore processing related to subsequent operations, as well as to choose each alternative process and the most suitable model for managing resources including capital and time (Bidanda et al., 2006; Choy, Lee, Lau & Choy, 2005). However, the problems of offshore production may include operations that are too complex and time consuming to be undertaken by company management (Preston, 2004).

Transaction Cost Economics and Outsourcing Risks

Transaction costs are a significant issue for international outsourcing. In order to understand the barrier to achieving cost savings, the development of theory and its relationship to outsourcing is reviewed. In TCE, transaction costs refer to all the costs associated with economic or business exchange activities between independent parties (McCarthy & Anagnostou, 2004). Actual transaction costs include managing, such as monitoring and control of business transactions on both sides. Examples include set-up

costs of a business (e.g., search, negotiation and training), transactions (for example, delivery, marine or air cargo insurance, tariffs, letters of credit, bank fees and local government fees in host countries), and inter-firm governance (e.g., data transmission and auditing) and termination of contracts. In the case of outsourcing, the net saving achieved is less than the gross saving due to transaction costs. The costs are mainly due to additional management work and inter-firm business relationships of distance, cultural differences, bounded rationality and opportunism.

Aubert, Rivard and Patry (2004) argue that bounded rationality and opportunism are the keys to inter-firm relationship. Bounded rationality refers to the limited ability of people to find or to handle all information during business activities and to evaluate the full consequences of all decisions (Bahli & Rivard, 2005; Ellram et al., 2008). People have limited memories and processing powers, and they assume that information from the other side of business partners is inherently imperfect (Williamson, 1999). Opportunism occurs when one side of a business party acts to cheat the other side for profit (Bahli & Rivard, 2005; Ettlie & Sethuraman, 2002). At the same time, there is a possibility that the other side of the partnership also acts opportunistically for profit when there is a lack of trust on both sides (Williamson, 1995). If there is no trust, both sides need to spend money for control or incur financial losses (Qu & Brocklehurst, 2003).

Outsourcing Risks

Identifying the outsourcing problems faced by companies in Australia when outsourcing to China is the first aim of this study. While outsourcing practices are increasingly achieved for significant benefits from the operations, the practices are frequently not perfect (Kennedy & Clark, 2006; Tsai, Lai, Lloyd & Lin, 2012). For example, there are risks associated with the practices when compared to vertically integrated operations (Bidanda et al., 2006). There is also the risk of transferring main technologies to suppliers so that the purchasing companies lose their core competency and market positions (Leavy, 2004). The risks are higher in international outsourcing due to the complexity of overseas transactions and the problems of international inter-firm alliances (Glass, 2000), as well as the different business environments in different countries (Metters, 2007). Wrong outsourcing decision may take some companies hollowing out organisations, losing core production skills and expertise, and losing control over production (Langfield-Smith, Smith & Stringer, 2000).

Schoenherr, Tummala and Harrison (2008) have identified offshore sourcing risks into three groups: products, business partners and environment. For products, there are risks related to quality and cost. When measuring costs other than product costs themselves, there are market costs that are the prices that competitors pay for the same kind of products. For risks associated with business partners, there are two concerns: service and management capabilities. For service, the main issue is the supplier fulfilment risk: that is, how suppliers fulfil contracts in terms of quality, quantity, and punctuality. In addition, there are risks for logistics operations. For management capabilities, there are risks of the wrong selection of business partners. There are concerns about the qualifications of suppliers. For international business there are also concerns about different cultures, politics, distance and language barriers. Environmental risks in host countries include natural and human disasters.

Management Control Systems, Trust and Minimisation of Risk in Outsourcing

The literature indicates that management control systems (MCS), trust and the balance of these two are all important. Ellram et al. (2008) emphasise a high level need for the monitoring and control in order for companies to attain their objectives to avoid high levels of uncertainty and risks from business partners. Langfield-Smith et al. (2000) claim for case studies research on ongoing management and control within outsourcing relationships to identify management issues. They identify three inter-related elements for the extended make-or-buy decisions: the structural basis of insourcing or outsourcing; the nature of the contracted parties; and the design of internal management control systems and outsourcing relationships.

The purpose of a contract is to consider the nature of the relationship in the beginning, and specify some ground rules. However, contracts cannot cover all contingencies during the whole contract period.

Therefore, in addition to the contract, good protocols for communication, performance monitoring, including measures of operation performance in delivery responsiveness, product quality and production costs are needed (Shy & Stenbacka, 2003). Kamminga and Van der Meer-Kooistra (2007) argue that shared ownership of the business increases the complexities of control issues. Transactions between firms, relational characteristics and their interconnectedness are all-important.

