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WATCHARAVEE CHANDRAPRAKAIKUL

STRATEGIC POSITIONING WITHIN GLOBAL SUPPLY CHAINS

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WATCHARAVEE CHANDRAPRAKAIKUL

STRATEGIC POSITIONING WITHIN GLOBAL SUPPLY CHAINS

SUPERVISOR: PROF T. S. BAINES

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ABSTRACT

This thesis is concerned with the decision process of strategic positioning within global supply chains. The research provides insights into how companies currently form positioning decisions, and set out to develop a systematic methodology to assist practitioners in forming their strategic positioning decisions.

Manufacturing in the UK is increasingly exposed to the effects of global competition. Many companies are facing difficulties to define the most advantageous position in their global supply chains in order to maximise their business competitiveness. The position of a company is concerned with deciding a boundary and configuration of internal and external business activities to the company and is directly related to initiatives such as outsourcing, make or buy, and offshoring. Unfortunately, current methodologies and tools do not provide adequate support to provide a holistic view for making such decisions. Hence, the purpose of this thesis is to provide a generic and practical methodology that is an integrated and holistic approach that assists practitioners to deal with strategic positioning within global supply chains.

The research programme commenced by exploring the process and content of positioning decision from four actual manufacturing companies. The results from the exploratory case studies and existing contribution from literature have then been synthesised to form a pilot methodology. This is captured in the form of a paper-based workbook. This methodology has then been evaluated and refined through a primary application in two case studies with the researcher taking a role as a participant. Finally, wider applicability of the methodology has been assessed through four more case studies covering different types of manufacturing with the researcher not intervening but instead observing. The final methodology referred to in this thesis as the “SPGC methodology” has demonstrated that it provides practical support to industrial decision making.

The outcome of this research is the step-by-step SPGC methodology supporting practitioners to deal with strategic positioning within global supply chains. The overall approach has been demonstrated to be feasible, usable and useful, and has been used in a range of manufacturing companies. This research has filled an industrial need and literature gap and has made a significant contribution to the knowledge on how manufacturing companies can form a strategic positioning within global supply chains.

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GLOSSARY OF TERMS

APICS	The Association for Operations Management
BERR	Department for Business Enterprise & Regulatory Reform
DTI	Department of Trade and Industry
EEF	Engineering Employers' Federation
EU	European Union
CNC	Computer Numerical Control
FACTS	Financial, Attitude/Acceptability, Competence/Capability, Technological and Strategic Fit
GDP	Gross Domestic Product
IRR	Interest of Rate Return
MAS	The DTI Manufacturing Advisory Service
MNCs	Multinational Companies
NPV	Net Present Value
OEM	Original equipment manufacturer
ROI	Return of Investment
R&D	Research and Development
SPGC	Strategic Positioning within Global Supply Chains
SMEs	Small and Medium Sized Enterprises
SWOT	Strengths, Weaknesses, Opportunities, and Threats
UK	United Kingdom
USA	United States of America

CHAPTER 1: INTRODUCTION

This chapter gives an introduction to the research (Section 1.1) and presents an overview of the research aim and objectives (Section 1.2). The research programme is also summarised (Section 1.3), along with the research contribution (Section 1.4). Finally, the structure of the thesis is outlined (Section 1.5).

1.1 Introduction to the research

The purpose of this section is to give a brief synopsis as a means of introduction to the research. A more detailed explanation is given in the industrial context and literature chapters (Chapters 2 and 3), leading to the research aim, objectives and programme in Chapter 4.

The competitive landscape in which businesses operate is changing rapidly (Engineering Employers' Federation – EEF, 2004). With globalisation, companies can reach out to almost anywhere in the world to locate their manufacturing activities (Bhatnagar and Viswanathan, 2000). This provides both opportunities as well as threats. Whether a company is located at home or abroad, competitors will also be present, offering cheaper alternatives or more sophisticated products (Prasad and Sounderpandian, 2003). In the UK, manufacturing is a sector that contributes highly to the economy (Section 2.1) but in recent years has been increasingly exposed to the challenges of global competition (Section 2.2). To help manufacturers face these challenges, the UK government has launched a Manufacturing Strategy, the framework for actions by government, industry, unions, and other key stakeholders (Section 2.3). A key challenge is for manufacturers to position themselves strategically so as to exploit supply chain opportunities and build up high value and knowledge intensive products and processes (Section 2.4). This challenge includes deciding which activities they should focus on and carry out themselves, along with those activities that should be external. Also, where are the most appropriate locations for those internal and external activities within the global supply chain network. Currently, these decisions are made in an unstructured way and without much appreciation for the overall impact on a company's overall performance (The Manufacturing Foundation, 2006). There is therefore an urgent need for research to help UK manufacturers to adopt a holistic approach to define their competitive position in global supply chains. This is referred to as strategic positioning within global supply chains (Section 2.4).

Strategic positioning is a relatively new concept. It is concerned with the choice of business activities a company carries out internally and those that are carried out externally. It looks beyond traditional concepts, such as make or buy, outsourcing and offshoring, by considering the interactions between manufacturing operations and the wider supply chain networks associated with the organisation (Lim et al., 2006). Baines et al. (2005) consider there to be four sets of interaction, namely; the upstream boundary with suppliers, the downstream boundary with customers, the infrastructure boundary, and the product range boundary. At each of these interfaces a company has choices, the outcomes of which will modify the strategic position (Section 3.1.3). To illustrate the strategic positioning concept, consider for example the strategic positioning decisions of an aerospace manufacturer. Such a manufacturer generally has to make many decisions that impact upon its position in supply chain networks. This may include a) moving downstream of the supply chain to invest in airframe servicing and maintenance, b) moving upstream of its supply chain into component manufacture and material supply, c) expanding the product range to move into larger products, or d) divest in infrastructural activities such as payroll, security or refectories. All these decisions impact on the company's strategic position, and hence its competitive space and performance. Therefore, it is important for a company to carefully manage strategic positioning by making careful decisions about the adoption of alternative manufacturing and supply chain activities.

Currently, there is paucity of research that explicitly addresses strategic positioning. Much of the existing research work is on traditional concepts impacting the position of an enterprise such as vertical and horizontal integration (e.g. Peyrefitte and Golden, 2004; Chen and Riordan, 2007; Wu et al., 2007), make or buy (e.g. Probert, 1997; McIvor et al., 1997), sourcing (e.g. Zeng, 2003; Kotabe and Murray, 2004; Trent and Monczka, 2005), supplier selection (e.g. Tam and Tummala, 2001; Xia and Wu, 2007; Demirtas and Ustun, 2008), strategic alliances (e.g. Zineldin and Dodourova, 2005; Hyder and Abraha, 2006), core competency (e.g. Gilgeous and Parveen, 2001; Fleury and Fleury, 2003; Chen and Wu, 2006), outsourcing (e.g. Jennings, 1996; Quinn, 1999; Kumar et al., 2007; McIvor, 2008), and offshoring (e.g. Jahns et al., 2006; Clott, 2007). However, these concepts have sought to manage the strategic position of a manufacturer by dealing with only part of the supply chain and treating supply chain boundary on supplier, customer, infrastructure, and product range independently without taking a holistic view of all the four interactions simultaneously (Section 3.2). Those methodologies that do exist for strategic positioning only focus on products produced within the domestic setting of a single business unit. They do not deal with strategic positioning within the global context (Section 3.3.1).

In summary, although there is high expectation for research in strategic positioning moving from domestic to a global basis, there is no existing research

taking a holistic view to support strategic positioning within global supply chains. The challenge therefore remains to develop a methodology that is an integrated and holistic approach for strategic positioning within global supply chains. This has then led naturally to the research aim and objectives which are explained in the next section.

1.2 Overview of research aim and objectives

The previous section leads to the research aim and objectives in this section. The purpose of this section is to give an overview of research aim and objectives which have been fully developed in Chapter 4. As presented in Section 4.2, the aim of this thesis has been stated as:

“To develop a generic and practical methodology that is an integrated and holistic approach that assists practitioners to deal with strategic positioning within global supply chains.”

In order to achieve the research aim, the following research objectives have been defined (see Section 4.2), namely:

1. Explore how strategic positioning decision formation takes place in practice and the challenges raised
2. Evaluate and select potential methodologies related to strategic positioning within global supply chains
3. Form a pilot methodology to aid practitioners in the strategic positioning within global supply chains decision
4. Conduct primary evaluation of the pilot methodology to evaluate its practicability in actual use
5. Conduct secondary evaluation of the refined pilot methodology to evaluate its wider applicability
6. Capture the complete methodology in a workbook for wide dissemination to practitioners

1.3 Overview of research programme

The objectives in the previous section lead to a six-phase research programme (Section 4.3), which is summarised as follows.

Phase 1 of the research addresses objective 1 and is detailed in Chapter 5. Its purpose is to explore how leading manufacturing companies form their strategic positioning decisions and what challenges are taken into account in these decisions. The case study method is used to study in four manufacturing companies. Semi-structured interviews are conducted with senior management at each company. The outcomes of this phase are seven key findings and a common decision process (Section 4.3.2).

Phase 2 of the research addresses objective 2 and is presented in Chapter 6. Its purpose is to evaluate and select potential methodologies related to Strategic Positioning within Global supply Chains (SPGC). The method for conducting this phase consists of establishing requirements for the pilot methodology, evaluating the capability of existing methodologies against the requirements, and selecting the potential methodologies. The outcomes of this phase are the set of requirements, an analysis of existing methodologies, and the potential methodologies for methodology formation in Phase 3 (Section 4.3.3).

Phase 3 of the research addresses objective 3 and is described in Chapter 7. Its purpose is to form a pilot methodology based on the results in Phases 1 and 2. The method for conducting this phase is to determine the structure and the content of a new approach by mapping the decision process from the case study with the selected methodologies and analysing contents and elements needed in the pilot methodology. The combined structure and content forms the pilot methodology (Section 4.3.4).

Phase 4 of the research addresses objective 4 and is presented in Chapter 8. Its purpose is to evaluate the pilot methodology in order to determine whether the methodology provides workable and logical steps in actual use. A case study method with participant intervention is chosen to be conducted in two manufacturing companies. The outcome of this phase is the refined pilot methodology which is ready for wider testing in the next phase (Section 4.3.5).

Phase 5 of the research addresses objective 5 and is described in Chapter 9. Its purpose is to evaluate the refined pilot methodology for wider application in order to determine whether the methodology could be generic and robust and to find out whether it is useful, usable and feasible in different environments. A case study method without intervention is selected in this phase to test the independence of the methodology from the researcher in four manufacturing companies. Consequently, the outcome from the case studies makes the final refinement for the SPGC methodology (Section 4.3.6).

Phase 6 of the research addresses objective 6 and is presented in Chapter 10. Its purpose is to present and illustrate the final SPGC methodology. This phase shows how the final SPGC methodology has been formed and to present its principles, structure, and content. The deliverable of this phase is the documented workbook shown in Appendix E (Section 4.3.7).

1.4 Overview of research contribution

As a means of introduction to the research, the purpose of this section is to present an overview of the research contribution. Full details of this section are provided in the conclusion chapter (Chapter 11).

The main contribution to knowledge of this research is the creation of the SPGC methodology that provides a practical and procedural aid for strategic positioning within global supply chains decisions. The purpose of the methodology is to guide practitioners through an integrated and holistic approach with a series of well-defined stages necessary for forming a strategic positioning decision. The methodology brings together a series of tools and techniques, and provides a holistic view to analyse, evaluate and improve the strategic position of a company. This structured and procedural methodology is derived from the execution of six logical sequences of the research programme. It is captured in the form of a paper-based workbook for dissemination, primarily based on ease of use, access and flexibility to the target user environment. The feasibility, usability and usefulness of the methodology have been shown in the industrial applications. Such a methodology has been lacking in previous research and, hence, contributes to knowledge for practitioners and researchers in this thesis.

1.5 Thesis structure

This thesis is divided into 11 chapters. This section presents a summary of each chapter and is illustrated in Figure 1.1.

- Chapter 2 Reviews the industrial context showing the importance of manufacturing to the UK economy. It highlights many challenges facing manufacturing companies and, especially, the difficulties associated with strategic positioning within global supply chains.

- Chapter 3 Reviews the literature in order to set the terminology used in this thesis, and explores the current research issues associated with strategic positioning as well as a suitable approach for researching strategic positioning.

- Chapter 4 Summarises the research problem and develops the precise research aim, objectives and programme. Individual phases of the work are determined, and for each phase, a suitable research method is identified.
- Chapter 5 Presents the execution of the first phase of the research programme and reports on the exploratory case study in four manufacturing companies which describes how leading manufacturers make a strategic positioning decision. Key findings of insightful experiences are explained and a decision process based on case studies is proposed.
- Chapter 6 Presents the execution of the second phase of the research programme by evaluating existing methodologies related to strategic positioning within global supply chains in order to select potential methodologies. This phase then defines the requirements of a methodology for strategic positioning within global supply chains. Existing methodologies are then reviewed against this set of requirements to select the potential methodologies.
- Chapter 7 Presents the execution of the third phase of the research programme and forms the pilot methodology. This is based on the results of the exploratory case study, the set of requirements and the selected potential methodologies. It presents the development process, overview, structure and content of the methodology.
- Chapter 8 Presents the execution of the fourth phase of the research programme and performs the evaluation of pilot methodology by the researcher as the user, to two UK manufacturing companies. The application is to evaluate the practicality of the pilot methodology in actual use and identify potential improvements.
- Chapter 9 Presents the execution of the fifth phase of the research programme and executes the second evaluation of the refined pilot methodology by the researcher as the observer, across a wider application of four case studies. The results of the application provide confirmation of the feasibility, usability and usefulness of the methodology and demonstrate its wide applicability in different environments.
- Chapter 10 Presents the execution of the sixth and final phase of the research programme and describes the final fully documented SPGC methodology. It presents the formation process and describes the principle, structure and content of the final methodology, and other issues raised during the evaluations and case study.

Chapter 11 Concludes this thesis with a discussion of the principal research findings against the research aim, contributions to knowledge, and limitations of the research programme and findings. It finally discusses research directions that could follow from this research.

In summary, this chapter has provided an overview of the research background, the research aim, objectives and programme, a summary of the research contribution and the thesis structure.

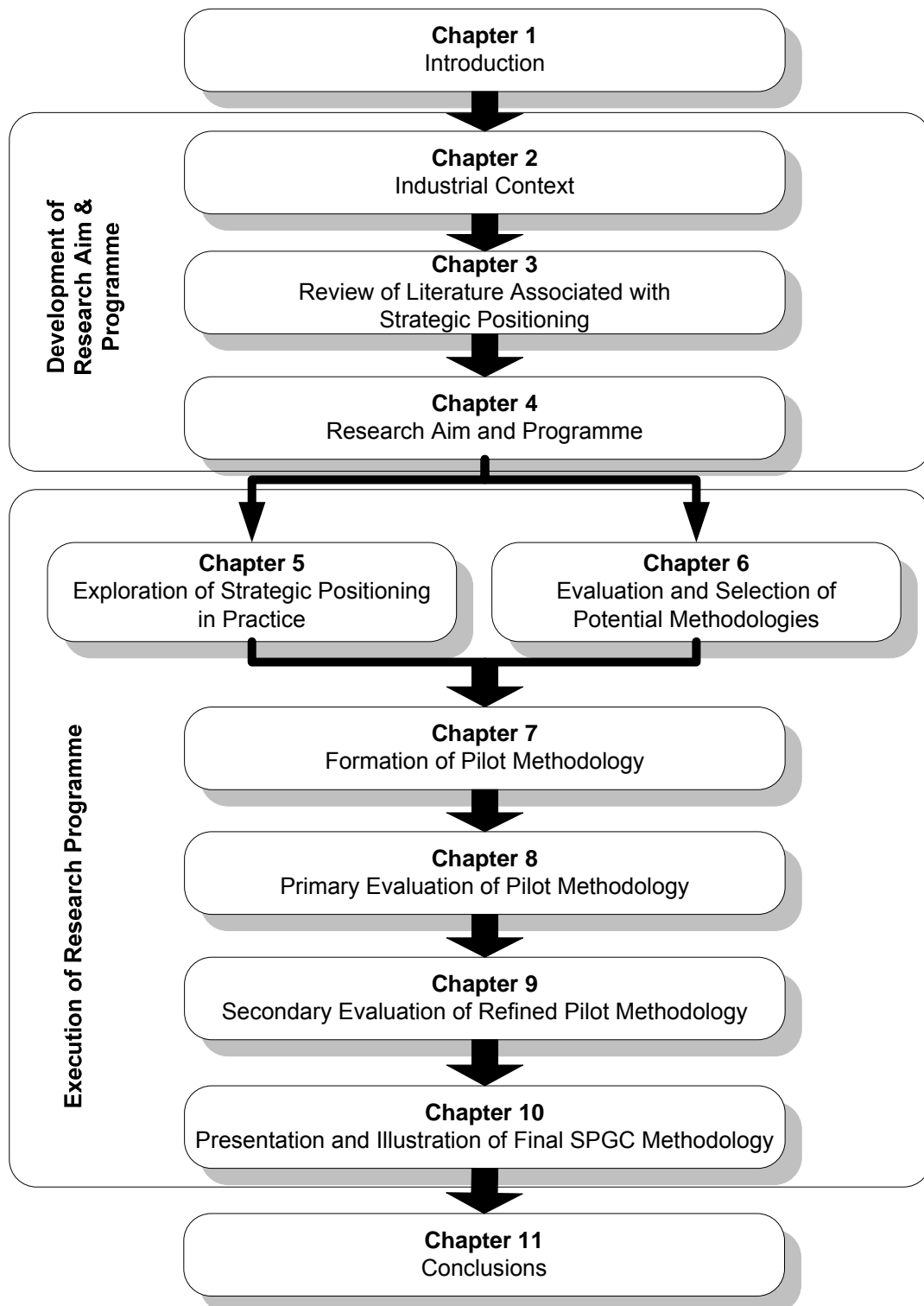


Figure 1.1 Thesis Structure

CHAPTER 2: INDUSTRIAL CONTEXT

This chapter deals in depth with the industrial context of the research, emphasising the importance of manufacturing within the UK economy (Section 2.1) and the challenges faced by UK's manufacturing (Section 2.2). Subsequently, the government initiatives for UK manufacturing are presented (Section 2.3). Finally, the challenge of strategic positioning within global supply chains for UK manufacturing is discussed (Section 2.4).

2.1 The contribution of manufacturing to UK economy

Manufacturing, in a basic sense, is the process of converting raw materials into products (Skinner, 1978; Wu, 1992; Swink and Way, 1995). It encompasses from understanding markets through product design, production, distribution and related services within an economic and social context (Hargreaves, 2006). Manufacturing also involves activities in which the manufactured product itself is used to make other products (Brown, 1996). Increasingly, manufacturing involves complex processes to make high value added products, which are considered to be a source of sustained competitive advantage. It is the backbone of any industrialised nation (Kalpakjian and Schmid, 2006). A nation's level of manufacturing activity is related directly to its economic health; generally, the higher the level of manufacturing activity in a country, the higher the standard of living of its people (Samson, 1991). Indeed, manufacturing is considered to be a significant activity reflecting a country's general well-being (Hill, 1995).

Manufacturing is vital to the UK's prosperity; past, present and future (BERR - Department for Business Enterprise & Regulatory Reform, 2004). In the past, the Industrial Revolution boosted the economy and created a higher standard of living in England (Kalpakjian and Schmid, 2006). Nowadays, manufacturing still plays an important role in the country, which can be seen from the evidence that the UK is the sixth largest manufacturing country in the world (Hutton, 2007; EEF 2007d). According to the EEF – Engineering Employer Federation (2007a, 2007d), in 2006, manufacturing added £150 bn to the economy and accounted for around a seventh of the total UK output.