Langfield-Smith and Smith (2003) provide a TCE-based model of markets, bureaucracy and trust-based patterns for inter-firm outsourcing relationships emphasising the importance of building high levels of trust. Here, in order to solve the problem of how business partners cooperate with each other with minimal outsourcing risk, contractual trust, competence trust and goodwill trust are needed.

In the case of outsourcing relationships between companies in Australia and China, a study is needed focusing on control and trust, because the balance of control and trust may be of significance in achieving success. Insufficient control can lead to quality problems and opportunism, whereas too much control may increase management costs and damage business relationships (Honeycutt Jr., Magnini, & Thelen, 2012; Li et al., 2007). In this context, trust is highly important, whereas the control level is adjustable. This occurs because people prefer trust rather than control. If people do not feel they are being trusted then business relationships will suffer (Li et al., 2007; Zhou, 2012).

Achievements from Outsourcing

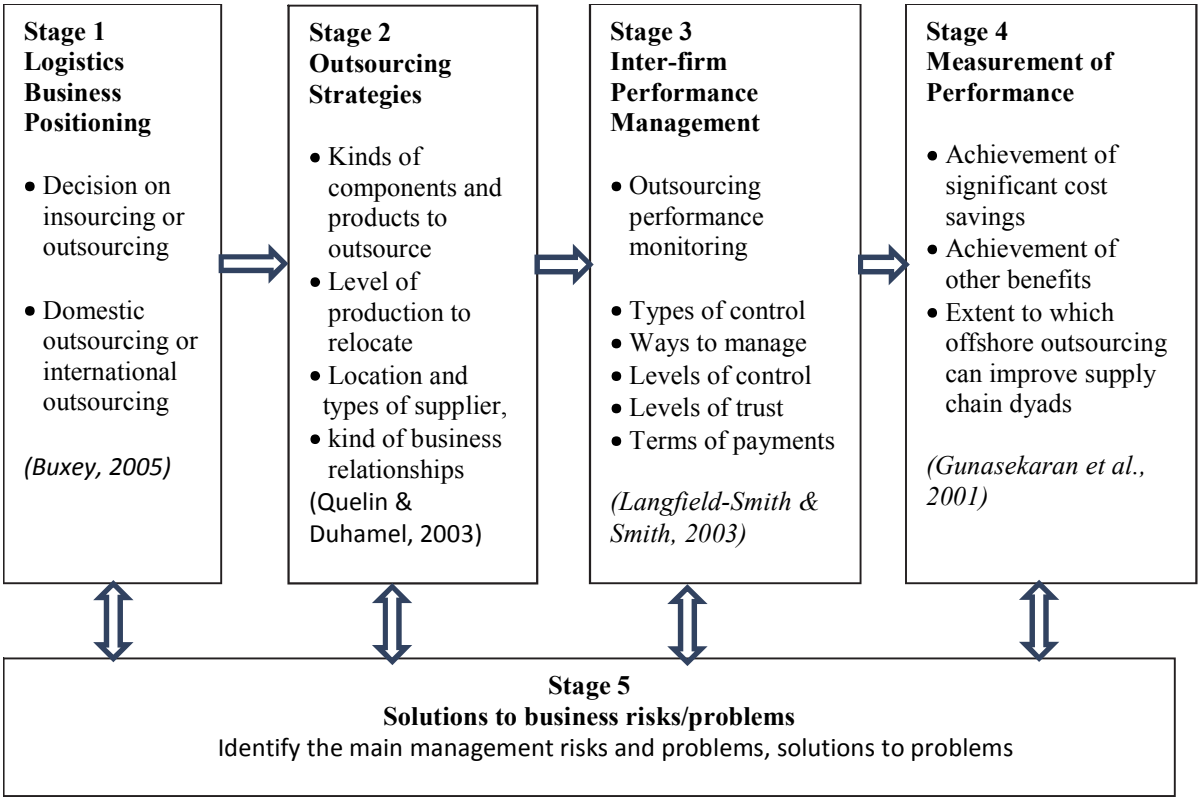
After the development of outsourcing in international trade, although there are inherent problems associated with the outsourcing practices, companies have found the overall results of the business as positive. As a widely used manufacturing strategy there are many advantages and benefits associated with outsourcing. Compared with traditional manufacturing strategies such as vertical integration, overseas outsourcing is relatively new, having grown rapidly in the past twenty years (Leavy, 2004). The reasons for its growth have become the subject of many published articles (Beaumont & Sohal, 2004; Lam & Han, 2005; Li et al., 2007). In Australia, Beaumont and Sohal (2004) also point out that outsourcing has increased because of the benefit of cost savings.

Comparative production costs are the strongest predictor of make-or-buy decisions. Lower-cost labour, less-restrictive work rules and lower land and facility costs are the primary reasons for western companies to outsource to developing countries (Gilley et al., 2004). Two decades of outsourcing practice have proven that the results for businesses are a net benefit (Quelin & Duhamel, 2003). Furthermore, Li et al. (2007), and Lam and Han (2005) find additional advantages in outsourcing such as achieving market development knowledge, learning of management skills, new product development knowledge and obtaining new and important information from suppliers. Other detailed examples include: taking advantage of the supplier's expertise and technologies (Ellram et al., 2008; Kamminga & Van Meer-Kooistra, 2007), taking advantage of the supplier's economy of scale reducing own operation size, increasing flexibility obtained by changing contracts and business partners (Munsch, 2004; Metters, 2007), and concentration on core activities and competencies (Gilley et al., 2004).

OUTSOURCING PROCEDURES AND CONCEPTUAL FRAMEWORK

The conceptual framework is based on outsourcing characteristics, the theory of manufacturing strategies, TCE, MCS and information of other international outsourcing practices (Buxey, 2005). The conceptual framework aims to investigate this outsourcing situation in depth and obtain qualitative information grounded in theory yet useful to practitioners' needs. It uses five stages: the sequential areas of logistic business positioning, outsourcing strategies, inter-firm performance management, performance measurement, and solutions to problems found. It follows the sequence of outsourcing procedures in an organisation.

FIGURE 1 PROCESS STAGES IN AN OUTSOURCING FRAMEWORK
[Source: adapted from Buxey (2005), Quelin & Duhamel, 2003, Langfield-Smith and Smith (2003), and Gunasekaran et al. (2001)]



The details of the stages are:

Stage 1 Logistic business positioning

This first outsourcing stage comprises strategic choices between insourcing within own factories or outsourcing to external business partners, and choices of domestic outsourcing or to overseas suppliers (Buxey, 2005). It involves major changes to supply chains.

Stage 2 Outsourcing strategies

This stage includes decisions on the kinds of components and finished products suitable for outsourcing (for example, only low technology and labour intensive, or high technology and high capital required products); outsourcing of only some parts (for example, only some non-core parts) or the whole (including core-part) production; where to outsource to; kinds of suppliers to contract with (for example, manufacturers or agents, large or small factories); and kinds of business relationships to be formed (Quelin & Duhamel, 2003).

Stage 3 Inter-firm performance management

This stage determines the outsourcing management decisions. This includes types of control needed when companies in Australia outsource production to China (for example, production monitoring, reporting systems and quality inspection); ways to manage offshore inter-firm relationships (for example, audit, travel to or hire staff in China and provide training); levels of control needed for specific products

and outsourcing operations (full or low-level control); and levels of trust suited to dealing with companies in China (levels of trust and control required) (Langfield-Smith & Smith, 2003).

Stage 4 Measurement of performance

Measurement of performance concerns the management required to measure performance of the whole outsourcing operation. It comprises performance planned, cost savings obtained, and other goals and benefits achieved when compared to initial plans. Australian companies also need to determine the extent to which offshore outsourcing can improve overall supply chains (for example, whether supply chain operations can gain significant improvements on cost, quality, flexibility, and delivery) (Gunasekaran et al., 2001).

Stage 5 Solutions to business risks/problems.

This interactive stage addresses the effectiveness of the previous parts in achieving the purchasing company's aims. The problems encountered during Stages 1 to 4 are enumerated, analysed and solved in Stage 5. This final stage identifies the major problems associated with outsourcing business to China that management needs to solve, and what solutions can be found.

Research Propositions

Based on the literature review and research questions, two propositions related to the research topic are derived as follows:

1) *There will be many business problems of outsourcing manufacturing from Australia to China. These are likely to include unexpected high transaction costs in operations; overloaded bureaucracy in China; Australian companies' loss of key capabilities, skills and intellectual property; and loss of management control (Qu & Brocklehurst, 2003).*

2) *Companies in developed countries such as Australia should mainly outsource labour intensive, low technology and low capital manufactured components and finished products to developing countries, but retain the core parts of production, high technology and high capital intensive parts of manufacturing in their own domestic factories, or within their home countries (Li et al., 2007; Johnston, McCutcheon, Stuart & Kerwood, 2004).*

METHODOLOGY AND RESEARCH DESIGN

Both quantitative and qualitative research methods were employed in this study. It adopted suitable approaches for extraction of secondary data, survey questionnaire, face-to-face focus interviews, case analysis and comparisons. Questionnaire survey and subsequent interviews with managers in purchasing companies in Australia were organised to collect quantitative and qualitative data respectively. The foci were the outsourcing problems and feasible solutions in order to provide evidence to test the propositions. A five-point Likert scale, ranging one indicating strongly disagree to five meaning strongly agree, was used in forty-four quantitative items in the questionnaire survey in the first phase of data collection. The scope of questions covered business background information and outsourcing operations in practice. The main sources of participants' names and addresses were the lists of the Australian Stock Exchange and major company websites. Six hundred questionnaires were posted or emailed to CEOs, purchasing managers, production managers, and operations managers of organisations in Australia. The selection criteria for the mailing list were managers and officers of organisations in Australia who were involved in outsourcing business with organisations in China. Fifty-one completed questionnaires were returned representing a response rate of 8.5 per cent.