Manufacturing drives the UK economy by generating 60% of the country's exports (EEF, 2007a, 2007d) and it is the UK's most innovative sector, representing three-quarters of the country's spending on business research and development (EEF, 2007a; 2007d). Manufacturing is also a major source of rapid productivity growth of the UK economy as illustrated in Figure 2.2.

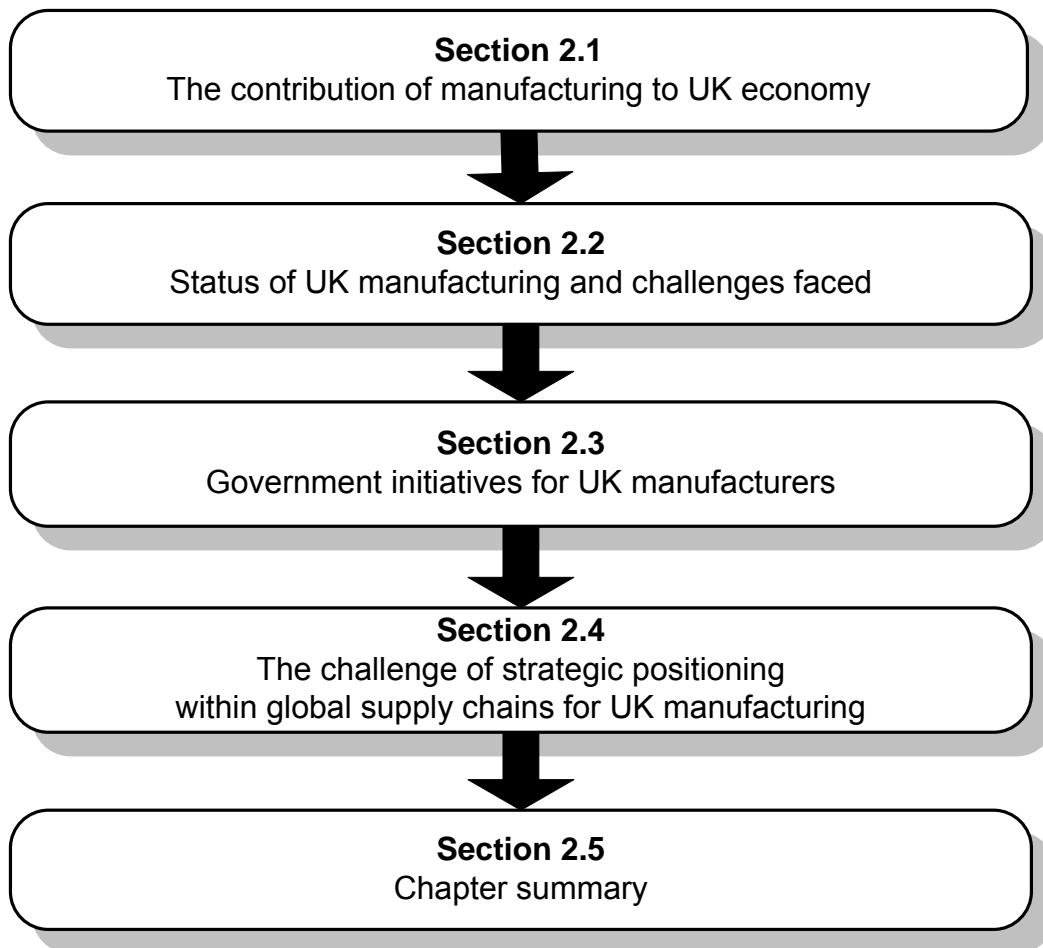


Figure 2.1 Industrial context review structure

Productivity growth in manufacturing has outpaced the economy as a whole for almost all of the past five years (EEF, 2007a). This elevates the productivity growth for the whole economy.

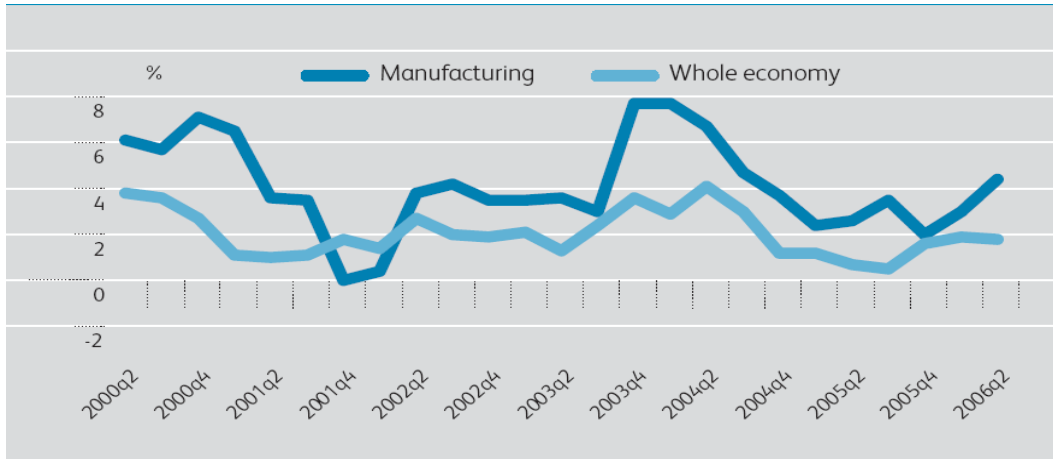


Figure 2.2 Productivity growth in manufacturing and whole economy (Source: EEF, 2007a)

Moreover in terms of employment, over three million people are employed in manufacturing, and it indirectly sustains many more jobs in the service industries (Amicus, 2006; EEF 2007d). The sector supports well-paid jobs in a number of the UK’s less prosperous regions (The Government’s Manufacturing Strategy – BERR, 2002). It makes a substantial contribution to the UK economy through the high number of Gross Value Added per filled job, a measure of productivity in an area and contribution of the area to the UK economy per job (National Statistics Online, 2007), see Figure 2.3.

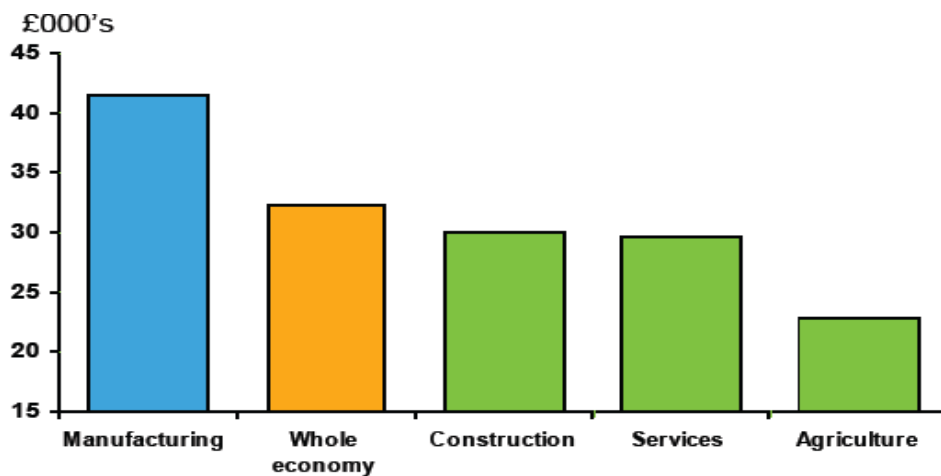


Figure 2.3 Gross value added per filled job in 2004 (Source: Brayshaw, 2005)

From the evidence shown, it can be summarised that manufacturing is an integral part of the UK economy and vital to the ability of the nation to compete in the future (Byers, 2001). A rise or fall in manufacturing trend has significant ripple effects through the whole economy as there are strong inter-relationships between them (Tutor2u, 2007). Therefore, it is important to understand the current status of UK manufacturing and the challenges it faces.

2.2 Status of UK manufacturing and challenges faced

Overall the manufacturing sector in the UK has been declining and the influence has been slowly dwindling. The sector's share of GDP has fallen over the last 25 years, from 27% in 1979 to 14% in 2004 (Benchmark Research, 2007; Oxford Economics, 2007). Manufacturing employment has also halved over the same period (Benchmark Research, 2007; Oxford Economics, 2007). However, while manufacturing's share of GDP has fallen, its absolute contribution to GDP has not. Gross value added in manufacturing in 2006 (the value that the manufacturing process adds to production inputs) was 30% higher than in 1980 (Oxford Economics, 2007).

In addition, the fall in the share of manufacturing in GDP is overstated by the trend to increased outsourcing of service activities, such as accounting and delivery services, which were previously carried out by divisions within manufacturing companies. As firms have sought to focus on 'core' business, they have outsourced these activities to other companies. These have subsequently been recorded as part of the service sector in the National Accounts. The Office for National Statistics suggests that the statistical treatment of such outsourcing may exaggerate the apparent fall in manufacturing by as much as 20% (Office for National Statistics, 2007). This status of UK manufacturing can be illustrated by the divergence of output and productivity growth in manufacturing and service sectors as shown in Figures 2.4, 2.5 and Table 2.1.

Figure 2.4 overleaf shows that manufacturing output peaked in 1973, and has since then grown only occasionally, with a number of periods of falling growth (1979-1982, 1990-1992 and 1999-2001), while the service output has increased continually. On the contrary, in Figure 2.5, the service sector generally shows more subdued productivity growth while there is very high productivity growth in the manufacturing sector. The following Table 2.1 shows sharp falls in manufacturing employment over the past three decades. Relatively fast output growth, but not a correspondingly fast pace of productivity, has accompanied the move of manufacturing to the service sector (Office for National Statistics, 2007).

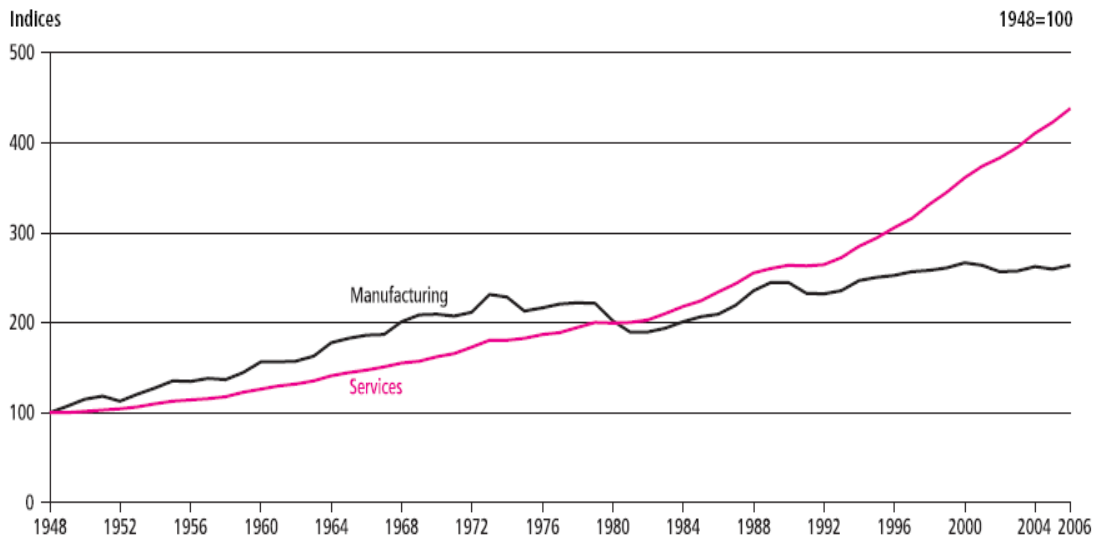


Figure 2.4 Manufacturing and service output
(Source: Office for National Statistics, 2007)

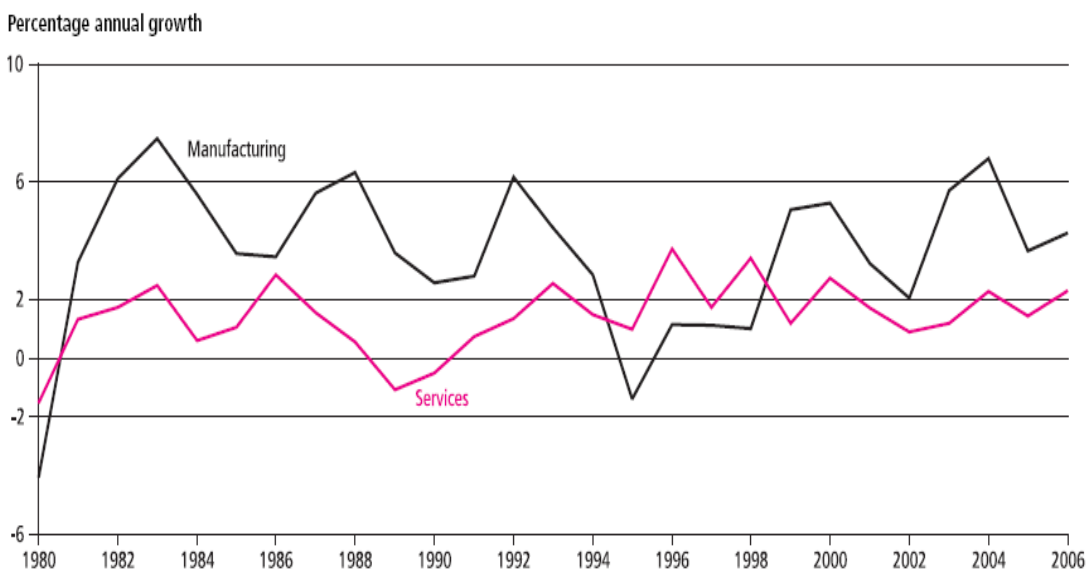


Figure 2.5 Productivity growth by sector
(Source: Office for National Statistics, 2007)

Table 2.1 Decomposition of productivity growth by average percentage per annum (Source: Office for National Statistics, 2007)

	Productivity			Output			Employment		
	Total	Manu- facturing	Services	Total	Manu- facturing	Services	Total	Manu- facturing	Services
1980s	1.9	4.3	1	2.6	1.9	2.8	0.7	-3.1	1.4
1990s	2.2	2.9	1.9	2.4	0.9	3.2	0.1	-1.9	1.3
2000s	1.6	3.8	1.5	2.4	-0.5	3.2	0.9	-4.6	1.8

Nonetheless, the UK manufacturing sector as a whole has grown more slowly than that of other advanced economies over the past 25 years, as illustrated in Figure 2.6. In the US, for example, manufacturing output has more than doubled. In Japan and Western Europe the sector has increased by over 50% and 40% respectively.

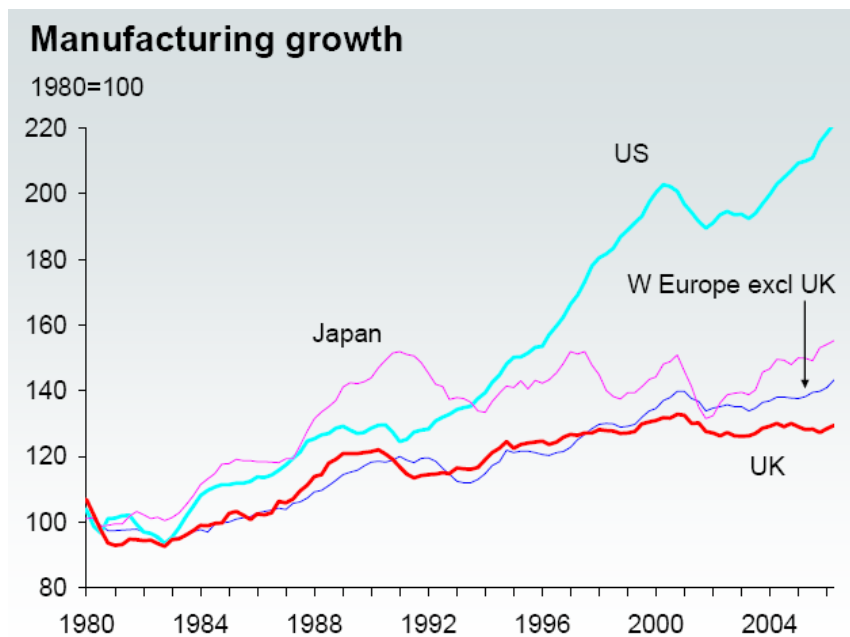


Figure 2.6 Manufacturing growth (Source: Oxford Economics, 2007)

However, not all parts of manufacturing have performed poorly in recent years. Certain sectors, such as textiles have contracted sharply, while other more profitable sectors have been extremely successful. The output of the pharmaceutical sector has more than quadrupled and the aerospace sector has doubled in size over the past quarter century (Oxford Economics, 2007), as exhibited in Figure 2.7.

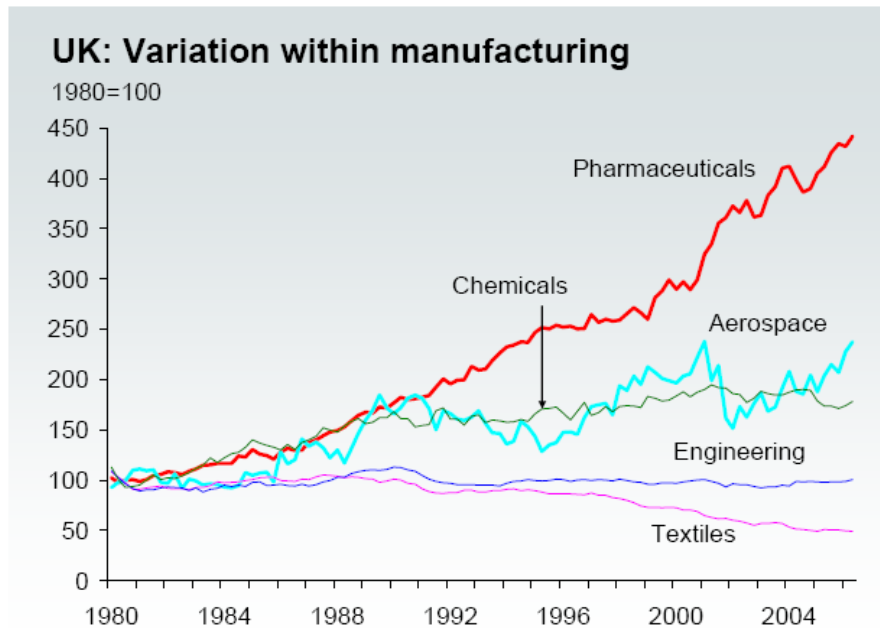


Figure 2.7 Manufacturing growth by sector, index at 1980 = 100
(Source: Oxford Economics, 2007)

Given the background, the relative decline in manufacturing reflects the rapid growth of domestic services and greater specialisation in international trade. The difficulties faced by UK manufacturing are often blamed on competition from low cost emerging economies, such as China and India (Engineering and Machinery Alliance, 2003; Amicus 2006, Engineering Employers' Federation - EEF 2004, EEF 2007c, Rudiger, 2007; Wachman, 2007; Brown, 2007). This can raise concerns over the threat of globalisation as well as opportunities for the UK to specialise in higher-valued manufacturing activities for export. Therefore in the following part of this section, the difficulties faced by companies and the potential to be able to turn these difficulties to their advantages are examined, as shown in Figure 2.8, and summarised as follows.

Customers demanding lower prices: EEF's survey (2004) reveals that the most critical pressure facing UK companies comes from customers demanding lower prices, especially for the motor vehicles and aerospace industries (Flood, 2008). These companies are experiencing over-capacity combined with high fixed costs and shrinking profit margins (Financial Times, 2007). Original equipment manufacturers (OEMs) have tried to alleviate some of these problems by making greater demands on their suppliers (EEF, 2004). This type of competitive pressure affects companies throughout the whole supply chain as OEMs demand lower prices from their first-tier suppliers, who subsequently need to make cost savings and pass these demands on to their suppliers. Faced with this pressure companies can only cut down on profit margins if they are unable to substantially reduce their unit costs.

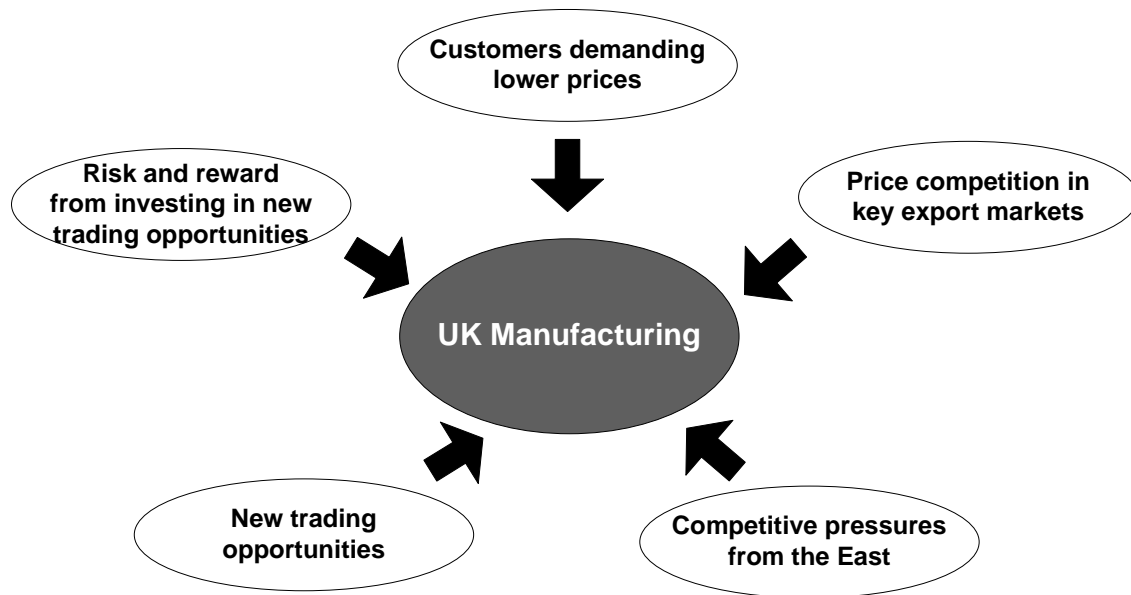


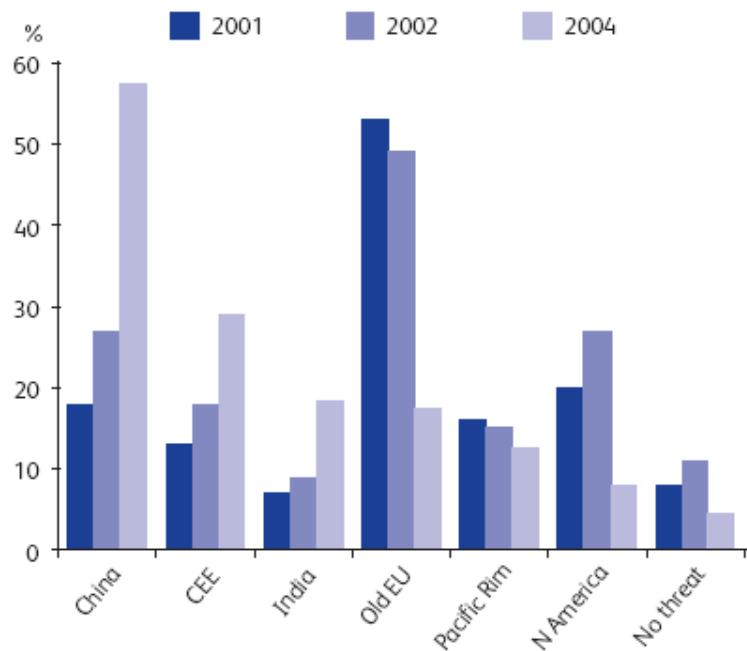
Figure 2.8 Current challenges facing UK manufactures

Price competition in key export markets: EEF's report on manufacturing export (2007b) indicates that one of the most important issues facing UK manufacturing is price competition in key export markets. The pressure appears to be more intense on firms in the machinery and electrical and optical equipment sectors (EEF, 2007b). On average over the past five years machinery and electrical and optical equipment have accounted for some 37% of UK manufactured exports (EEF, 2007b). Companies in these sectors export a higher proportion of their output than other manufacturing companies – an average of around 45% of turnover (Benchmark Research, 2007). Therefore it is not surprising that these companies feel more exposed to competition in export markets. This is likely to have been especially acute in recent years during the global manufacturing downturn, when investment plans worldwide were being cut back and demand for capital goods was weak (Brown, 2007; EEF, 2007b).

Competitive pressures coming increasingly from the East: UK manufacturers are also facing competitive challenges from rapidly growing emerging economies, such as China, India, South-east Asia and the new nations of the European Union (Lawton, 2007; Mehta, 2007; Smith, 2008; Works Management, 2008). As these countries can offer lower cost of manufacturing, they have brought a much greater degree of competition in the export or domestic markets and have become a big threat (Wachman, 2007). Industries such as textiles, that are high volume and standardised, are suffering from the emergence of these developing countries (Oxford Economic, 2007).

Competitor companies are also likely to be taking advantage of lower costs in the East through offshoring or purchasing from suppliers with a presence in the East, giving them some leverage in asking for lower prices (Griffiths, 2006).

It is believed that competitive challenges from the East will increase. UK-based companies acknowledge that in the future China will be able to combine the resources from a vast and skilled workforce, which are likely to remain low-cost for some time, with the new technologies and working practices, thus driving up productivity and efficiency (EEF, 2004; Roberts and Tschang, 2008). They believe that India and China will be more of a competitive threat in the future than they are currently (Hargreaves, 2006; Mayhew-Smith, 2007; Jefferson et al., 2008). Competitive challenges from North America and the EU reduce the impact on UK manufacturing, despite the fact that they still account for a sizable proportion of the world's manufacturing and trade, see Figure 2.9.



**Figure 2.9 % of respondents rating as biggest competitive threats
(Source: EEF, 2004)**

New trading opportunities: Operating in an increasingly internationalised world brings not just threats but new trading opportunities. While Europe and North America account for around three-quarters of the UK's merchandise exports, the emergence of fast-growing transition economies provide new opportunities for companies to look to new trade partners (BERR, 2004; Brown, 2007; Ellinor, 2008; Brady, 2008; Amico, 2008). In 2007, only around 2.4% of the UK's exports were destined for either China or India. Around 5.5% of

exports went to Pacific Rim countries and 5% of exports went to Eastern Europe (EEF, 2007c). There are still big opportunities for UK manufacturers to exploit these markets.

Risk and reward: Opportunities clearly exist for manufacturers, but emerging markets by their nature, are not without risk. There are a number of economic, political and institutional factors in transition regions which remain to be addressed before companies can trade or invest with greater confidence and certainty (EEF, 2004; Manufacturing Engineering, 2005; Overby, 2006). As a result, decisions on global opportunities are more complex and challenging to deal with.

These are the current challenges facing UK manufacturers which include threats and opportunities. The next section looks at some of the strategic initiatives implemented by the UK Government to help UK manufacturing to better meet these challenges and to develop the UK manufacturing effectively.

2.3 Government initiatives for UK manufacturers

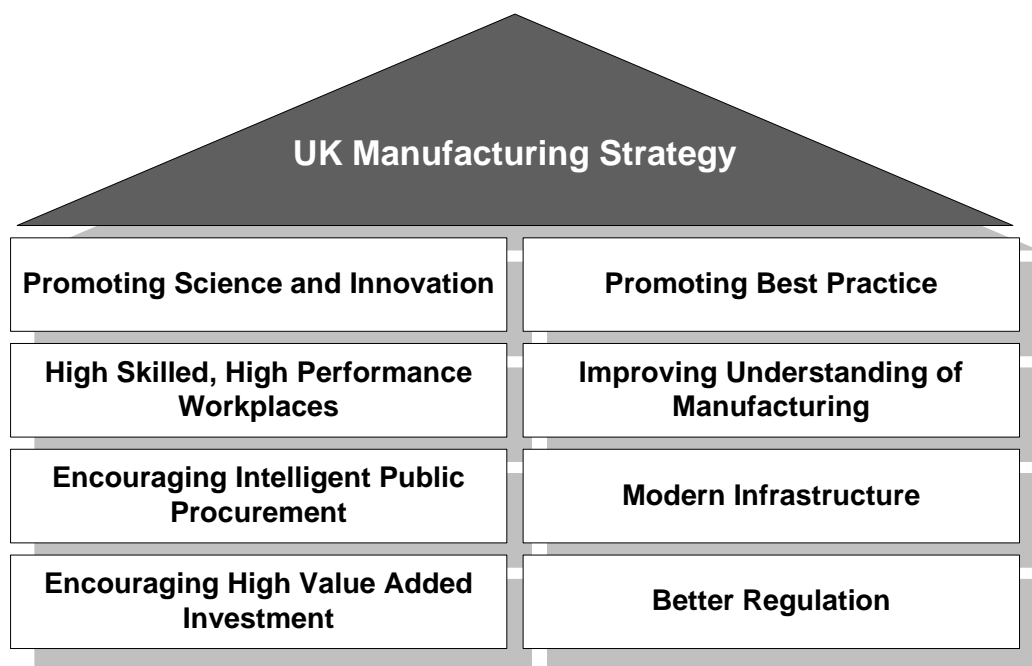
The UK Government has realised the importance of manufacturing to the prosperity of the nation. The Government's Manufacturing Strategy was published in May 2002, setting out a framework of action in partnership between Government, industry, unions and key stakeholders, to help manufacturing companies fulfil their potential.

The Government's Manufacturing Strategy stresses that manufacturing is and will remain critical to the UK economy. It highlights challenges from global and low-cost competition, and emphasises that firms must move up the value-added chain by embracing knowledge-intensive and high-skilled manufacturing (The Government's Manufacturing Strategy - BERR, 2002; Review of the Government's Manufacturing Strategy – BERR, 2004). The strategy identifies “Seven pillars for manufacturing success” necessary to help build a successful, knowledge-intensive, highly-skilled manufacturing sector:

- Macroeconomic stability – allowing businesses to plan for the long term
- Investment – working with modern, efficient processes and equipment
- Science and innovation – helping manufacturers exploit the UK's strong science base to create innovative, high-value products
- Best practice – raising productivity and competitiveness by continuous improvement
- Skills and education – developing a skilled and innovative manufacturing workforce

- Modern infrastructure – providing effective transport and communications network
- The right market framework – providing the business environment manufacturing needs to compete globally.

The Manufacturing Strategy has since established itself as a widely accepted framework for action (BERR, 2004; Hutton, 2007). Later in 2004, the Government's Manufacturing Strategy was reviewed and reconfigured the seven pillars of activity into an action plan of eight priority areas, as shown in Figure 2.10.



**Figure 2.10 The Government's Manufacturing Strategy – 2004 review
8 priorities for the future (BERR, 2004)**

The action plan encompasses 42 actions in the eight priority areas. The aim of the action plan is for highly productive UK manufacturing competing successfully in the global market through high value, knowledge intensive products and processes, creating new markets, and delivering high levels of exports to increase UK prosperity. The statement from Porter and Ketels (2003) is referred to the creation of the aim of action plan that the overall transition of UK manufacturing sector needs to make to achieve this (BERR, 2004): "We find that the competitive agenda facing UK leaders in Government and business reflects the challenges of moving from a location competing on relatively low costs of doing business to a location competing on unique value and innovation." This highlights the direction of UK manufacturing to offer higher value-added services/products to customers. On November 22 2007, John

Hutton, Secretary of State for BERR, announced a review of the Government's Manufacturing Strategy in 2008 to ensure that the Strategy continues to meet the needs of the sector (BERR, 2008). The review in 2008 will ensure that the Strategy continues to address the changing needs of the sector and set out a clear set of priorities that will maximise the contribution of manufacturing to the UK economy.

In summary, the UK government is committed to help strengthen the future of UK manufacturing by supporting companies to embrace new opportunities in the increasingly competitive global markets as well as to compete on unique value and innovation (Hutton, 2007). The Government has launched and implemented UK manufacturing strategy to help UK manufacturers to move up the value chain so that they can add value to their customers and enhance their competitiveness. This manufacturing strategy also builds up a concrete infrastructure for UK manufacturers. However, such a strategy needs to be treated cautiously and the actual actions taken by a company need to be tailored to the organisation's context. Therefore, the next section will examine the key challenges faced by UK manufacturers to strategically position themselves in the global supply chains.

2.4 The challenge of strategic positioning within global supply chains for UK manufacturing

From the previous sections, it is clear that the UK will not be able to compete in all areas of industry. In global terms the UK's wage rates are relatively high. This means that UK manufacturing is unlikely to be able to compete effectively in world markets with mass-produced labour-intensive products such as clothing, and consumer goods where labour costs are a significant element of the price. UK manufacturing would rather compete on unique value and innovation, as the government's strategy (BERR, 2002 and 2004) suggest that in the face of increasing low-cost competition, UK manufacturers will need to move up the value-added chain and embrace knowledge-intensive, high-skilled manufacturing to compete more on quality and less on price. The UK government claims that the UK has strong assets to help it to do this, such as world-class science resources, skilled and flexible employees, strong associated services in finance and marketing, and international transport links.

In addition, the government sees that in globalisation, new opportunities will be created for UK manufacturers to specialise in high quality products to satisfy the more sophisticated demand of rising income customers. However, what can such a strategy mean for a manufacturer? How can they restructure their position and move up the value chain? What activities should they strengthen, grow in-house, in-source or leave outside? Where should they locate those internal and external activities within global supply chains? This indicates that

the key challenges for UK manufacturers therefore depend crucially on defining their own position among companies in the manufacturing global supply chain, which needs to be tailored to the organisation's context. Increasingly, these challenges cannot be effectively met by isolated change to specific organisational units, but instead depend on the relationships and interdependencies among different elements in the supply chain, and those that are unable to do so increasingly face the danger of losing their existing markets. The competitive advantage of a company is very much bound up with the dynamics of the supply chains in which it participates, and each company has its own 'position', a selection of internal and external activities that the organisation owns and controls in the supply chain.

Considering examples from well-known companies such as Zara and IKEA, these companies have been successful in strategic positioning within their global supply chains. Zara, a fast-fashion retailer, positions itself strategically which provides higher value to customers and increases its competitive advantage. According to Strategic Direction (2005), Zara, whose 650 clothing stores serve around 50 different countries, chooses to have strict control on its supply chain. As a result, Zara can boast an unprecedented capacity for quick response within an industry that rarely stands still. Zara has flourished on the principle of being responsible for its product all the way from initial conception to the customer. For instance, whereas its competitors choose to minimise cost and risk by owning fewer assets, Zara only outsources the production of clothing which is not subject to seasonal variation (Sull and Turconi, 2008). Zara positions strategically by carrying out all operations within the headquarters which provides flexibility and allows speedier decision making (Richard, 2008).

Another example, IKEA, the global furniture retailer based in Sweden, has a clear strategic positioning and succeeds in its business by refusing to move up the supply chain and assemble furniture. According to Human Resource Management International Digest (2005), half a century ago, IKEA identified an opening to introduce quality products at an affordable price but seizing the opportunity to disrupt the market status obviously meant keeping costs to an absolute minimum. The company managed this by using a business model that combines simple design with a heavy dependence on customer involvement (Enquist et al, 2007). Uniquely, this involves taking final assembly of the product to the customer, in addition to the more routine production and delivery system (Groever, 2008). These examples show different strategic positioning decisions in different environments which impact on the company's strategic position, and hence on company's performance as well as value to customers.

Key decisions in defining the position of a company, however, are complex tasks. Currently, UK manufacturers are facing the problem of finding their most advantageous position in the global supply chain network. Such decisions by UK manufacturers have been carried out in a rather fragmented manner without

appreciating the overall impact on a company and its supply chains, thus leading to sub-optimum overall performance and causing project failures (The Manufacturing Foundation, 2006). UK manufacturers tend to follow the trend of offshoring (either through outsourcing or investment) to cut cost down (EEF, 2004; EEF, 2007c). The Manufacturing Foundations (2006) reported that 25% of offshoring projects fail because of the lack of appropriate information and inferior decision consideration, leading to costly decisions. Not all goods can be produced more cheaply in low labour-cost locations. Many other important factors should be included in the decisions (EEF, 2004). If companies can better understand their strategic positioning, they can make more informed decisions about the adoption of alternative manufacturing and supply chain activities. Similarly, they are more likely to reject those that are currently in trend, like offshoring, that might erode business success in some cases.

Therefore UK manufacturing needs to exploit these changing market forces as opportunities so as to compete more effectively on high value-added products/services and innovation, to secure the UK's future prosperity in the increasingly competitive global market (BERR, 2002; BERR, 2004; Hutton, 2007). To achieve this, they need to position themselves strategically within global supply chains to build up distinctive value, exploit high-skilled manufacturing and technologies for growth and establish knowledge intensive products and processes (EEF, 2007d). UK manufacturers need help to identify what to do strategically to position themselves in the global supply chains in order to maximise business and be sustainable in global competition. It is the topic that this thesis addresses.

2.5 Chapter summary

This chapter has shown the importance of UK manufacturing to the whole UK economy and highlighted the status of UK manufacturing and challenges being faced including threats and opportunities. This chapter has also reviewed the Government Manufacturing Strategy for UK manufacturing. Finally, the challenge of strategic positioning within global supply chains for UK manufacturing has been discussed as the need of know how to define their competitive position in global supply chains in an holistic approach, strategic positioning within global supply chains, so as to move up the value chain, and achieve competitiveness. Thus, the study for strategic positioning within global supply chains is a valuable research topic. In the next chapter, a literature review on strategic positioning will be conducted to develop the aim, objectives and programme for this research.

CHAPTER 3: REVIEW OF LITERATURE ASSOCIATED WITH STRATEGIC POSITIONING

The purpose of this research is to aid UK manufacturing companies in strategic positioning within global supply chains. The intention of this chapter is to define the terminology used in the thesis, to explore previous work in this area, and to determine the current research issues. These objectives are achieved by addressing the following questions.

1. What is meant by the term 'global supply chain'?
2. What is strategic positioning?
3. What are the formal methods that can be used to modify the strategic position of an organisation?
4. What are the current research issues associated with strategic positioning?

These questions will be answered through a review of the literature that has made a valuable contribution to knowledge in the field of strategic positioning. The literature review is structured into three main sections, as illustrated in Figure 3.1. Section 3.1 presents the concept of strategic positioning within global supply chains. Section 3.2 provides an overview of the formal decision methods for strategic positioning of an organisation. Finally, Section 3.3 explores the current research issues associated with strategic positioning.

3.1 The concept of strategic positioning within global supply chains

The purpose of this section is to answer the questions: 'What is a global supply chain?' and 'What is strategic positioning?'. It is necessary to define the terminologies in the preliminary stage of the research in order to avoid misinterpretation from readers and inconsistencies of the usage, which can hinder research contribution. This section therefore provides the terminologies used in this research by examining the definition of a global supply chain (Section 3.1.1), the meaning of strategic (Section 3.1.2), and the definition of strategic positioning (Section 3.1.3).