The second phase of data collection was face-to-face interviews with those participants identified while responding the survey. The selection criterion for the person interviewed was a key staff member (e.g. CEO, purchasing manager, or operations manager) of organisations in Australia, who were undertaking outsourcing components and finished products to companies in China. Interviews were then conducted in eight companies to gather some details on company information regarding their outsourcing

business to China. Within- and cross-case qualitative analyses helped to compare and summarise the qualitative data from the case studies. The unit of analysis is the focal company doing business with China. This study focuses on manufacturing products but also includes the service trade. Some manufacturing companies outsource both products and services (for example, logistics and ICT).

ANALYSIS OF SURVEY AND CASE STUDIES

Survey Analysis

The data from the completed questionnaires was keyed into the SPSS and then analysed by comparing the means, and zero-order correlations. Computing the correlation coefficient is to determine the correlative relationships between variables of business problems and possible solutions. One focus of the case studies is cross-case analysis of the process that each company used when solving problems that occur during outsourcing. It aims to collect evidence about how companies formulated and implemented inter-company business relationships no matter what businesses they come from. The eight case studies were analysed based on questionnaire information, interview records and data including company descriptions, company annual reports and other publications extracted from the company websites. Both within-case and cross-case analyses were used in the eight case studies.

Most companies in the sample are located in two (Victoria and New South Wales) of the seven states of Australia where manufacturing is concentrated. These companies are engaged in doing business with organisations in China motivated by lower labour and other production cost advantage. Company sizes range from 10 to 3000 employees. The length of time these companies have done business with China varies from 1-5 years (31%), 5-10 years (33%), 11-15 years (16%) and others. The sample also has companies (6%) doing business for more than 25 years (Table 1).

TABLE 1
TIME OF OUTSOURCING

Length of time organisation has been conducting business with companies in China:	Number of answers	Percentage
(a) Less than 1 year	3	6
(b) 1–5 years	16	31
(c) 6–10 years	17	33
(d) 11–15 years	8	16
(e) 16–20 years	3	6
(f) 21–25 years	1	2
(g) more than 25 years	3	6
Total	51	100

They deal with products mostly in manufacturing (38%), household goods (20%), electrical items (19%), textiles/clothing/garments (13%), and others such as non-manufacturing products, toys and footwear (10%). Types of products and services imported from China include labour intensive manufactured goods (48%), High technology products (21%), capital intensive products (e.g. aircraft) (8%) and a few ICT (3%) and Management service tasks (2%) (Table 2). There are more organisations in Australia that only purchase some materials, components or products from China without outsourcing their own production tasks (30%), or have long-term (alliance) relationships with partial production tasks performed in China (28%). In addition, some have their Own production operations in China (18%), or entire production tasks performed by suppliers in China (11%) and some have short-term (less than one year) outsourcing contracts (9%). Very few service tasks were outsourced (2%) (Table 3) (* When there is more than one choice, the percentage sum of weight is used).

TABLE 2
TYPES OF PRODUCTS AND SERVICES OUTSOURCED

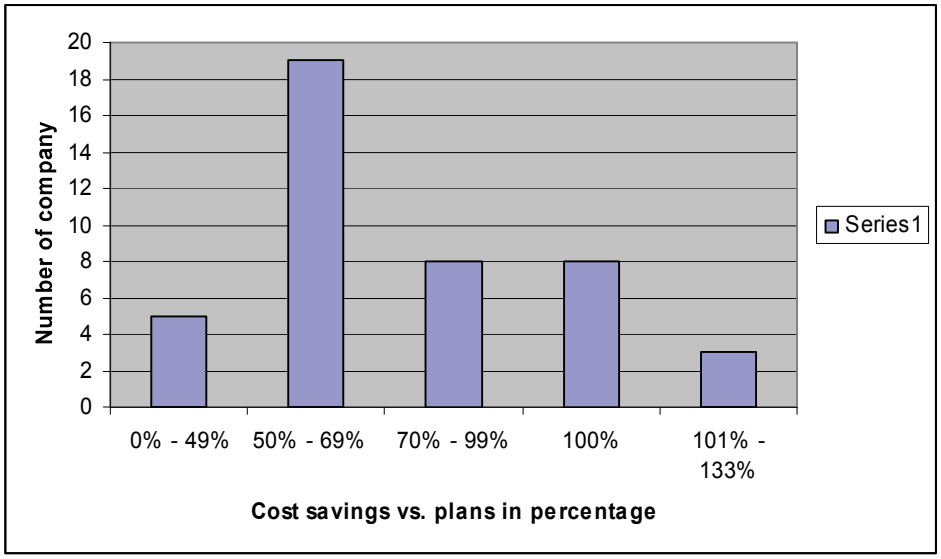
Kinds of components and products that have been imported by your organisation, or service tasks assigned to companies in China	Sum of weight*	Percentage
Labour intensive manufactured products (e.g. clothing/footwear/toys)	26.2	48
High technology manufactured products (e.g., computers/cars)	11.0	21
Others types of products	6.8	12
Capital intensive manufactured products (e.g., airplanes)	3.3	8
Delivery/logistics	1.7	6
Information and communication technology (ICT)	1.0	3
Accounting, finance, sales/marketing, call centres, human resources and other service tasks	1.0	2
Total	51.0	100