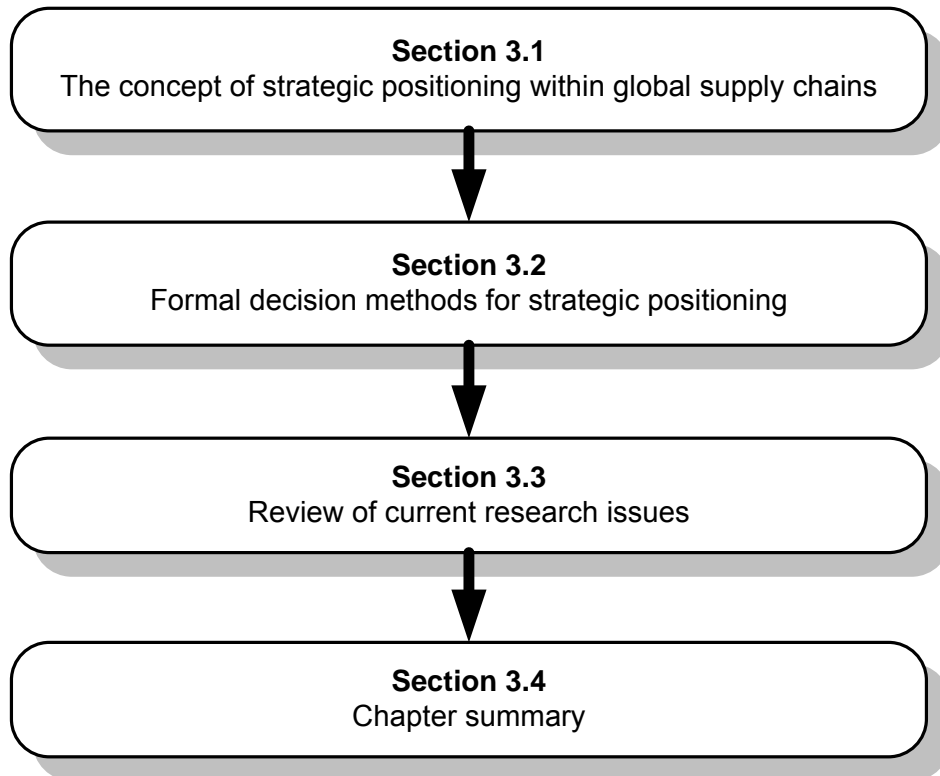


Figure 3.1 Literature review structure

3.1.1 Definition of global supply chain

Supply chains have come to be understood by practitioners and academics as relatively stable groups of firms engaged in the sequence of production and distribution activities required to serve the end-customer (Stevenson and Spring, 2007). Not only the manufacturer and suppliers, but also transporters, warehouses, retailers, and customers are involved in the supply chain. Within each organisation, such as a manufacturer, the supply chain includes all the functions involved in filling a customer request (Chopra and Meindl, 2001). As the term has gained popularity over recent years, several researchers and organisations have produced definitions for it. Table 3.1 highlights a few definitions that have been used and cited prevalently in academic papers (e.g. Bowman, 1997; Larson and Rogers, 1998; Lummus and Volurka, 1999; Fredendall and Hill, 2001; Wisner, 2003; Lyson and Farrington, 2006; Forslund and Jonsson, 2007; Stevenson and Spring, 2007, Bartlett et al., 2007).

The definitions in Table 3.1 emphasise three characteristics of a supply chain. First, a supply chain has become thought of as a network (Figure 3.2). From the illustration in Figure 3.2, the focal firm receives material from several suppliers and then supplies several distributors as a network. Chopra and Meindl (2007) argue similarly that it may be more accurate to use the term supply chain network or supply chain web to describe the structure of most supply chains. The network properties involve the sequence of connections among organisational units for product flow and information, and reflect the interdependence of activities, organisations and processes (Scharj and Larsen, 2001). One example, the decision to source in Asia to supply Western markets unleashes a chain of potential points of disturbance that modify decisions in many areas. The result is that actions in one part of the network affect other parts, in totally different areas; cause and effect become difficult to separate. Therefore the objectives of the supply chain are holistic, in that they pertain to the network as a whole rather than to individual members. The concept of network also implies some coordination of processes and relationships across organisational boundaries (Giannakis et al., 2006).

The second characteristic of the supply chain is the linkage of a variety of memberships from upstream to downstream, or in another word, from source to end customers. Upstream relates to the relationships between an organisation and its suppliers and suppliers' suppliers. Downstream relates to the relationship between an organisation and its customer (Lysons and Farrington, 2006). Member organisations in a supply chain achieve their own individual objective through the performance of the supply chain as a whole. The ultimate customers are the main focus of the chain since "the primary purpose of the existence of any supply chain is to satisfy customer needs, in the process generating profit for itself" (Chopra and Meindl, 2007).

Table 3.1 Definitions of supply chain

Author(s)	Definition
APICS (The association for operations management) Dictionary (12 th edition, 2008)	(1) the process from the initial raw materials to ultimate consumption of the finished product linking across supplier-user companies and (2) the functions within and outside a company that enable the value chain to make products and provide services to the customer
Davis (1993)	A supply chain is a network of material processing cells with the following characteristics: supply, transformation, and demand.
Lummus and Alber (1997)	The network of entities through which material flows. Those entities may include suppliers, carriers, manufacturing sites, distribution centres, retailers, and customers
Lee and NG (1997)	A supply chain is a network of entities that starts with the suppliers' supplier and end with the customers' customers for the production and delivery of goods and services.
Christopher (1998)	A network of organisations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate customer.
Handfield and Nichols (1999)	The supply chain encompasses all activities associated with the flow and transformation of goods from the raw materials stage (extraction), through to the end-user, as well as associated information flows. Material and information flow both up and down the supply chain.
Supply Chain Council (2001)	Supply chain encompasses every effort involved in producing and delivering a final product, from the supplier's supplier to the customer's customer.
Chopra and Meindl (2007)	A supply chain consists of all parties involved, directly or indirectly, in fulfilling a customer request. The supply chain includes not only the manufacturer and suppliers, but also transporters, warehouses, retailers, and even customers themselves. Within each organisation, such as a manufacturer, the supply chain includes all functions involved in receiving and filling customer request.

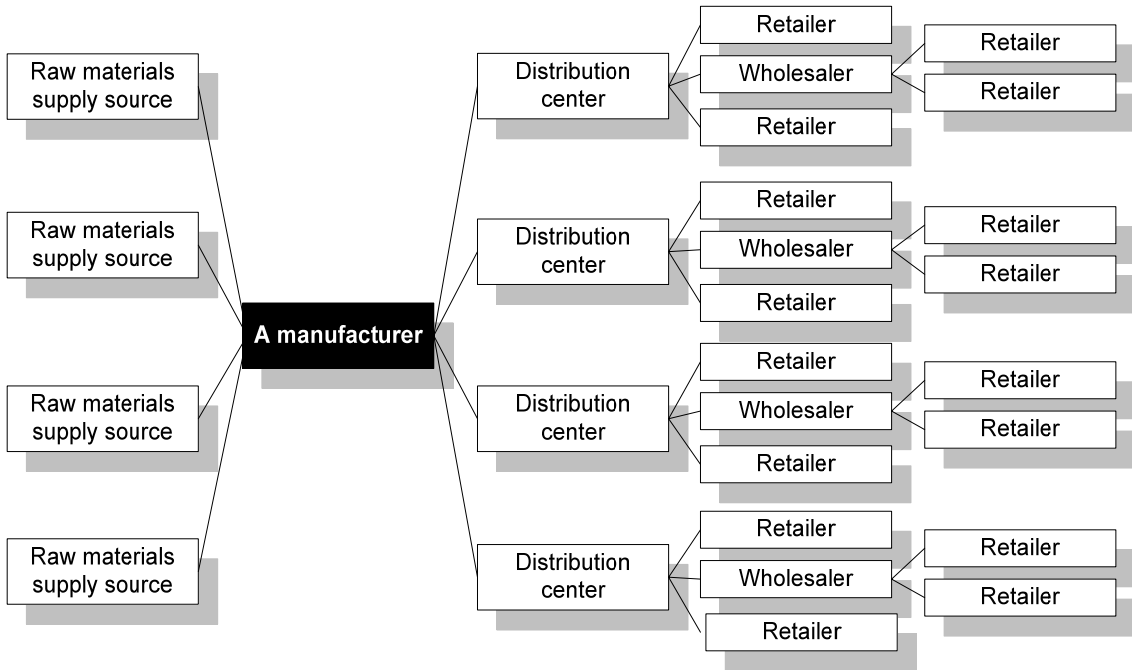


Figure 3.2 Supply chain as a network

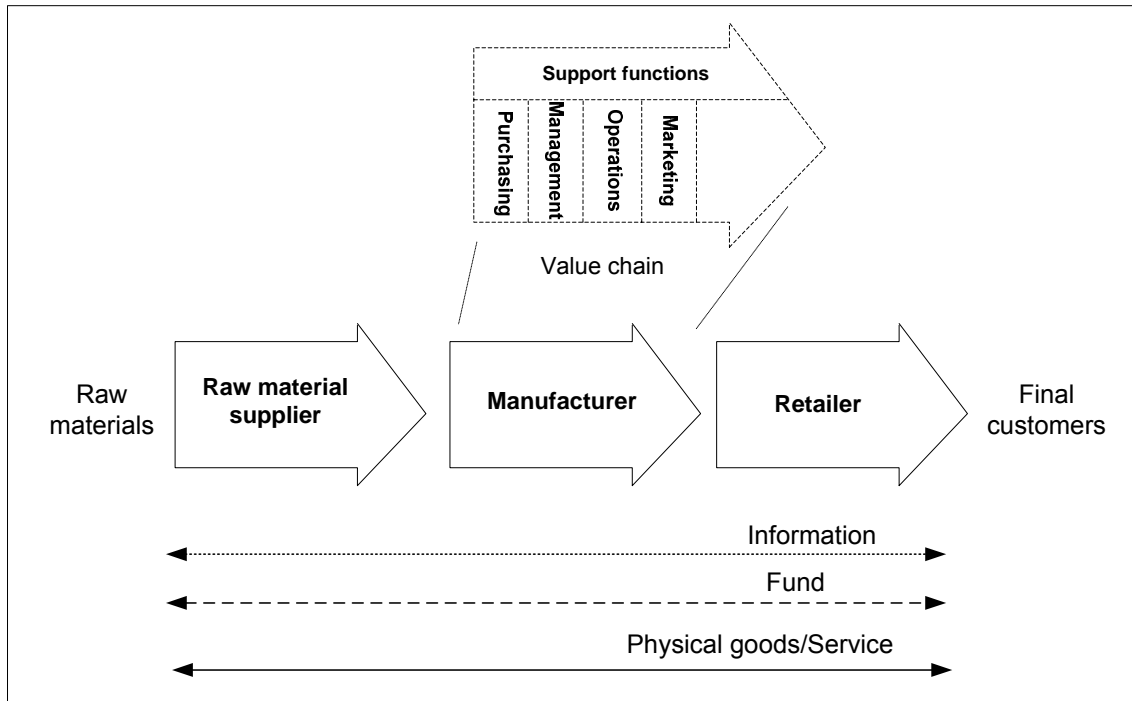


Figure 3.3 The linkage of upstream and downstream to deliver value to final customers in a supply chain (Source: Fredendall and Hill, 2001)

The third characteristic of the supply chain is the process for delivering value to end customers. Value is defined by Porter (1985) as ‘what buyers are willing to

pay'. The supply chain processes and activities create the flows of products, services, funds and information between supply chain parties, which is considered in two ways; forwards and backwards, to deliver value to end customers (Figure 3.3). Activities and processes together can be considered as the supply chain system. The supply chain is also a dynamic system (Schary and Larsen, 2001; Chopra and Meindl, 2007). Activities and processes can only be justified within the supply chain as they add value to the overall flow process. They can be reorganised by sequence and shifted between organisations to improve system performance (Bowersox et al., 2002).

The supply chain is sometimes referred as value chain. Walters and Lancaster (2000) define value chain as a business system which creates end user satisfaction (i.e. value) and realises the objectives of other member stakeholders. In Figure 3.3, the supply chain is shown as a series of arrows moving from the raw materials stage to the final customer. Each of these arrows represents an individual firm which has its own value chain. This value chain is enlarged for one firm in the supply chain so that the internal functions of the firm that add value can be shown. From the illustration, Fredendall and Hill (2001) state that a supply chain is a series of value chains of individual firms. However, Christopher (2005) argues that the effect of outsourcing extends the value chain beyond the boundaries of the individual firm and therefore the supply chain becomes the value chain. Value is created not just by the focal firm in a network, but by all the entities that connect to each other. Similarly, Christopher's argument, Chopra and Meindl (2001) and Lysons and Farrington (2006) state that supply chains and value chains are synonymous.

These three characteristics present characteristics of a supply chain in a general sense. Nevertheless, supply chains can be considered in a local, regional and global scope (Lysons and Farrington, 2006). The three characteristics of a supply chain discussed earlier can be adopted in any scope of supply chain. From these characteristics, it seems Christopher's (1998) definition covers all the characteristics, and therefore, is adopted in this research. A domestic supply chain relates to the memberships of supply chains in a domestic or local area while the term 'global supply chain' has wider scope in terms of global geographical area of memberships in supply chains. For example, in a global supply chain, suppliers and customers of a manufacturing company are located in different countries or regions from the manufacturing company. A global supply chain is therefore defined here as:

“A network of organisations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate customer.”

3.1.2 Definition of strategic

This section develops a definition of the term 'strategic'. It deals with the questions: 'What is meant by strategic?' 'What types of issues are strategic?', and 'What distinguishes these from other types of issues in organisations?'

The term 'strategic' is associated with the word 'strategy'. The term strategy derives from the Greek word *strategia*. It means 'generalship' and is primarily a military concept that, since the end of World War II, has been used in a business context (Lysons and Farrington, 2006). Later, strategy has been extensively examined and re-defined and is today firmly situated as the pivotal construct of the business planning process (Burke and Jarratt, 2004). Table 3.2 presents the definitions of strategy in business literature. These definitions have been referred to prevalently in many academic papers such as Ansoff (1991), Kenyon and Mathur (1993), Feurer and Chaharbaghi (1997), Grandy and Mills (2004), Lyson and Farrington (2006), Depperu and Gnan (2006), Johnson (2006), and Hurreeram (2007).

The significance of these definitions lies in the similarities and weaknesses which reflect the characteristics of strategy and strategic decisions. From the similarities of the definitions, the characteristics of strategy and strategic decisions can be concluded as follows (Johnson and Scholes, 2002):

- Strategy is likely to be concerned with the long term direction of an organisation.
- Strategic decisions are about trying to achieve some advantage for the organisation over competition.
- Strategic decisions are also likely to be concerned with the scope of an organisation's activities.
- Strategic decisions are likely to affect operational decisions and actions.
- Strategy can be seen as building on or allocating an organisation's resources and competences to create opportunities or to capitalise on them.

These characteristics can imply that strategic decisions are likely to be complex in nature and likely to demand an integrated approach to managing the organisation. To harmonise these different interpretations, a representative definition is formed that integrates the characteristics. Therefore, strategic level here can be defined as:

"A level that deals with the long term direction, within a dynamic environment, of an organisation to achieve competitive advantage for the organisation through its configuration of resources."

Table 3.2 Overview of strategy definitions in business literature

Author	Definitions
Chandler (1962) – the first author articulating the notion of strategy in scholarly circles	“the determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary to carry out these goals”
Porter (1980)	“The creation of a unique and valuable position, involving a different set of activities...”
Mintzberg (1987) and Mintzberg et al. (2003)	<p>“As a plan, strategy is some sort of consciously intended course of action, a guideline to deal with a situation.</p> <p>As a ploy, strategy is a specific manoeuvre intended to outwit an opponent or competitor.</p> <p>As a pattern, strategy is a stream of actions demonstrating consistency in behaviour, whether intended or not intended.</p> <p>As a position, strategy is a means of locating an organisation in an environment.</p> <p>As a perspective, strategy is a concept or ingrained way of perceiving the world.”</p>
Hax (1990)	<p>“Strategy is a fundamental framework through which an organisation can asset its vital continuity while, at the same time, purposefully managing its adaptation to the changing environment to gain competitive advantage. Strategy includes the formal recognition that the recipients of the results of a firm’s actions are the wide constituency of its stakeholders. Therefore, the ultimate objective of strategy is to address stakeholders’ benefits – to provide a base for establishing the host of transactions and social contracts that link a firm to its stakeholders.”</p>
Kerin et al. (1990)	A fundamental pattern of present and planned objectives, resource deployments, and interactions of an organisation with markets, competitors, and other environmental forces.
Johnson and Scholes (2002)	“Strategy is the direction and scope of an organisation over the long term which achieves advantage for the organisation through its configuration of resources within a changing environment and to fulfil stakeholder expectations.”

3.1.3 Definition of strategic position and positioning

The previous section has established a definition of global supply chains and strategic level. This section therefore develops a definition of strategic positioning.

The term 'strategic position' has appeared in many academic publications since the 1970s, though mainly in product, marketing and strategic management areas (Porter, 1996, Kalafatis et al., 2000; Vrontis and Sharp, 2003; Gallagher, 2007). There are, however, only a small number of papers that consider this concept within the scope of manufacturing operations. Hill (1993) is amongst the first group of researchers who defines strategic positioning in manufacturing supply chains. He defines 'position' as: "associated with the company's internal span of process, the degree and direction of vertical integration alternatives and its links and relationships with suppliers, distributors and customers."

Later, Valliespir and Kleinhans (2001) describe strategic positioning of a company as defining the company's boundary and modifying the scope of its activity on the supply chain in order to expand vertically (integration of new activities) or, conversely, to retire from some activities. Their focus is on vertical integration to decide upon the direction (upstream or downstream) and limits of the extension. They illustrate a company, positioned between its supplier and customer on its supply chain, may wish to decide upstream/downstream extension or upstream/downstream reduction. They suggest the position of the company inside the supply chain is not perpetual so that the company has to assess whether the position of the company is the best.

More recently, Johansen and Riis (2005) present the strategic positioning of a company by proposing a framework which comprises three inter-related levels. The first generic firm level is characterised by three attributes: knowledge and learning, cross-functional relationships and networks. The level two serves the company's role and position in the supply chain. The last level relates to the designation of different strategic production roles a firm should consider. Their approach is different from others by defining position of a company in supply chain together with the role of production.

In the same period, Baines et al. (2005) build on their earlier work to define 'position' as a statement of where a company sits within its supply chain network and identify strategic positioning as a key strategic decision which has long-term implications. They define 'strategic positioning' as being concerned with the process of choosing those production centred activities that an organisation should carry out internally, and those that should be external and under the ownership and control of suppliers, partners, distributors and even customers. Their work explicitly addressed the concept and process of strategic positioning in a holistic view of a supply chain. They consider there to be four sets of interactions for a typical manufacturer within a supply chain

network, namely; the upstream boundary with suppliers, the downstream boundary with customers, the infrastructure boundary, and the product range boundary (see Figure 3.4 overleaf). At each of these interfaces a company has choices, the outcomes of which will modify the strategic position.