TABLE 3
KINDS OF OUTSOURCING

Type of outsourcing conducted by your organisation	Sum of weight	Percentage
Our organisation only purchases some materials, components or products from China	15.5	30
Long-term (strategic alliance) relationships, partial production in China	14.3	28
Offshore business in China (joint ventures built or own operations in China)	9.3	18
Entire production tasks performed by suppliers in China. Our organisation conducts only sales distribution, service and/or management	5.4	11
Short-term (less than one year) contracts only, partial production previously conducted by our company is now assigned to companies in China	4.5	9
Service tasks (e.g., accounting, marketing, human resources management, logistics) previously conducted by our company are now assigned to companies in China.	1.0	2
Others	1.0	2
Total	51.0	100

The next part of the questionnaire elicits the percentage of planned production cost savings and actual cost savings achieved for the outsourcing practices. The graph shows that nineteen companies achieved 50%–69% cost savings compared to their initial plans. Then there are sixteen companies which achieved 70%–100%. The two ends (0%–49% and 101%–133%) have only eight companies. More companies achieved 50% - 69% (Figure 2).

FIGURE 2
COST SAVINGS RESULT – NUMBERS OF COMPANIES VERSUS ACHIEVEMENTS



Possible inter-firm business problems (Survey method)

The second part of the questionnaire identifies the possible business problems associated with outsourcing business to China. The responses to the eighteen questions in the questionnaires are summarised into Table 4.

TABLE 4
POSSIBLE INTER-FIRM BUSINESS PROBLEMS ENCOUNTERED WHEN DOING BUSINESS IN CHINA

	Possible inter-firm business problems in the questionnaire	a Strong disagree	b Disagr ee	c Neute r-al	d Agree	e Strong agree	N	Mean
1	Significantly high inter-company costs and additional work	2	11	9	23	6	51	3.4
2	Product quality is poor and quality Standard is too low in China	2	17	8	10	13	50	3.3
3	Loss of organisation's secret information	1	14	10	22	4	51	3.3
4	Significant problems of opportunism	1	8	21	19	2	51	3.3
5	Too many hidden business costs in China	2	12	17	15	5	51	3.2
6	Loss of own company competency and tacit knowledge	1	19	8	20	3	51	3.1
7	Violations of intellectual property rights	1	9	25	16	0	51	3.1
8	Bureaucracy and unclear government policies China	1	17	10	22	1	51	3.1

The findings show that responses with the mean higher than three (neutral) in the first eight rows are the most important problems when outsourcing to with China. For example, there are more agreements than disagreements for the first question, 'Significantly high inter-company costs and additional work including quality control and conflict resolution involved in outsourcing', more participants (29) agree and strongly agree than those (13) who disagree and strongly disagree with the statement. The same applies to row 2 to 8 in Table 4.

Possible Solutions to Business Problems (Survey Method)

Means higher than three in Table 5 indicates that top four solutions are the most common methods companies want to use. However, for the last two rows, there are more disagreements than agreements: For row 5, there are more disagreements (18), than agreements (13). The mean is below three. For row 6, there are more disagreements (28), than agreements (3). The mean is only 2.4. These indicate that these two solutions are not commonly used.