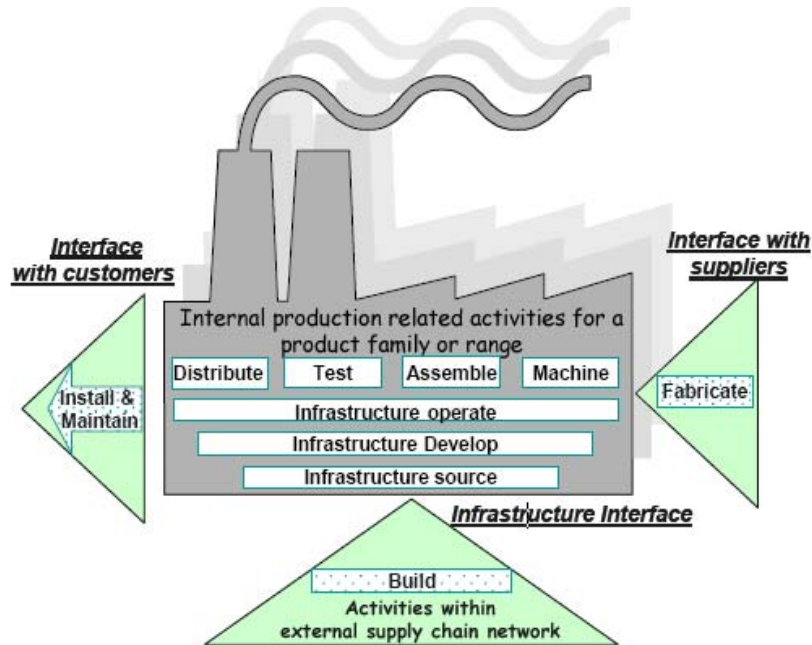


Figure 3.4 Four supply chain interfaces (Source: Baines et al., 2005)

Recently, Watson et al. (2006) defines a firm’s position on what activities it chooses to do and not to do. Their work emphasises on literature review in moving up the value chain. They suggest that repositioning is changing the sphere of activities in the delivery of value to the end customer. They categorise four perspectives on repositioning in the value chain as; moving up the value chain, value chain upgrading, moving down the value chain (nearer the customer), manufacturing services to rival business services.

From these definitions, Baines et al. (2005) provide a definition that covers the perspectives of strategic level and holistic view in a supply chain. Such a definition is adopted in this thesis. In their work, they have defined strategic positioning as:

“A process concerned with the choice of business activities that an organisation should carry out internally, and those that should be external and under the ownership and control of suppliers, partners, distributors and even customers in the supply chain network by taking a holistic view of the organisation.”

In summary therefore, the definitions adopted in this research for global supply chain, strategic and strategic positioning are summarised in Table 3.3.

Table 3.3 Adopted definitions of global supply chain, strategic level, and strategic positioning

Author	Definitions
Global Supply Chain	A network of organisations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate customer.
Strategic level	A level that deals with the long term direction, within a dynamic environment, of an organisation to achieve competitive advantage for the organisation through its configuration of resources.
Strategic Positioning	A process concerned with the choice of business activities that an organisation should carry out internally, and those that should be external and under the ownership and control of suppliers, partners, distributors and even customers in the supply chain network by taking a holistic view of the organisation.

3.2 Formal decision methods for strategic positioning

Having understood the strategic positioning concept, it is now necessary to appreciate the variety of formal decision methods that can be used to modify the strategic position of an organisation. This section therefore explores the formal decision methods available in existing literature.

3.2.1 Definition of a formal decision method

The intention of this section is to first define precisely what is meant by a formal decision method. It is useful to distinguish between formal and informal decision approaches and their associated scope.

In the literature, there are two paradigms of methods, namely the formal and informal method, sometimes referred as unstructured and structured method. Unstructured decision methods are fragmented but flexible, and tend to follow an organic and do-it-yourself process (Klein, 1994). Klein and Weiss (2007) see that unstructured decision methods have advantages of flexibility, comprehensiveness and creativity, not being restricted to any obligatory resolution procedures, and are able to respond to unconventional situations.

The advantages of an unstructured decision method, however, are tempered by evidence of errors in intuitive judgement and a non-systematic approach (Kahneman and Tversky, 1982; Simon, 1993). The decisions made could be overly biased toward the manager's experience (Tan and Platts, 2005), and there is a high possibility that the latest management tools and techniques are excluded. Difficulties in using this approach also arise in a complex situation (Hasee et al., 2003) where much information needs to be considered.

Formal or structured decision methods have been prescribed as tools to overcome the limitation of an unstructured approach when undertaking complex decisions. Decision theorists have proposed that complex decision-making may benefit from use of formal analytical decision protocols that specify the processes individuals should use in generating and evaluating decision alternatives (e.g. Russo and Shoemaker, 1989; Elsbach and Barr, 1999). These theorists have suggested that decision makers require a more formalised and structured decision process to aid them in examining many dimensions, preferences, and uncertainties that are inherent in making complex decisions (Thomas, 1984; Dixit and Nalebuff, 1991). Their theoretical works all suggest that structured decision methods and environmental factors shape strategic decision effectiveness (Dean and Sharfman, 1996). Furthermore, researchers have shown that careful use of the types of structured decision approach improves a variety of outcomes for organisations, including outcomes related to profits, organisational image, internal coordination, capacity utilisation, and market penetration (Dean and Sharfman, 1996 and Gillelard Jr. et al., 1999).

In summary, formal decision methods are suggested as an appropriate method for making complex and strategic decisions. It is important to have an approach that can cope with a complex decision and provide improved outcomes for organisations. Therefore, it is appropriate to have a formal decision method for strategic positioning within global supply chains as indicated by most authors in the strategic decision paradigm.

3.2.2 Literature search for formal decision methods associated with strategic positioning

The purpose of this section is to define the scope of the literature search for formal decision methods associated with strategic positioning. The intention of this review is to establish extensive knowledge on strategic positioning. It is therefore important to comprehensively review the literature on various existing formal decision methods related to strategic positioning, and not be constrained to one particular method. As a result, the literature search includes study/review, model, framework, process, approach and methodology related to strategic positioning of an enterprise.

Section 3.1.3 addresses the fact that there is a paucity of work focusing on strategic positioning explicitly and only a few methods are currently provided (Lim et al, 2006). In order to provide a substantial literature review, the scope of a literature search must broaden to encompass other associated concepts of strategic positioning. Baines (2004), Baines et al. (2005) and Lim (2007) identify the concepts impacting on a strategic position of an organisation including make or buy, vertical/horizontal integration, strategic alliances, sourcing/strategic sourcing, supplier selection, core competency, outsourcing/strategic outsourcing and offshoring. Apart from these concepts, manufacturing location is a concept that has not been mentioned by them but has direct impact on the strategic position of an organisation especially within global supply chains (Trent and Monczka, 2003a). Location decisions influence the organisational boundary as well as locations of internal and external activities of an organisation.

Therefore, literature covering these concepts including manufacturing location will be reviewed to explore methods that can be used to modify the strategic position of an enterprise. These words are used as main keywords to search relevant papers. The search domains include the article title, article abstract, article key words, and the text body. A search is conducted mainly through four management and science journal databases: Emerald, Business Source Premier, Science Direct, and ABI/INFORM. The reason for using a number of databases rather than only one is to search literature in a variety of journals publishing in this area. The results from the search are analysed to set out its origin, develop the definition, locate its relationship with strategic positioning and explore key formal decision methods in both qualitative and quantitative approaches.

3.2.3 Evolution of key concepts impacting on the strategic position of an organisation

This section presents the results from the literature search on formal decision methods for strategic positioning. The results from the search are analysed to illustrate an evolution of key concepts which have an impact on the strategic position of an organisation as shown in Figure 3.5. The evolution of these concepts from past research can be organised into eleven phases (1) manufacturing location (2) make or buy (3) vertical/horizontal integration (4) sourcing/global sourcing (5) supplier selection (6) strategic alliances (7) outsourcing/global outsourcing (8) core competency (9) strategic outsourcing (10) offshoring (11) strategic positioning. Each of these is now explored in more detail in the following sections.

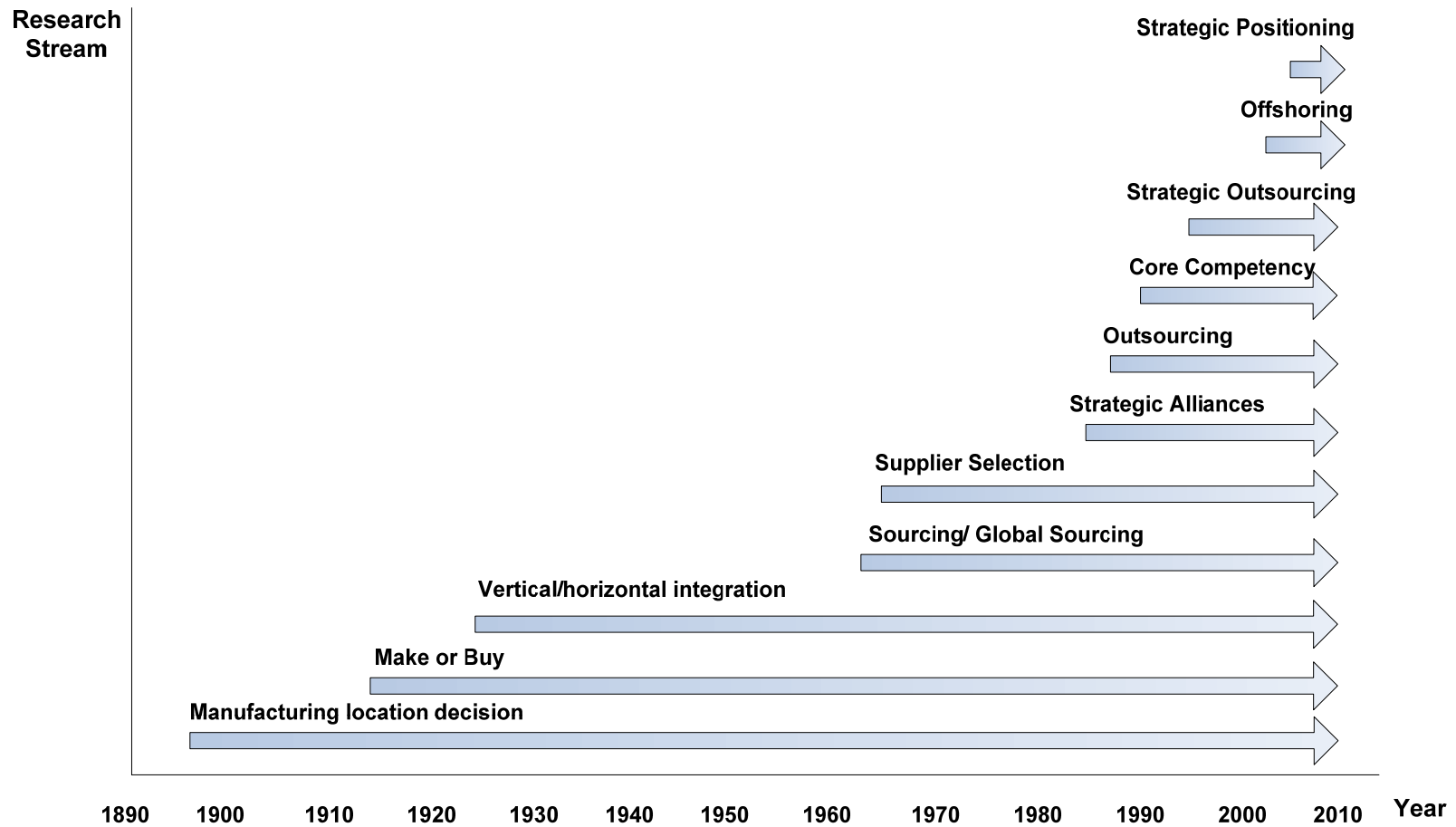


Figure 3.5 Evolution of key concepts impacting the strategic position of an organisation

Note: The beginning of arrows represents the starting point of the first published paper in each concept. The open end of each arrow represents that each concept is still active as a research topic.

3.2.4 Manufacturing location

Origin – The first manufacturing location paper appeared in 1896, written by Ross in the *Journal of Economics*. His paper focuses on the factors that determine the location of industries. Later, this area was extensively studied in the literature and is commonly referred to as the manufacturing location problem or facility location problem (Kodali and Routroy, 2006). Research works initially paid attention to domestic location and traditional plant location criteria emphasising on cost-based variables, and shift to international context focusing on variation in factors in the latter period (Brush et al., 1999). For many years, the facilities location has attracted a great deal of attention by the management and science literature (Kouvelis et al., 2004). As a result, there are now a variety of methods for solving these problems.

Definition – Vos (1991) and Pongpanich (1999) define the decisions concerning manufacturing locations. These include the decisions for a new production location, a production relocation, a production reallocation and a plant closure. These decisions directly involve the level of ownership especially in overseas plants such as new green field plant, subcontracting, acquired plant, joint venture, licence agreement and wholly-owned subsidiary plant (Pongpanich, 2000). Making these decisions is a key aspect of strategic and logistical decision-making for manufacturing firms as they have direct impact on both short and long term performance and profitability of firms (Porter, 1985, Matson, 1995). Moreover, the location decisions are costly and difficult to reverse and involve a high commitment of firm's time, money, and resources (Epping, 1982; Snyder, 2006).

Relationship with strategic positioning – The definition of manufacturing location is linked to the relationship with strategic positioning because manufacturing location deals with the choices of infrastructure boundary. In addition, it also relates to locations of internal and external activities and has a direct impact on performance of those activities.

Formal methods – There is a large number of studies related to manufacturing location decisions (Canel and Das, 2002). Prior works reported in the literature fall into two distinct approaches (Bhatnagar et al., 2003). The first approach predominantly focuses on quantitative analyses based on geo-economic theory and operation research perspective. The classic geo-economics theory is concerned with the optimal outcome for location problems. The body of knowledge in this area has evolved since 1900 (Pongpanich, 1999). Its main assumption is that a decision maker is an economic maximiser seeking the plant location that minimises costs or maximises profits. The research works in this area include Weber (1929), Simon (1957), Pred (1967), Stobaugh and Telesio (1983), Smith (2007). The operations research aims to improve location decision making by developing decision techniques to deal with the issues and

the development of mathematical models in order to find the optimum solutions. Research work taking this perspective comprise Jungthirapanich et al., (1995), Reville and Laporte (1996), Yang and Lee (1997), Kouvelis et al. (2004), Kodali and Routroy (2006), Snyder (2006), Wu (2007), Cheng (2007), and Robinson and Bookbinder (2007).

The second approach is from a qualitative perspective or referred to as business strategy perspective. Work in this area generally aims to draw concepts and develop frameworks from practical experiences. Research work with this approach comprise Bartmess and Cerny (1993), MacCormack et al. (1994), Yang and Lee (1997), Pongpanich (1999, 2000), Yoshihara and Tametoh (2002), MacCarthy and Atthirawong (2003), and Christensen and Drejer (2005).

3.2.5 Make or buy

Origin – The first published make or buy work was written by Ford and Porter in 1915 with the title 'Deciding whether to make or to buy'. Since the first work, the papers for improving the make or buy decision had been well documented from a variety of economic and quantitative viewpoints (Jauch and Wilson, 1979). Afterwards, the realm of make or buy research has turned to strategic view and long-term impact decision (Jauch and Wilson, 1979; Probert, 1997; Humphreys et al., 2002). Platts et al. (2002) stated that make or buy is critical to the success of a company because the firm expands to include other, strategically linked suppliers. Likewise, Yoon and Naadimuthu (1994) stated that the make or buy decision can often be a major determinant of profitability making a significant contribution to the financial health of the company.

Definition – In the strategic era, make or buy has been defined by Probert (1997) as the choice of whether to carry out a particular process or activity within a company's own business or to buy it from a supplier. He states further that make or buy issues sit firmly at the centre of manufacturing strategy of a company. Platts et al. (2002) provide an example of a make or buy decision, that is, when a manufacturer is faced with the design and production of a new component or process for one of its products, does it make it 'in-house', or does it buy it from another company? Brierley et al. (2006) explain that the decision to buy externally can lead to cost saving in internal manufacturing when a company can take advantage of the expertise, economies of scale and smoother production schedules of external suppliers.

Relationship with strategic positioning – From the explanation, it can be concluded that make or buy deals with the choices of supplier and infrastructure boundaries of the firm.

Formal methods – Make or buy has been an important issue for many decades. Due to its multi-disciplinary nature, it has been approached from

different perspectives such as economics (Poppo et al., 1995), purchasing (Shore, 1970), operations research (Balakrishnan, 1994), accounting (Bassett, 1991) and strategic management (Venkatesan, 1992). From the literature review, two main groups were identified. The first group aims at answering the make or buy question from a quantitative approach or a cost viewpoint (Raunick and Fisher, 1972; Bassett, 1991; Ellis, 1992; 1993; Balakrishnan, 1994; Poppo, et al., 1995; Geyskens et al., 2006). The concept of transaction cost plays an important role in many of the models mentioned above. The transaction cost theory can be traced back to Coase (1937) and to Commons (1970). Ronald Coase (1937) first stated the role of transaction cost economics to organisational boundary decisions that “a firm will tend to expand until the costs of organising an extra transaction within the firm become equal to the costs of carrying out the same transaction by means of an exchange on the open market or the costs of organising in another firm”. He first created the basis for the development of the transaction costs theory, which has come to dominate the literature dealing with deciding organisational boundary. Since his work, the body of knowledge in this area has evolved. The transaction costs method has received great empirical support in explaining organisational boundary decisions.

The second group of make or buy is qualitative approach or a strategic perspective, acknowledging other factors in addition to cost. The idea of make or buy being an issue that goes beyond cost factors is not new. Ford and Porter (1915) emphasised the importance of strategic factors for make or buy decisions. Furthermore, Culliton (1942), Higgins (1955), Jauch and Wilson (1979), Ford and Farmer (1986) also discussed the strategic implications of the make or buy decision. In the strategic approach, the study includes work from Welch and Nayak (1992), Venkatesan (1992), McIvor et al. (1997), Probert (1997), Padillo and Diaby (1999), Humphreys et al. (2002), Perrons et al. (2004), Ulrich and Ellison (2005), Jacobides and Billinger (2006), and Parmigianim (2007).

3.2.6 Vertical/horizontal integration

Origin – According to Harringan’s (1986) citation, the study of vertical integration first appeared in a paper published in 1925 by Lavington (1925). In the early stage of vertical integration study, researchers did not recognise the dynamic nature of the strategy (Harringan, 1986) and therefore analyses were static. Researchers tended to assume that the same types of vertical integration arrangements existed within all firms and did not change over time. A turning point in vertical integration strategies occurred in the late 1960s and 1970s when the factors that determine vertical and horizontal integration changed significantly in these years (Mpoyi and Bullington, 2004). For example, the number of competitors has considerably increased, the environment of most

industries is now highly uncertain and dynamic (Chandler, 1990; Stuckey and White, 1993). As a number of studies have argued, the change in these determining factors may have led to a significant change in vertical and horizontal integration study that took place during the corporate restructuring in the 1980s and 1990s (Harrigan, 1986; Chandler, 1990; Mpoyi, 1997, 2000; Stuckey and White, 1993). Since that period, vertical integration has continued in popularity as a research topic especially in the economics area and the topic is still in active (Mpoyi and Bullington, 2004).

Definition – Harrigan (1985 and 1986) defines vertical integration as involving “a variety of decisions concerning whether corporations, through their business units, should provide certain goods or services in-house or purchase them from outsiders instead.” These decisions include how much of a particular product or service to transfer in-house or sell to outsiders (degree), and how far backward (or forward) in a vertical chain of activities to integrate (number of stages of processing). The definition by Harrigan suggests the classic strategic management economic and large-corporation-based concept of vertical integration (Stonebraker and Liao, 2006). Harrigan (1986) addresses further that vertical integration is more than a make or buy decision, because some decisions to integrate upstream (or downstream) require firms to acquire capabilities far beyond the basic strengths of their core businesses. A more recent definition from Cox and Blackstone (2001) is that vertical integration is the degree to which a firm chooses to produce in multiple value-adding stages from raw material to the ultimate consumer. This latter approach emphasises the choices and tradeoffs in the management of serial production and distribution activities, as well as a range of serial process activities.

Horizontal integration is defined by Hirsch (1950) as controlling a number of units which together or separately handle complementary commodities on one and the same level of production or marketing process; and its management pursues a unified profit policy. Later, Johnson and Scholes (2002) defined horizontal integration as development into activities which are competitive with, or complementary to, a company’s present activities. Both vertical and horizontal integration are seen as a critical component of corporate strategy, as it is often one of the first diversification strategies a firm considers (Peyrefitte et al., 2002). Integration is a natural response for a top manager who is looking for a means to incite organisational growth, gain scale economies, or attain a higher degree of control.

Relationship with strategic positioning – Regarding these definitions, vertical and horizontal integration are relevant to the topic of strategic positioning as vertical integration deals explicitly with the upstream and downstream boundary of a firm’s activities while horizontal integration deals with the product range boundary of a firm’s activities.

Formal methods – The study of vertical and horizontal integration has been proposed in many views available in key journal databases in both qualitative and quantitative approaches. The quantitative approaches involve efficiency considerations, primarily based on governance and transaction cost arguments, and the qualitative approaches include strategic considerations, primarily to do with power and positioning (Osegowitsch and Madhok, 2003; Mpoyi and Bullington, 2004). For the quantitative approaches, governance arguments are principally derived from two bodies of theory: agency theory and transaction cost economics. Both mainly seek to minimise the firm's exposure to opportunistic action on the part of others. Each has a different focus, but both share the premise that the firm's governance choice, whether it opts to internalise or outsource a particular activity, is required to create a product or service. In addition, both theories seek to determine the firm's most efficient (cost-minimising) vertical boundary. There are many papers publishing this approach such as Vernon and Graham (1971), Schmalensee (1973), Arrow (1975), Reyniers (2001), Matsubayashi (2007), and Koppl and Monnet (2007).

Qualitative approaches relate to strategic considerations of the company's competitive positioning. Most strategic motives were originally developed in the industrial organisation literature, such as Bain (1956) and Porter (1980). Strategic approaches aim to change the industry's existing power structure, either by building/exploiting the firm's market power or by attempting to offset the power of others. Vertical integration is seen as a means to winning the power play against actual and potential competitors, thereby enabling the firm to earn monopoly or oligopoly profits. The study into the quantitative approaches has been proposed in many views such as the generic view (Hirsch, 1950; Harrigan, 1984, 1985; Osegowitsch and Madhok, 2003; Jaspers and Ende, 2006) and for specific industries (automobile industry: Crandall, 1968; Marx, 1976; OhUallachain and Wasserman, 1999, fashion apparel: Richardson, 1996, and food: Bhuyan, 2005)

3.2.7 Sourcing/global sourcing

Origin – Sourcing and global sourcing decisions have their origins in make or buy alternatives and accordingly the decisions are developed from the purchasing area (Tayles and Drury, 2001). The first paper on sourcing and global sourcing appeared for full paper access in journal database in 1963 by O'Connell and Benson. In the early stage of sourcing research, researchers paid attention to international sourcing and focused on transaction cost (Leontiades, 1971; Leff, 1974; Hefler, 1981; Caddick and Dale, 1987), afterwards researchers focused on a more strategic role (Spekman et al., 1999; Nellore et al., 2001; Tayles and Drury, 2001; Jennings, 2002; Kocabasoglu and Suresh, 2006).

Definition – Sourcing specifically deals with managing the supply base in an effective manner by identifying and selecting suppliers for strategic long term partnerships, being involved in supplier development initiatives by effectively allocating resources to enhance supplier performance, providing benchmarks and continuous feedback to suppliers, and in some cases involving supplier pruning activities (Talluri and Narasimhan, 2004). The further definition from Zenz (1994) is the strategic philosophy of selecting vendors in a manner that makes them an integral part of the buying firm for a particular component or part they are to supply. Narasimhan and Das (1999) define strategic sourcing as “the process of designing and managing supply networks in line with operational and organisational performance objectives”. These definitions pinpoint the profound meaning of sourcing that is beyond the traditional view. In other words, sourcing no longer simply refers to getting the materials at desired prices, rather, the decision should be incorporated into the buying firms' operating strategies to support or even to improve the firm's competitive advantages (Zeng, 2000).

In terms of global sourcing, Trent and Monczka (2003a) built on their early work and defined global sourcing as the worldwide integration of engineering, operations, logistics, procurement, and even marketing within the upstream portion of a firm's supply chain. Global sourcing requires many decisions, such as locations of production and assembly, internal versus external sourcing, locations of R&D, and product design (Li et al., 2000). Hefler (1981) addressed that there are three primary strategies for global sourcing: (1) finding qualified suppliers for the required materials and services; (2) entering into a joint-venture relationship and (3) making a 100 percent equity investment in a foreign country. These three progressively require capital and long-term commitments.

Relationship with strategic positioning – According to the definitions, sourcing/global sourcing deals with the upstream boundary of the firm in the context of strategic positioning.

Formal methods – Previous research on sourcing can be classified into two approaches, namely quantitative and qualitative approaches. The quantitative approach seems to get less attention from researchers than the qualitative approach. The work in the quantitative approach includes creating a computational method for international sourcing (Gutierrez and Kouvelis, 1995), proposing a sourcing optimisation tool (Leschen and Johnson, 1999), transaction cost implications for sourcing strategies (Park et al., 2001), assessing the operation cost of sourcing strategies (Lowson, 2002), linear programming in sourcing decisions (Balakrishnan and Cheng, 2005), stochastic modelling of multiple sourcing (Han and Damrongwongsiri, 2005), single sourcing and multiple sourcing (Inderst, 2008), and heuristics for sourcing from multiple suppliers (Burke et al., 2008).

The second approach to qualitative sourcing focuses more on the long-term implications of sourcing for the procurement process and buyer-supplier relationships. One shortcoming of the current research in this approach is that each study concentrates on different dimensions of sourcing and therefore does not offer a complete picture (Kocabasoglu and Suresh, 2006). The contributions to this approach comprise strategic sourcing (Anderson and Katz, 1998; Narasimhan and Das 1999; Sisljan and Satir 2000), global sourcing (Monczka and Giunipero, 1984; Monczka and Trent, 1991; Giunipero and Monczka, 1997; Cavusgil et al., 2003; Trent and Monczka, 2003a; Trent and Monczka, 2003b; Zeng, 2003; Trent and Monczka, 2005; and Busi and Ball, 2007), a decision framework for global sourcing (Cavusgil et al., 1993), efficiency and effectiveness orientation of global sourcing strategy (Kotabe, 1998), an investigation of global sourcing strategy effectiveness (Petersen et al., 2000), global sourcing process (Zeng, 2003), global sourcing strategy (Kotabe and Murray, 2004), a toolkit to support informed global sourcing strategy-making (Busi and Ball, 2007), and cross-functional sourcing decision processes (Moses and Ahlstrom, 2008) .

3.2.8 Supplier selection

Origin – According to Verma and Pullman (1998), the emergence of the supplier selection study showed in 1966 from a paper written by Dickson (1966) with the title ‘An analysis of vendor selection system and decisions’. Since then, academic attention towards a more systematic approach to decision-making in supplier selection has increased steadily and for extensive literature overviews on methods and tools for supporting supplier selection (Boer and Wegen, 2003). Almost invariably, authors on this topic justify their efforts in developing decision support tools and methods by pointing to the increased importance and complexity of purchasing and supply management in general, the crucial role of supplier selection decisions within the purchasing process and a lack of available decision tools (Boer and Wegen, 2003).

Definition – Supplier selection and evaluation have an important role in the supply chain process and are crucial to the success of a manufacturing firm (Hartley and Choi, 1996; Deagraeve et al., 2000; Choy and Lee, 2003). This is because the cost and quality of goods and services sold are directly related to the cost and quality of goods and services purchased. On the other hand, the supplier selection decision-making problem involves trade-offs among multiple criteria that involve both quantitative and qualitative factors, which may also be conflicting (Ghodsypour and O’Brien, 1998). In other words, buyer supplier relationships based only on the price factor have not been appropriate in supply chain management recently. As reported by Boer et al. (2001), a supplier selection typically consists of four phases, namely (1) problem definition, (2) formulation of criteria, (3) qualification of suitable suppliers and (4) final

selection of the ultimate supplier(s). Considerations on supplier selection have also been given to the other important strategic and operational factors such as quality, delivery, flexibility, and etc. Supplier selection decisions must include strategic and operational factors as well as tangible and intangible factors in the analysis (Sarkis and Talluri, 2002).

Relationship with strategic positioning – Obviously, supplier selection relates to the upstream boundary of the firm in the context of strategic positioning.

Formal methods – There has been a fair amount of previous research in the area of supplier selection and supplier evaluation (Pearson and Ellram, 1995). Quantitative approaches for supplier selection have played a dominant role in previous work in comparison to qualitative approaches. Quantitative approaches for supplier selection feature prominently in the literature of three evaluation methods: linear-weighting method, total cost of ownership method and mathematical-programming method (Yang and Chen, 2006). Linear-weighting method evaluates potential suppliers using several equally weighted factors, and then allows the decision-maker to choose the supplier with the highest total score (Timmerman, 1986). Although this method is simple, it depends heavily on subjective judgment. In addition, these models weight the criteria equally, which rarely happens in practice (Min, 1994; Amid et al., 2006; Sevkli et al., 2008). The criteria used were described as financial, quality, risk, service, partnerships, cultural and communication, and trade restrictions. In contrast to the equal weighting used in the linear-weighting method, analytical hierarchy process (AHP) is an effective method for providing a structured determination of the weights of criteria by using pair-wise comparison to select the best suppliers. Several researchers have used AHP to deal with the supplier selection issue. These include Nydick and Hill (1992), Barabarasoglu and Yazgac (1997), Tam and Tummala (2001), and Chen and Huang (2007).

The total cost of ownership method attempts to include the quantifiable costs that are incurred throughout the purchased item life cycle into the supplier selection model. Monczka and Trecha (1988), Smytka and Clemens (1993), Bhutta and Huq (2002), Chen and Yang (2003), and Garfamy (2006) all attempted to integrate the total cost into their evaluation models. A mathematical-programming method can be used to formulate the supplier selection problem in terms of an objective function to be maximised (for example, profit) or minimised (for example, costs) by varying the values of the variables in an objective function. Several papers have used single objective techniques. These include linear programming (Pan, 1989; Ghodsypour and O'Brien, 1998), goal programming (Buffa and Jackson, 1983; Karpark et al., 1999; Demirtas and Ustun, 2007), or mixed integer programming (Chaudhry et al., 1993; Xia and Wu, 2007; Demirtas and Ustun, 2008) to solve the supplier selection issue. Most of these mathematical programming models took cost as

the objective function, with other criteria (such as quality, capacity, delivery, and so on) being taken into account as constraints. However, the complexity of the mathematical programming models is not suitable for companies that wish to solve the supplier selection issue effectively without using advanced computer programmers.

3.2.9 Strategic alliances

Origin – Alliances/relationship/partnerships among supply chain networks emerged from the role of sourcing that give consideration to the importance of cooperation of buyer-supplier both upstream and downstream in the supply chain. The first paper dealing with cooperative and strategic alliances was written by James (1985) with the title 'Alliance: the new strategic focus'. Since that time, the subject of strategic alliances has been very popular (Morrison and Mezentseff, 1997). Researchers in this field have described and analysed the shift from traditional adversarial, buyer-supplier relationships towards longer term, more cooperative relationships in which buyers and suppliers regard each other more as partners. Strategic alliances have been seen as a popular strategy for firms for sharing risks and exchanging resources, accessing new markets, achieving economies of scale and obtaining synergy and competitive advantages (Dacing et al., 1997).

Definition – Devlin and Bleackley (1988) provide the definition of strategic alliances which is distinguished from the traditional style of a co-operative agreement. He sees strategic alliances taking place in the context of a company's long-term strategic plan and seeks to improve or dramatically change a company's competitive position. Wheelen and Hungar (2000) define a strategic alliance as "an agreement between firms to do business together in ways that go beyond normal company-to-company dealings, but fall short of a merger or a full partnership". Strategic alliances are partnerships of two or more corporations or business units that work together to achieve strategically significant objectives that are mutually beneficial (Emulti and Kathawala, 2001). The potential of a strategic alliances strategy is enormous. If implemented correctly, some authors claim it can dramatically improve an organisation's operations and competitiveness (Brucellaria, 1997, Hoffmann and Schlosser; 2001).

Relationship with strategic positioning – From the perspective of strategic positioning decision, strategic alliances cover both upstream and downstream boundaries of the firm, however, there is much research working on upstream alliances.

Formal methods – To account for the emergence of strategic alliances, a number of theories and models have been proposed in both qualitative and quantitative approaches. The work in quantitative approaches includes

transaction cost economics (Williamson, 1985; Hennart, 1988) and game theory (Parkhe, 1991; Lee and Yang, 2007). The work in qualitative approaches include the strategic behaviour model (Porter, 1985; Hagedoorn, 1993), the strategic decision-making model (Tyler & Steensma, 1998; Wang and Miao, 2006), social exchange theory (Axelroad, 1984; Bignoux, 2006; Dong and Glaister, 2007), power-dependence theory (Van de Ven and Walker, 1984; Chisholm, 1989), management consulting perspective (Chung et al., 2006) and specific country (Zineldin and Dodourova, 2005; Hyder and Abraha, 2006).

3.2.10 Outsourcing/global outsourcing/strategic outsourcing

Origin – Outsourcing has been viewed as a form of predetermined external provision with another enterprise for the delivery of goods and/or services that would previously have been offered in-house (Elfing and Baven, 1994; Domberger, 1998; Kliem, 1999; Finlay and King, 1999). Outsourcing practice dates back to eighteenth-century and has been in continuous use in numerous industry sectors since it received impetus in the latter half of the 1980s and 1990s in the emerging service sector (Quinn and Hilmer, 1994; Reyniers and Tapiero, 1995; Ang and Straub, 1998). The evolving literature on outsourcing has been concerned with "make-or-buy", or "in source-out source" decisions in relation to the behaviour of enterprises (Coase, 1937; Williamson, 1979; Carlson, 1989; Venhatraman and Loh, 1994; Alpar and Saharia, 1995; Hart, 1995) and transaction cost economics (Williamson, 1985; Boon and Verberk, 1991; Benko, 1993; Grover et al., 1994; Nam et al., 1996). The first outsourcing paper was published in 1987 by Koshiro (1987a and 1987b) on the automotive industry, and from then, outsourcing research has been studied seriously since 1990s (Lonsdale and Cox, 1998). The first paper on strategic outsourcing was written by Quinn and Hilmer (1994), who explained the essence of core competency to strategic outsourcing in their paper. The last decade showed an evolution in outsourcing processes from traditional to strategic. Recent literature on outsourcing however has emphasised the need to adopt a strategic focus.

Definition – Outsourcing (from "out" "source", i.e. external source) is a management approach that allows delegation to an external agent of operational responsibility for processes or services previously delivered by an enterprise (Franceschini et al., 2003). It can be defined as ". . . the purchase of goods or a service that was previously provided internally" (Swink, 1999; Smith et al., 1996; Lankford and Parsa, 1999; Elmuti and Kathawala, 2000). The decision process of outsourcing is defined by Thomas and Wilkinson (2006) as an "act of moving some of a firm's internal activities and decision responsibilities to outside providers". Lankford and Parsa (1999) similarly state "outsourcing is defined as the procurement of products or services from sources that are external to the organisation". These and other definitions define the basic outsourcing decision situation as being one of reallocating production (both

service and/or manufacturing capacity) from one location to another. This term can also be differentiated in terms of domestic outsourcing (i.e. to a firm within the country of the outsourcing firm) and international outsourcing (i.e. to a firm outside the country of the outsourcing firm). The term of strategic outsourcing is defined as "when companies outsource everything except those special activities in which they could achieve a unique competitive edge" (Venkatesan, 1992; Quinn and Hilmer, 1994; Willcocks and Choi, 1995).

Relationship with strategic positioning – Each of these topics: outsourcing, global outsourcing and strategic outsourcing have influence on a strategic position of a firm as it modifies the supplier and infrastructure boundaries.

Formal methods – The literature offers a number of guidelines and prescriptions for an outsourcing decision. Early work in this area tended to focus on outsourcing in a quantitative approach, emphasising on cost (McIvor, 2008). Therefore, proponents of approaches were influenced by the transaction cost perspective arguing that the optimal outsourcing option will be chosen on the basis of transaction cost minimisation (e.g. Ginsburg and Michel, 1988; Besenko et al., 1996). However, economic analysis based on cost has its limitations as it does not account for the leadership and management capabilities to structure and manage co-operative relationships crucial to the effective working of outsourcing arrangements (Kakabadse and Kakabadse, 1999). Some have challenged the predominance of cost considerations in the outsourcing decision with scant attention being given to how the decision impacts the overall business strategy of the organisation (Baden-Fuller et al., 2000). Consequently, a number of latter works proposed in the literature have focused on qualitative approaches to the strategic implications of the outsourcing decision (Venkatesan, 1992; Pagnoncelli, 1993; Quinn, 1999; Lonsdale and Cox, 1998; Insinga and Werle, 2000; Zhu et al., 2001; Momme and Hvolby, 2002; Roy and Aubert, 2002; Franceschini et al., 2003; Schniederjans and Zuckweiler, 2004; Kumar et al., 2007; Lacity et al., 2008).

3.2.11 Core competency

Origin – Historically, the core competency perspective is based on research into production specialisation (Walsh and Linton, 2001). Further development of the core competence perspective is provided by various researchers who investigated the relationship between technology and economic performance. Until 1990, Prahalad and Hamel's work was influential in linking a firm's internal environment, specific technological competencies, to competitive advantage in their classic paper "The core competence of the organisation". Since their paper, undoubtedly core competence has become one of the best-known strategic management concepts (Ljungquist, 2007). It is a complex and challenging concept: it is difficult to specify theoretically, to identify empirically as a phenomenon, and to apply in practice (Ljungquist, 2007).

Definition – According to Prahalad and Hamel (1990), core competencies are built on intangible assets that cannot be easily imitated by competitors, are the source of the company's ability to deliver unique value to its customers, and allow the company to be flexible in terms of markets and products. Core competencies are not necessarily related to technologies: they can be the outcome of excellence in any business function. Consistent with Prahalad and Hamel (1990), other researchers have described core competencies as the basic building blocks for a firm's corporate strategy (Collins & Montgomery, 1995; Frery, 2006). In particular, when deciding to diversify, researchers have stressed the benefits of choosing businesses that draw on existing core competencies (e.g. managerial expertise, innovation capabilities) because leveraging such abilities can result in cost efficiencies and operational effectiveness that help a firm compete in new business (Markides, 1997; Porter, 1987). An analysis of core competencies can also be helpful in assessing past diversification strategies by revealing a need for further competence development, outsourcing, restructuring, or downsizing (Hafeez et al., 2002; Webster et al., 2005). Thus, the core competency concept is often seen in subjects that affect the strategic position of an organisation such as make or buy, outsourcing, sourcing, and offshoring.

Relationship with strategic positioning – Core competency is a supporting concept for modifying the boundary of the firm in the strategic positioning context.

Formal methods – Core competency has been universally discussed since 1990 or after Prahalad and Hamel's work (Chen and Wu, 2006). The existing work in core competency is basically on quantitative approach. Identification is arguably the starting point of all core competence research (Clark, 2000) and is the matter on which most previous research has focused (e.g. Javidan, 1998; Eden and Ackermann, 2000). The process of identifying core competencies usually entails having employees identify core competencies by scanning and assessing company-critical resources, capabilities, and competencies (Prahalad and Hamel, 1990). Though the basis of core competency is fairly clear, in practice, the utilisation of the concept poses some difficulties: the precise identification of the core competence is not trivial even for the participants of the firm (Porter, 1996; Gilgeous and Parveen, 2001, Ljungquist 2007). Therefore latter work has focused on the application of the concept. The papers dealing with core competency comprise, for example, survey research (eg: Gilgeous and Parveen, 2001), framework (eg: Walsh and Linton, 2001), content (eg: Chen and Wu, 2006; Mooney, 2007); and models (eg: Onyeiwu, 2003; Fleury and Fleury, 2003).