TABLE 5
POSSIBLE SOLUTIONS TO OUTSOURCING PROBLEMS

	Solutions to the problems	a strongly disagree	b disagree	c neutral	d agree	e strongly agree	N	Mean
1	Increase communication level with business partners, e.g., by hiring liaison persons and bilingual staff	0	3	7	34	7	51	3.9
2	Increase management control over business partners, e.g., by monitoring production and/or hiring quality inspection agents	0	3	9	37	2	51	3.7
3	Increase levels of trust with our business partners, e.g., give more designs and technologies to business partners	0	6	13	31	1	51	3.5
4	Withhold part of the payment until we receive the goods and satisfy product quality	0	4	18	20	6	48	3.4

Correlations between Variables (Survey Method)

Correlation was calculated to identify high correlations, and hence lack of independence, between key variables such as business problems. Following the analysis in Table 4 above (inter-firm business problem), the variables of business problems which had the means higher than 3.0 (more agreements than disagreements) were selected for correlation value tests in Table 6 on next page. High correlations were found between problem #2 in Table 7, 'Product quality is poor, quality standards are too low in China' and problem #1, 'Significantly high inter-company costs and additional work' ($r = 0.535$, $p = 0.000$), this indicates that when product quality and quality standards did not meet the requirements of purchasing companies, more inter-company costs and additional work incur. Similarly, high correlations were found between problem #5, 'Too many hidden business costs in China' and the three following variables of: #1, 'Significantly high inter-company costs and additional work' ($r=0.583$ and $p=0.000$); #2, 'Product quality is poor, quality standard is too low in China' ($r= 0.562$, $p= 0.000$); and #3, 'Loss of organisation's confidential information' ($r = 0.654$, $p = 0.000$).

TABLE 6
CORRELATIONS OF EIGHT BUSINESS PROBLEMS WITH MEANS > 3.0

	Possible inter-firm business problems in the questionnaire	1	2	3	4	5	6	7	8
1	Significantly high inter-company costs and additional work	1							
2	Product quality is poor and quality standard is too low in China	.535*	1						
3	Loss of organisation's secret information	.30**	.318**	1					
4	Significant problems of opportunism	.195	.419*	.149	1				
5	Too many hidden business costs in China	.583*	.562*	.654*	.245	1			
6	Loss of own company competency and tacit knowledge	.480	.576*	.462	.311	.558*	1		
7	Violations of intellectual property rights	.197	.131	.509*	.085	.285**	.317**	1	
8	Bureaucracy and unclear government policies in China	.116	.412*	.256	.141	.343**	.209	.261	1

*Correlation coefficients *p< .01, **p<.05*
N= 51 for all items except for item 2, N=50

Turning to business solutions using Table 6, the first four variables (means > 3) are selected to form the Table 7 below to test the correlation level between the variables. Data show that none of the variables have a significant ($p < 0.05$) nor high correlation with each other ($r > 0.500$). The solutions to problems of companies are different.

TABLE 7
CORRELATIONS OF FOUR POSSIBLE SOLUTIONS WITH MEANS >3.0

	Possible inter-firm business problems in the questionnaire	1	2	3	4
1	Increase communication level with business partners, e.g., by hiring liaison persons and bilingual staff	1			
2	Increase management control over business partners, e.g., by monitoring production and/or hiring quality inspection agents	-.067	1		
3	Increase levels of trust with our business partners, e.g., give more designs and technologies to business partners	-.032	-.262	1	
4	Withhold part of the payment until we receive the goods and satisfy product quality	.029	-.238	-.204	1

N=51. *Correlation coefficients are insignificant at p > .05*

Case Study Interviews

In addition to the survey, one manager from each of the eight companies was interviewed. Of the eight case studies, the first group of six companies are manufacturers, the second group including that the seventh is an importer, and the eighth conducts both importing and exporting. All eight companies trade in merchandise. For both manufacturing and import/export companies, outsourcing decisions required outsourcing location (within Australia or overseas), what to buy, when to buy, buy from whom, types of outsourcing (short or long-term), payment terms, shipping and insurance. Each case study aims to provide an in-depth qualitative understanding of manufacturing outsourcing or import/export backgrounds, business problems associated with the extension of supply chains to China, solutions that these companies have used, and the main business success factors and outsourcing plans adopted. Table 8 (below) shows a summary of the outsourcing problems mentioned by the interviewees.

TABLE 8
OUTSOURCING PROBLEMS BEING MENTIONED IN THE INTERVIEWS

	Problems	Company								Total	
		Manufacturing						Import export			
		1	2	3	4	5	6	7	8		
O	Product quality, technological level and quality standards are not high enough in China	Y	Y	Y	Y	Y		Y	Y	7/8	87%
O	Risk of losing secret information and intellectual Property		Y	Y	Y	Y	Y	N/A	N/A	5/6	83%
O	Language barrier, cultural differences, and communication issues	Y	Y		Y		Y	Y	Y	6/8	75%
F	High transaction costs, and overload of management work in setting up and managing production	Y	Y		Y	Y		N	N/A	4/6	67%
O	Delay in production and shipments				Y	Y		Y	Y	4/8	50%

F: financial problems, O: operations problems
Last column shows how many participants mentioned the problems in the interviews
Y= Yes, N= No, N/A = Not Applicable.