3.2.12 Offshoring

Origin – Dramatic changes have taken place to organisational business models in recent years due to a confluence of global trends and developments in technology, management structures that encourage global operations, standardisation and growth of global supplier firms that perform work in the most optimal locations worldwide (Clott, 2007). As a result, offshoring has become a popular issue in recent years and it is considered as a relatively new area of research impacting on the position of an enterprise. The realm of manufacturing offshoring in academic papers started in 1999 by Katayama et al. (1999) and it is still a popular topic.

Definition – Offshoring and outsourcing are sometimes treated identically as companies seem to choose them for similar reasons, such as to focus on core competencies, to increase flexibility and to realise cost savings. However, offshoring cannot be regarded as purely interchangeable with outsourcing. The differentiating issues are involvement of a third party (outsourcing) and foreign location (offshoring). Outsourcing always requires involvement of a third party but offshoring does not necessarily, as activities can be relocated under direct control. Offshoring always involves a foreign location, whereas outsourcing can be done in the local market as well (Jagersma and Gorp, 2007). Offshoring refers to the development where companies relocate business activities, including jobs, to foreign locations (Jagersma and Gorp, 2007). Therefore there are four types of outsourcing and offshoring. Firstly, outsourcing is defined as a company contracting part or a whole project to a vendor based in the same country. Secondly, offshoring is defined as setting up the company's existing business function or division in a foreign country. Thirdly, outsource-offshoring happens when the outsourcing vendor go offshore for contracting part or whole of a project to third party vendor situated in another country. Lastly, offshore-outsourcing can be defined as company contract its part of whole project to a vendor based in another country (Ramanujan and Jane, 2006).

Relationship with strategic positioning – Offshoring deals with the supplier, infrastructure and product range interfaces.

Formal methods – The trend towards offshoring has been growing rapidly for some years however, there are small numbers of journal papers in manufacturing offshoring. Most of the papers in offshoring are relevant to offshoring labour, service firms and IT offshoring. Besides that, offshoring in the manufacturing sector is always used interchangeably with outsourcing, sourcing and foreign direct investment terms. Among the manufacturing offshore research, Katayama et al. (1999) investigate current status and future direction of Japanese manufacturers in Thailand. Warburton and Stratton (2002) present the case of a North American apparel manufacturer and evaluate the results of offshore manufacturing. Jahns et al. (2006) research on a stringent understanding of the term offshoring along the dimensions of contractual/legal

arrangement and geographic location. Kinkel et al. (2007) study motives and the employment effect of manufacturing offshoring of German SMEs. Clott (2007) studies offshore outsourcing from the manager's perspective. These previous studies show the focus of offshoring literature in qualitative approach.

3.2.13 Strategic positioning

Origin – Strategic positioning is a relatively new concept. The first strategic positioning paper appeared in 2005, written by Baines et al. (2005). They stated in this paper that they built the principles of strategic positioning from their earlier survey- and case-based research as reported in Baines and Kay (2002) and Philpott et al. (2004). This earlier research revealed three key principles that leading manufacturers apply when making these decisions. First, all four of the key business areas (supplier, customer, infrastructure, product range), should be considered simultaneously so that the interactions between these can be fully appreciated. Second, leading manufacturers understand that the strategic position of an organisation is dynamic in nature, and that opportunities and threats may appear in any aspect of their supply chains over time. Third, that the strategic position decision should be linked directly to the market conditions, and then the wider acceptability of an initiative to the host organisation. These three key principles became fundamental in the development of formal and rational processes for guiding manufacturers through the strategic positioning decision. Currently, there is only little research dealing directly with the strategic positioning concept.

Definition – The definition of strategic positioning has been given in Section 3.1.3

Formal methods – Previous research of strategic positioning has been proposed under the qualitative approach. Baines et al. (2005) firstly instigate the concept of strategic positioning in the supply chain concept by proposing a holistic view of supply chains for designing a strategic position of a company. Their work can be considered as the primary research in this area. Baines et al. (2005) propose an integrated strategic positioning process that guides manufacturers through the strategic positioning decision. Their strategic positioning process comprises five stages: stage 1 scope issues; stage 2 identify key decision criteria; stage 3 identify activity landscape; stage 4 assess impact and stage 5 consolidate outcomes. The decision process is aimed at encouraging a holistic view of supply chain opportunities and threats, appreciating the dynamics of the organisation and its environment, and linking all strategic positioning decisions to competitive strategy. Baines et al.'s decision process for strategic positioning has been developed from the perspective of a domestic setting for large multinational manufacturing companies (MNCs).

In the same year, Johansen and Riis (2005) proposed a framework for the strategic positioning of tomorrow's industrial company. Their framework attempts to capture future trends and challenges and transform them into a holistic industrial context to be used for strategically positioning an industrial company. The framework comprises three inter-related levels. First, generic firm level takes as its point of departure the interactive firm, which is characterised by three distinctive attributes: knowledge and learning, cross-functional relationships and networks. Level two posits three archetypal production types: the focused firm, the networking firm and the integrating firm. The last level is to decide five different strategic production roles an industrial firm should consider. Their work tends to focus on archetypes and production roles but leaves out the process on how to make a decision for those strategic positions.

Later, Lim et al. (2006) report on an investigation into the selection and evaluation of the suitable strategic positioning for SMEs in Singapore. They selected the decision process of Baines et al. (2005) as it is potentially the most suitable for SMEs in Singapore. They suggest that the methodology of Baines et al. (2005) is mainly for manufacturing companies and from the perspective of multinational companies, not specifically for the SMEs. The structure of the methodology can be simplified to cater for SMEs and for different industry sectors. In 2007, Lim (2007) developed a strategic positioning decision process for SMEs in Singapore by improving and tailoring the methodology of Baines et al. (2005) to the requirements of SMEs in Singapore. Lim's methodology for strategic positioning has been developed to support SMEs in Singapore from the perspective of a resource based view and for domestic positioning.

3.2.14 A comparison of concepts impacting the position of an organisation

The previous sections have detailed the key concepts and methods that impact the strategic position of an organisation. This section now highlights the differences of these key concepts.

All the concepts presented in the previous sections provide an impact on the supply chain position of a company since they can be applied to modify boundaries of a company. The notional boundary of an organisation exists between those business activities carried out internally and those provided by external organisations. The boundary can be considered in four key business interfaces of a supply chain: suppliers, customers, infrastructure and product range. However, these concepts have different implications on the boundaries of the supply chain. Table 3.4 shows the supply chain boundaries of each concept having an impact. The information from the table can be summarised as following:

- Most of the concepts deal with the supplier boundary and do not deal with all boundaries simultaneously.
- Four concepts from the table are intended to be used for modifying only one boundary which are sourcing and supplier selection for the supplier interface, horizontal integration for the product range, and manufacturing location for the infrastructure interface.

Table 3.4 Comparison of concepts impacting on supply chain boundaries

Concepts	Usual Supply chain boundaries concerned				Decision
	Supplier	Customer	Infrastructure	Product range	
Strategic positioning within global supply chains	●	●	●	●	●
Manufacturing location	□	□	●	□	●
Make or buy	●	□	●	□	●
Vertical integration	●	●	□	□	●
Horizontal integration	□	□	□	●	●
Sourcing	●	□	□	□	●
Supplier selection	●	□	□	□	●
Strategic alliances	●	○	□	□	●
Core competency	○	○	○	○	○
Outsourcing	●	□	●	□	●
Offshoring	●	□	●	●	●

● Intended to be used for ○ Can be used for □ Not intended for

- Three concepts are intended to be used for modifying two supply chain boundaries: vertical integration with the supplier and customer

boundaries (upstream and downstream), make or buy and outsourcing with the supplier and infrastructure boundaries.

- Strategic alliance is the concept that is intended to be used for modifying supplier boundary and tends to be used for deciding customer boundary.
- Offshoring is intended to be used for the decisions of supplier, infrastructure and product range boundaries.
- From all concepts shown in the table, strategic positioning and core competence are the concepts dealing with all key supply chain boundaries concurrently. However, strategic positioning is the concept intended to be used for all key boundaries, while core competency is implicitly used for those boundaries.
- Considering the decision column in Table 3.4, all the concepts are the approaches for decision-making in the supply chain boundaries except core competency. This tends to be a concept supporting those decisions about what should be kept in-house and outsourced (Hafeez et al., 2002; Webster et al, 2005).

With regards to aspects of supply chain boundaries and decision approach, strategic positioning seems to be beyond the other concepts in deciding organisational boundaries. This is because it considers the interactions between manufacturing operations and the wider supply chain networks associated with the organisation in four interfaces, or in other words, it takes a holistic view of supply chain network.

3.3 Review of current research issues

Previous sections have introduced the concept of strategic positioning and various other concepts impacting on strategic positioning have been explored. The intention of this section is to answer the last question of the literature review, namely: what are the current research issues? This section is structured to answer the question by beginning with general issues in the field of strategic positioning. Next, issues on formal decision methods are discussed and guidelines on research process are explored.

3.3.1 Current research issues associated with strategic positioning

There are several concepts associated with modifying an organisational boundary or the strategic positioning of an organisation, providing a number of research papers as discussed in Section 3.2. The evolution of these concepts begins with manufacturing location in quantitative approach focusing primarily on cost factors to the concept of strategic positioning in 2005. Each concept has

continued in popularity as a research topic until now. However, most of the existing literature tends to focus on research in key supply chain boundaries of an organisation within the supply chain independently: supplier, infrastructure, customer and product range, without taking a holistic view of all the four interactions simultaneously (Section 3.2.14). Such research does not consider the impact of one boundary to another as a whole in a supply chain so the decision result could be sub-optimum and some opportunities and threats might be ignored.

Previous work associated with strategic positioning presents both qualitative and quantitative approaches for positioning in a general scope but there is less existing work emphasising specific scope in the global supply chain. In addition, the global scope papers still have limitations by identifying only high-level approaches of content related research and not detailed decision process related research (Elmuti and Kathawala, 2000). With content related research, the potential value to the practitioner from the industry appears to be more difficult to implement these concepts directly (Lim et al., 2007). For the current research on decision process, much of the process and data need to be validated in the real industry so that the process can be rigorous and practical.

Of researchers addressing strategic positioning explicitly, the previous research covers the positioning decision making process and frameworks to modify the scope of a company's activity on the chain; an integrated strategic position decision process (Baines et al., 2005), a framework for the strategic positioning for the future (Johansen and Riis, 2005), and strategic positioning methodology for SMEs in Singapore (Lim et al., 2006; Lim, 2007). It can be summarised that there is a limited number of papers on this research and so far there is no methodology to support strategic positioning within global supply chains. The research works by Baines et al. (2005), Lim et al. (2006) and Lim (2007) deal with strategic positioning from the perspective of a single business unit dealing with its relatively domestic supply chain interfaces and Johansen and Riis (2005) focus on archetypes of a company. Therefore, the review in this section suggests that the main gap in the current literature is the lack of an approach that assists manufacturing companies in strategic positioning within global supply chains.

3.3.2 Current issues associated with formal decision methods

The previous section has concluded that there is a lack of current research in strategic positioning within global supply chains. In this section, current issues associated with formal decision methods are explored for future research direction.

The discussion in Section 3.2.1 has shown the need of a formal method for strategic positioning decisions. From the literature review, there is evidence in

existing research of systematic and formal methods working on the decision process of organisational boundary choices. This work can be classified into two major approaches for decision making, namely (1) quantitative approach and (2) qualitative approach, shown in Table 3.5. As the fundamental assumptions used by each approach are different, therefore the positioning decisions can be viewed in different perspectives from these two approaches. The following part of this section reviews the approaches in the literature using this classification.

Quantitative approach

The first approach to aid decision making found in the literature is the quantitative approach which uses a quantitative basis to make decisions in positioning choices. In this approach, there are two main quantitative methods: economics method and operations research. The theory in the economics method called transaction cost economics has emerged as a predominant theoretical explanation of concepts relating to organisational boundary decisions (Rodriguez and Robaina, 2006). The works from Coase (1937) and Williamson (1985) on transaction cost have come to dominate the literature dealing with deciding organisational boundary (Jacobides and Billinger, 2006; Penttinen and Palmer, 2007; Holcomb and Hitt, 2007; Ellram et al., 2008). The transaction costs method has received great empirical support in its explanation of organisational boundary decisions. Examples of research work using this approach are shown in Table 3.5.

Transaction cost economics provides a theoretical framework for strategic position choices, and changes in the nature of the strategic choices can be understood as devices for transaction cost minimisation. Its main assumption is that a decision maker is an economic maximiser seeking the options that minimise costs or maximise profits. The transaction cost argument is based on the costs arising from opportunistic behaviour in transactions between buyers and sellers that are in separate firms. This traditional approach has been based on financial and economic criteria – can another company provide a component or process for less money than is possible in-house (Platts et al., 2002). However, to look exclusively at the cost aspects of an organisational boundary decision is somewhat myopic (Platt et al., 2002); there are several other important issues that need to be addressed such as quality issues, potential technological capabilities, political climate and competitors' strategies. Some researchers state that decisions on organisational boundaries require multiple inputs and call for a structured strategic approach (Ford and Farmer, 1986; Buckowicz, 1991; Quinn and Hilmer, 1994).

The second method in quantitative approach is operations research that focuses on providing optimised results. This method offers a range of

approaches and techniques that may support the decision maker in dealing with the increased complexity. Examples of such techniques are multi-criteria aid, mathematical programming and data mining techniques (Boer et al, 2001). The current papers range in content from theory to application, from cost justification to the application of operations research techniques in organisational boundary decisions.

The current operations research papers are different in their format, scope and usage of operations research methodologies. Some of the operations research methodologies include activity-based costing, analytic hierarchy process, compromise programming, fuzzy decision trees, fuzzy programming, global programming, integer programming, linear programming, multi-criteria methodology, non-linear programming, scoring methodology, simulation, and etc. Some of the decision areas that have been presented by the application of operations research methodology include vendor selection, lot-sizing, supply chain considerations in outsourcing, managing outsourcing projects, identification of core and non-core assets, integration of outsourcing in enterprise resource planning systems, global sourcing location, and many others.

Examples of researchers working in this method are shown in Table 3.5. Even though these researchers have shown the benefits of operations research to the decisions in this area, limitations of operations research have been cited in various issues such as; the use of the simulated data, dependence on an electronic computer, distance between practitioners and operations researcher, money and time costs and difficulties in implementation (Pongpanich, 1999). More importantly, operation research techniques provide a solution only when all the elements related to a problem can be quantified. Because some relevant variables can not be quantified, they have no place in operations research models. As a result, the evidence that this research method used in practice is very rare. Even the most sophisticated model is of rather limited use. Although there is a small amount of evidence of the practical use of these sophisticated mathematical models in the real company, companies still rely heavily on traditional investment analysis techniques such as Return on Investment (ROI), Net Present Value (NPV), Cash Flow, and Payback Period for their evaluation of investment decision making (McIvor, 2000).

Qualitative approach

The second approach found in the literature for aiding decisions is from the qualitative perspective. Work in this area generally aims to draw concepts and develop processes from practical experience. This approach for aiding decisions usually deals with the act of creating a strategy, the analysis, and implementation issues. Current literature on this perspective tends to use the

process based methodology to show what steps to take, how to perform these steps and why the user must follow those steps in the suggested order. A key recommendation of this approach appears to be the combination of both qualitative and quantitative factors, both focused and comprehensive studies, and both rational and political assumptions (Platts, 1990). In practice, it also leads employees in an organisation to follow the structured steps and open discussions among the employees, destroying the gap of economist or operations researcher with practitioners. In current literature, Baines et al. (2005) and Lim (2007) propose their strategic positioning process using this research approach and their process-based methodologies have been tested successfully for practicability in a number of cases. Other examples of research using this approach are presented in Table 3.5.

Table 3.5 Overview of research streams of formal methods for deciding organisational boundary

Decision Research Approaches	Authors	Description
Quantitative approaches	Economic method - Coase (1937); Walker and Weber (1984); Klein et al.(1990); Lyons (1995); Murray et al. (1995); Vining and Globberman (1999); Ngwenyama and Bryson (1999); Park et al. (2001); Shy and Stenbacks (2003); Geyskens et al. (2006); Jacobides and Billinger, 2006; Penttinen and Palmer, 2007; Holcomb and Hitt, 2007; Ellram et al., 2008	An economics method seeking the options that minimises costs or maximises profit
	Operations research - Li et al. (2000), Coman and Ronen (2000), Balakrishnan and Chen (2005), Yang et al. (2007), Araz et al. (2007), Hafeez et al. (2007), Tsai and Lai (2007), Wadhwa and Ravindran (2007), Bock (2008)	A scientific method of providing decision makers with a quantitative basis to compare the outcomes of alternative decisions, strategies or controls
Qualitative approaches	Venkatesan (1992), Cavusgil et al. (1993), McIvor et al. (1997), Lonsdale and Cox (1998); Padillo and Diaby (1999), Probert (2000), Pongpanich (2000), Zhu et al. (2001); Momme and Hvolby (2002); Humphreys et al. (2002), Franceschini et al. (2003), Zeng (2003), Baines et al. (2005), Jahns et al. (2006), Lim (2007)	A designed sequence of decision steps from practical experience

Each approach has different advantages and disadvantages for aiding decision making. The qualitative approach tends to be less structured and the results are harder to interpret. The quantitative approach seems to be low in practical usage while the qualitative approach is widely used for decision making in practice (Pongpanich, 1999; Sislian and Satir, 2000; Trent and Monczka, 2005; Kakouris et al., 2006; McIvor, 2008). The works of Neely et al. (1996), Bourne et al. (1997), Pongpanich (2000) and Phaal et al. (2001) are good examples of research that indicates that the qualitative approach is useful to formal decision methods in the area of strategy for manufacturing industry. Moreover, the quantitative approach does not adequately support practitioners when forming decisions at the strategic level where there is a need to include many unquantified factors in the positioning decision. Currently, there is also an absence of formal decision methods in the qualitative approach dealing directly with strategic positioning within global supply chains. Hence, the qualitative research tends to be the most appropriate approach for formal decision making methods in strategic positioning within global supply chains. It is very difficult for this type of decision, that is based purely on quantitative factors, to be used in practice. Research is needed to develop a structured and practical process in strategic positioning within global supply chains to correspond with the industrial problems, which have been explained in Chapter 2.

3.3.3 Guidelines on the process approach of strategy perspective research

Accepting that a research thrust on the qualitative approach of strategic positioning is justified, it is appropriate that the issues that surround research methodologies in the field of strategic positioning research are explored. Current literature has identified gaps with the following shortcomings:

Concepts and terminologies associated with strategic positioning are vague and unclear: Concepts and terminologies in this area are always used interchangeably such as sourcing, offshoring, make or buy, outsourcing, foreign direct investment, offshore outsourcing (Arnold, 1989; Petersen et al., 2000; Trent and Monczka, 2005; Jagersma and Gorp, 2007). It is important to make all concepts and terminologies clear so that the research can fully contribute knowledge in the area of strategic positioning. This research attempts to avoid this shortcoming by defining all terminologies and associated concepts of strategic positioning as presented in Section 3.1 and Section 3.2.