Table 9 (next page) shows solutions to the problems used by interviewed companies. The highest score is six – meaning that six interviewed companies (75%) used the same solutions in the sample companies. The data are ranked in the last column.

Testing of Propositions

This section provides a comparison of the two research propositions.

The first proposition is '*There will be many business problems of outsourcing manufacturing from Australia to China. These will include unexpected high transaction costs in operations; overloaded bureaucracy in China; Australian companies' loss of key capabilities, skills and intellectual property; and loss of management control'*. For the first proposition, anticipated inter-firm business problems in questionnaires and interviews include:

(1) unexpected high transaction costs in operations
(2) overloaded bureaucracy in China
(3) Australian companies' risk of losing key capabilities, skills and intellectual property
(4) loss of management control.

TABLE 9
SOLUTIONS TO THE PROBLEMS IN THE INTERVIEWS

Solutions	Company								Total	
	manufacturing						Import export			
	1	2	3	4	5	6	7	8		
Increase communication level, visiting, meeting, training	Y	Y	Y	Y		Y		Y	6/8	75%
Strong control: visit, face-to-face-talk	Y	Y	Y	Y	Y	Y			6/8	75%
Outsourcing only non-core components & retain core technologies			Y	Y	Y	Y	N/A	N/A	4/6	67%
Provide skills training and workshops	Y	Y	Y		Y		N/A	N/A	4/6	67%
Hire bilingual staff, translate product specifications into Chinese	Y	Y		Y	Y	Y			5/8	63%
Change to other suppliers within China	Y	Y	Y		Y		P		4/8	50%
Monitor production	Y	Y	Y				N/A	N/A	3/6	50%

P = Planning, Y = Yes, N = No, N/A = Not Applicable

According to the findings, problems (1) and (3) are highly supported by both the questionnaire survey and interview records; mentioned by four or five companies. Problem (2) is supported by the findings of the survey questionnaire (mean is 3.1), but was indicated by only two interviewees, which is supported by the minority group. Problem (4) is not supported by the survey questionnaire and any interview record, meaning it is not a problem when outsourcing to China. This means that when there is an extension of the supply chain, issues of transaction costs and risks of losing key capabilities, skills and intellectual property have become the main problems. The second part of the first proposition, *overloaded bureaucracy in China,* has been supported by only a minority of interviewed companies (mentioned by two companies). This means some companies face the problem but others do not. The last part of the first proposition, *loss of management control,* has not been supported by any interview record, meaning it is not a problem when outsourcing to China. The sample companies in Australia have a high level of management control so that control is not a problem. Consequently, apart from a lack of management control, all other aspects of the first proposition have been validated.

The second proposition is '*Companies in developed countries such as Australia should mainly outsource labour intensive, low technology and low capital manufactured components and finished products to developing countries, but retain the core parts of production, high technology and high capital intensive parts of manufacturing in their own domestic factories, or within their home countries'.* For the second proposition, anticipated solutions to the problems in questionnaires and interviews include:

(1) mainly outsource labour intensive, low technology and low capital manufactured components and products to developing countries.

(2) retain the core parts of production, high technology and high capital-intensive components of manufacturing in their own domestic factories, or within their home countries.

As per the findings, solutions (1) and (2) are highly supported by interview records. Six companies interviewed outsource only the non-core part of their production to China and keep the core part of production in-house, or outsource high technology components to other developed countries. These procedures lessen the risk of losing intellectual property rights.

DISCUSSION AND IMPLICATIONS

Outsourcing manufactured products in the sample companies of this research covered a broad range. Most components outsourced were labour intensive and non-core parts of production. Fewer were involved with high technology or were capital intensive. Outsourcing involved different types of activities that range from import only to owner built factories or the creation of joint venture factories overseas. The mean length of time found in outsourcing to China was nine years, which was a shorter than companies in Hong Kong, Taiwan and the USA. This might reflect a conservative attitude in the sample companies in Australia in terms of foreign trade.

The motivation of companies in this study for outsourcing to China was found to be primarily to take advantage of lower labour and other production costs. These companies were found to achieve twenty per cent net cost savings on average after the effect of transaction costs. More companies only imported components and finished products, with fewer having their own factories and joint ventures in China. Outsourcing manufactured components and finished products to China was recognised as the correct strategy for manufacturing restructure in all cases researched.

However, while achieving some benefits, all companies had faced some kind of *inter-firm business problems*. There were three most common and important problems supported by both the questionnaire survey and the interview records:

- risks of losing secret information and intellectual property rights,
- low product quality, technological levels and quality standards, and
- high transaction costs, overload of management work.

Other main findings inter-firm business problems included: opportunism, hidden business costs, loss of competency and tacit knowledge, violations of intellectual property rights, bureaucracy and unclear government policies. The primary reasons for these problems were due to extended supply chains to independent business partners which had different business environments, technical capacities, business cultures, and working attitudes. When production tasks were contracted out to suppliers, transaction costs could not be avoided. However, levels of the costs were related to operational types and sizes, types of projects, and management control and trust levels with suppliers. As many companies in China lacked high levels of technology and standards of quality control, companies in Australia often faced problems of product quality not meeting their requirements. Because intellectual property, company competencies and tacit knowledge were highly important assets, leakage of these was of prime concern when supply chains were extended to independent suppliers overseas. In addition, opportunism, hidden business costs, bureaucracy and unclear government policies in China were significant issues in outsourcing business.

The sample companies had a strong concern with protecting their intellectual property rights, as these were their main competencies. Results indicated that most of the sample companies had not yet entered upon a total solution to their manufacturing restructure. In order to protect their intellectual property rights, most companies in Australia had retained their core designs and technologies in-house, and only contracted out non-core, low technology parts to suppliers in China. Another reason why those companies retained their core parts of production in home countries was to ensure product quality. The other way to achieve the aim was to outsource high technology parts to other developed countries. For example, one company outsourced some key parts of automobile seats to Germany.

Nevertheless, all companies want to continue and improve their outsourcing businesses and find *ways to solve the problems*. The main solutions to the above-mentioned problems that the surveyed companies commonly used are:

- increasing levels of communication
- increasing management control
- increasing levels of trust
- withholding part of payment until receipt of products with satisfactory quality.

Good communication with business partners is so important that some companies in Australia hire bilingual staff, translating product specifications into Chinese and establish their offices in China. Management control and trust with business partners are both important, as well as the balance of these two. Insufficient control due to relying on trust alone may lead to defective product quality, loss of an organisation's secret information, loss of their company competency and tacit knowledge, and violations of intellectual property rights. Conversely, tough control and distrusting suppliers may lead to higher transaction costs, loss of suppliers, time wastage in finding new suppliers, and high costs for re-setting-up and training new staff. Withholding part of the payment for products is one aspect of business control.

Study results reveal that, on average, sample companies achieve only 71 per cent cost savings compared to initial planning, mainly due to transaction costs being greater in overseas operations. Actual production cost savings refer to the dollar saved after transaction costs. This is mainly due to: the costs for additional work created by inter-firm business relationships; defective product quality; protection of an organisation's secret information; and opportunism between purchasers and suppliers. The average cost savings achieved in outsourcing for the sample companies is only twenty per cent. This means transaction costs significantly reduce the net cost savings achieved.

Most sample companies were found to have strong concerns about protection of core technologies and intellectual property rights. In agreement with the literature review, the problem of the leakages of these two elements was found to be a significant issue in both questionnaires and interview findings. In addressing these problems, the sample companies were found to either keep the core parts of their production within their own companies, or outsource them to other western countries such as Germany and Canada, mainly to avoid suppliers in China replicating products in the suppliers' own brands. With regard to poor product quality, low technological levels and low quality standards, solutions presented included helping suppliers to improve, changing suppliers, keeping high technology parts of production in–house or outsourcing to other western countries.

CONCLUSION

The results show that outsourcing to China can achieve significant cost savings and other benefits. However, the extended supply chains result in some new inter-firm business problems. On average, the sample companies cannot fully achieve their initial cost saving goals. The risks of outsourcing can be significant, but solutions are available. None of the sample companies plans to withdraw from outsourcing from Australia to China. The problems encountered, the solutions used have some things in common but there are also differences between companies. There is no one general solution for all sample companies. Their decisions of make-or-buy, levels of manufacturing restructure and management styles depend on individual companies, their suppliers and business environments.

Although this research provides a window of information about outsourcing from Australia to China, generalisation to all outsourcing business is limited as findings are based solely on the samples of the survey questionnaire and the case studies. First, because the sample size comprised only 51 questionnaire responses and eight case studies, the number is too small to generalise. The low response rate might be a result in that the circulation list was mainly from a public source, for example, Australian Stock Exchange and some companies' websites. Second, due to the limited time of interviews and the lack of complete information sources of the eight companies investigated, information describing their businesses is not exhaustive. Therefore, results of these case studies and the particular combinations of industries do not provide a complete conclusion to the subject. Third, most of the samples were rather limited to companies located in the states of Victoria and New South Wales in Australia, which conduct manufacturing outsourcing to China. Whilst the results provide some implications for the main manufacturing locations in Australia and for all developed countries outsourcing to China, case results may not apply to all outsourcing practices of other states in Australia and other large countries such as the USA.

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