Insufficient empirical work and theory testing: Insufficient empirical work and theory testing has been observed and cited by authors such as Saunders and Thompson (1980), Camerer (1985), Adesola (2002), Barnes (2001), Trent and Monczka (2003a and 2003b); Kotabe (2008). Hill (1987) argues that research rigorous in this area must involve testing through application. He calls

for the direct involvement of the researcher, not merely in observation. He said that academics should:

1. crystallise events through first-hand involvement with the issues, not by a process of observation;
2. bring a body of knowledge which they have applied, not acquired by reading;
3. advise businesses on the relevance of suggested approaches, the means for applying them and the methods of evaluation;
4. create new knowledge and concepts from work undertaken.

A lack of relevance to the “real world” (external validity): Platts (1993) criticises that there is much concern expressed in the literature about the lack of research relevant in the real world of practising managers. Likewise, Barnes (2001) addresses that “research may be valuable if it searches for relationships for prescription, it can also be valuable if it seeks to clarify complexity, provide understanding and offer challenges to both the academic community and the thinking manager.” Platts (1993), Bourne et al. (2002), Tan et al., (2004), Tan and Platts (2005) criticise the traditional research approach of interviews and one day company visits and add that questionnaires are unrewarding and lacking in relevance to industrial collaborators in the real world. McGrath (1982), Platts (1993), Brannick and Coghlan (2006), Jack and Raturi (2006), Sanders et al. (2007), and Flynn (2008) then address these shortcomings in current research by proposing three guidelines for research that seek to develop processes in the strategy perspective:

1. the process must link to existing contributions;
2. there must be adequate empirical testing and verification of any proposed process;
3. the results of the research must be relevant to the world of the practicing manager.

Based on these requirements, Platts (1993) proposed the research methodology for the process approach of strategy research, namely:

1. creating the strategy formulation process that links to existing contributions;
2. testing and refining the process by application in a small number of companies;
3. investigating the wider applicability of the process.

This research methodology has been developed, observed, and seen to be appropriate in the earlier work of Platts (1990), Adesola (2002), Bourne et al. (2002), Tan et al., (2004), Viseras (2004), Tan and Platts (2005), and Lim et al. (2007). Furthermore, it is clear that the purpose of the research of this thesis is aimed at the development of processes which will provide managers with practical approaches to improving their operations. Therefore, the adoption of Platts' research methodology, which provides strong implications for both practitioners and the researcher, will be used to form the basis of the research objectives and research programme of the thesis which is presented in the next chapter. On this basis, it is hoped that application and testing of methodologies would become more practical and relevant to practitioners.

3.4 Chapter summary

This chapter has presented a literature review on strategic positioning. The chapter began by defining the terminologies that are used in this thesis. Then, the formal decision methods that can be used in strategic positioning have been reviewed and the differences of key concepts in strategic positioning have been discussed. Finally, this chapter has discussed the current research issues, suggested a research approach for future research, and explored guidelines for the research process. The key findings from the literature analysis suggest that there is much research giving attention to related key concepts however there is little research work about strategic positioning. From the literature search, there is no existing research work taking a holistic approach to strategic positioning within global supply chains. The findings also emphasise the need for a formal decision method for strategic positioning research from a qualitative approach. Therefore, strategic positioning within global supply chains is a valuable topic for a focused research effort to aid practitioners with a strategic positioning decision. The next chapter will establish the research aim and research programme for carrying out the activities in this research.

CHAPTER 4: RESEARCH AIM AND PROGRAMME

Reviews of the industrial context in Chapter 2 and literature in Chapter 3 have established the area in which to direct research. Therefore the intention of this research is to assist practitioners in strategic positioning within global supply chains. In the following sections, an overview of the research problem from earlier chapters will be summarised (Section 4.1). This will lead to the development of the research aim and objectives (Section 4.2). Subsequently, the research programme and details of each research phase are described (Section 4.3).

4.1 The research problem

The manufacturing industry plays a vital role in the UK economy. It generates one sixth of UK overall wealth and has important implications for other industries such as the service industry (Section 2.1). However, the overall UK manufacturing sector has been slowly declining and the sector's share of UK GDP has fallen for many years. Nevertheless, the fall in the share of manufacturing in GDP is exaggerated by the trend towards increased outsourcing of service activities, which was previously done by divisions within manufacturing companies. In addition, the potential for the sector seen by UK government remains strong in the medium and long-term (Section 2.2). There are however many competitive pressures facing UK manufacturers such as customers demanding lower prices, the eastward expansion of the European Union and the entry into the global marketplace of low-cost Asian economies. These have presented tough challenges for UK manufacturing (Section 2.2). The government's strategy (BERR, 2002 and 2004) suggest that in the face of increasing low-cost competition, UK manufacturers will need to move up the value-added chain and embrace knowledge-intensive, high-skilled manufacturing to compete more on quality and less on price (Section 2.3). This indicates that the key challenge for UK manufacturers depend crucially on defining their own position among companies in the manufacturing global supply chains. Currently, UK manufacturers are facing the problem of finding the most advantageous position in the global supply chain network. Such decisions by UK manufacturers have been carried out in a rather disintegrated manner without appreciating the overall impact on a company and its supply chain (Section 2.4).

The evidence drawn out by the literature review in Chapter 3 shows that much of existing literature treats the supply chain boundary on supplier, customer, infrastructure, and product range independently without taking a holistic view of all the four interactions simultaneously and so some opportunities and threats

might be ignored in this research work (Section 3.3.1). In the meantime, there is little research dealing explicitly on strategic positioning. Furthermore, the current research deals with strategic positioning from the perspective of a single business unit dealing with its relatively domestic supply chain interfaces (Section 3.3.1). The challenge therefore remains to develop a structured and practical process in strategic positioning within global supply chains. This will be a valuable aid to managers and practitioners involved with a strategic positioning decision, and support the competitiveness and growth of the UK manufacturing industry (Section 3.3.1).

In the literature, there are two main research approaches for systematic and formal methods for deciding organisational boundary: quantitative approach and qualitative approach. The qualitative approach has been shown to be the most appropriate approach for research into strategic positioning within global supply chains. This is because it combines both qualitative and quantitative factors with their focused and comprehensive studies, and rational and political assumptions for strategic level decisions (Section 3.3.2). Moreover, there are strong guidelines that research work should link to existing contributions, provide adequate empirical testing for practicability and wider applicability, and ensure relevance to the practicing manager. Such guidelines should be taken into account when developing a research aim and programme (Section 3.3.3). This has then led naturally to the research aim and programme which are explained in the following sections.

4.2 Research aim and objectives

The industrial problem has shown the need of research work in strategic positioning within global supply chains. Therefore, the aim of this research is:

“To develop a generic and practical methodology that is an integrated and holistic approach that assists practitioners to deal with strategic positioning within global supply chains.”

There are a number of research issues involved in the fulfilment of the research aim such as weaknesses of the existing literature and the guidelines in conducting the strategy perspective research. Therefore, the following research objectives have been defined:

1. Explore how strategic positioning decision formation takes place in practice and the challenges raised

2. Evaluate and select potential methodologies related to strategic positioning within global supply chains
3. Form a pilot methodology to aid practitioners in the strategic positioning within global supply chains decision
4. Conduct primary evaluation of the pilot methodology to evaluate its practicability in actual use
5. Conduct secondary evaluation of the refined pilot methodology to evaluate its wider applicability
6. Capture the complete methodology in a workbook for wide dissemination to practitioners

The following section presents the research programme for realising the aim and objectives of this research.

4.3 Development of research programme

To realise the above aim and objectives, a research programme has been devised to direct the activities of this research in a sequence of phases. Further detail about the activities at each phase will be added in the associated chapter. This section presents an overview of the research programme and the structure. Then, it describes each phase of the research programme, including the research method chosen and the rationale for each phase.

4.3.1 Structuring the overall research programme

There are many ways in which this research could be carried out, but it should be structured according to the need and purpose of the research (Field and Morse, 1991). The six research objectives have suggested six phases to achieve the delivery of the research aim. Phases 1 to 3 of the programme should concentrate on the formation of a pilot methodology. These phases enable the researcher to explore decision formation from real practices, evaluate and select the potential methodologies, and form the pilot methodology. The focus of phases 4 and 5 should be on the evaluation of the methodology in practice. These phases enable the researcher to evaluate the methodology in actual company applications. Phase 6 should focus on the presentation and illustration of the final methodology.

For Phases 1 to 3, the research problem has identified two weaknesses in the literature that affect the manner in which the formation of the pilot methodology should proceed. Firstly, a methodology for strategic positioning within global supply chains is not apparent. Secondly, and more significant here, knowledge

about strategic positioning in existing literature is limited, in its infancy and empirically weak. In this situation, there are three ways to address the development of a methodology. One way is to develop the methodology on the basis of the existing knowledge about strategic positioning in the literature (Baines, 1994; Lim et al., 2007). However, the weaknesses in the existing literature may mislead research efforts and deliver a sub-optimum solution. The second way is to critically assess the capabilities of existing methodologies, and, on the basis of this knowledge, develop a new strategic positioning methodology. This way will eventually require testing to be carried out over a range of approaches in order to gain confidence that the developed methodology is suitable for strategic positioning and to avoid being criticised as an unsupported practical solution.

The third way is to explore and get requirements from real practice as a basis together with assessing the capability of existing methodologies to form a new methodology. This way ensures that the new methodology has fundamentals of real practicability and rigorous content from existing literature contribution. The research aim in this thesis clearly requires a focus on the strategic positioning within global supply chains methodology that will be rigorous and relevant to a wide range of businesses. As a result, the third way is preferred in this research and is the rationale for carrying out Phases 1 to 3.

A set of conditions to classify research methods from Yin (2003) was considered to identify which research method was the most suitable to form and evaluate the methodology. A set of conditions classifies research methods into five categories – experiments, surveys, archival analysis, histories, and case studies. These conditions are; (a) the type of research question, (b) the control an investigator has over actual behavioural events, (c) the focus on contemporary as opposed to historical phenomena. The research methods and their characteristics are summarised in Table 4.1.

Table 4.1 Relevant situations for different research methods (Yin, 2003)

Method	Form of research questions	Requires control of behavioural events?	Focuses on contemporary events?
Experiment	How, why?	Yes	Yes
Survey	Who, what, where, how many, how much?	No	Yes
Archival analysis	Who, what, where, how many, how much?	No	Yes/No
History	How, why?	No	No
Case study	How, why?	No	Yes

The focus on phase 1 is on exploration of how and why a manufacturing company forms its strategic positioning decision, and the focus on phases 4 and 5 is on the methodology evaluation in real practice. Looking at Yin's (2003) classification, "How" and "Why" questions are likely to favour the use of case studies, histories or experiments. Histories are the preferred strategy when there is virtually no access or control, whereas the case study is preferred in examining contemporary events when the relevant behaviours cannot be manipulated. Finally, experiments are done when an investigator can manipulate behaviour directly, precisely, and systematically (Yin, 2003).

Therefore, in this situation where understanding of the subject being studied is lacking and exploration of contemporary events from company practices is required, the case study method is the most appropriate method. It allows exploration into how and why a manufacturing company forms its strategic positioning decision and evaluation of the pilot methodology in real application. Many authors have employed the case study method as a useful research technique in similar situations (see: Eisenhardt, 1989; Yin, 2003; Hartley, 2004; Maylor and Blackmon, 2005). It is particularly suited to research questions which require detailed understanding of social or organisational processes because of the rich data collected in context. It is also useful for exploring new or emerging processes or behaviours. In this sense, case studies have an important function in generating hypotheses and building theory (Bryman, 1989; Eisenhardt, 1989; Easterby-Smith et al., 1991; Gummesson, 1991; Gill and Johnson, 1991; Yin, 2003; Hartley, 2004). As a result, a case study method will be used in Phases 1, 4 and 5.

The overall research programme is graphically illustrated in Figure 4.1. Each research objective is realised into each phase of the research programme, and forms the basis for the layout of this thesis where each phase is presented as a separate chapter. The first phase of the research programme is to explore strategic positioning decision forming from leading companies in the manufacturing sector. The second phase is to evaluate related methodologies in literature and select potential methodologies. The third phase is to develop a pilot methodology from the results of exploratory analysis in the first phase and the selected methodologies in the second phase. Next, the fourth phase is to first evaluate the pilot methodology to test its application and then use the feedback to improve the pilot methodology. The fifth phase will be to test more widely whether the refined pilot methodology could be generic and robust and make final refinements to the methodology. Once evaluated and modified, the last phase is to present and illustrate the final methodology.

In summary, a six-stage research programme has been developed. Subsequent sub-sections will discuss the associated objectives of each stage and the guiding methods and policies necessary to realise the research objectives.

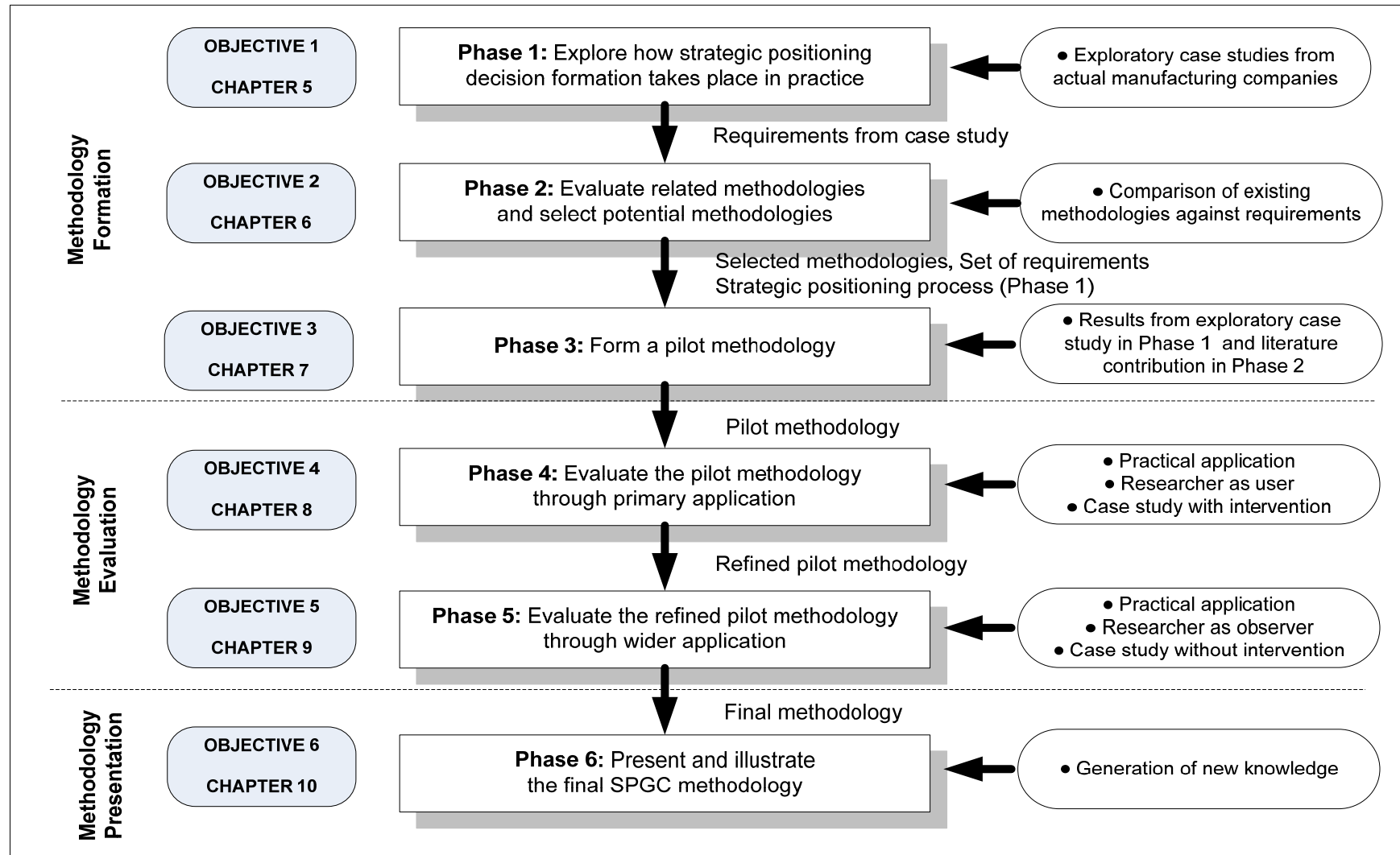


Figure 4.1 An overview of the research programme

4.3.2 Phase 1: Exploration of strategic positioning in practice

The first phase of the research programme intends to achieve the first research objective. The purpose of this phase is to explore strategic positioning decision formation in practice. To achieve this, questions arise as to: how and why strategic positioning decisions are formed within global supply chains and what factors are taken into account in these decisions? This phase needs to fulfil how and why questions in order to understand the decision processes of strategic positioning within global supply chain. As discussed in Section 4.3.1, case studies will be used conducted in this phase because of their usefulness in answering how and why question (Yin, 2003).

The guidelines for conducting a case study, as suggested by Yin (2003), are to define the data collection protocol, select case studies and analyse data. As a result, this phase should start with data collection protocol to find suitable methods for collecting data. This should also include formation of research questions about the strategic decision content and process to conduct an exploratory case study. A decision must be made about whether to use a single case study or multiple case study for this phase, the number of cases to study and criteria for selecting companies. Next, this phase should focus on case study execution and analysis to propose outcomes from the case studies. The main outcomes should be (1) key findings which will be used to set requirements for a new methodology in Phase 2 (2) a decision process which will be used to form a pilot methodology in Phase 3. This phase will be presented in Chapter 5.

4.3.3 Phase 2: Evaluation and selection of potential methodologies

The second phase of the research programme aims to achieve the second research objective. The purpose of this phase is to evaluate related methodologies in strategic positioning within global supply chains and to select potential methodologies for methodology formation in Phase 3. Although Phase 1 presents key findings from practitioners, the strategic positioning process from case studies still lacks the comprehensive and academic theory based content for a pilot methodology. Platts (1993), Adesola (2002) and Lim (2007) suggest that the strategy formulation process must link to existing knowledge which will provide a solid conceptual base for the process. Consequently, it is crucially important in this phase to assess the capability of existing methodologies related to strategic positioning within global supply chains and to select promising methodologies to form a pilot methodology in the next phase.

Therefore, for phase 2 of this research, first the requirements for strategic positioning within global supply chains will be defined. The key findings in Phase 1 present requirements from industry and this phase intends to search

requirements from the literature addressed. Requirements from industry and literature will be combined and termed 'requirement set'. This is followed by an overview of the various existing methodologies related to strategic positioning within global supply chains. The search for methodologies will be conducted in the strategic positioning area and related concepts (Section 3.2) which is to broaden the limitation of current contribution in strategic positioning (Section 3.3.1). Next, the various methodologies will be evaluated against the set of requirements to analyse their strengths and weaknesses. Finally, the potential methodologies will be selected, as a good grounding for creating a new methodology, which will be carried forward for methodology formation in the next phase. The results from this activity phase will be presented in Chapter 6.

4.3.4 Phase 3: Formation of pilot methodology

The third phase of the research programme intends to fulfil the third research objective. This phase will provide an opportunity to establish combination views of practice and theory for formation of a strategic positioning within global supply chains methodology. The purpose of this phase is to form a pilot methodology based on the process results from Phase 1, the set of requirements and the potential methodologies from Phase 2.

The formation process first determines two elements of a pilot methodology, namely, structure and content. Based on the structural framework, the potential methodologies and the decision process derived from the exploratory case studies in Phase 1 will be mapped to generate a basis for the new approach. The content will incorporate elements required in a pilot methodology and focus on both practical and theoretical basis. The combined structure and content will form the pilot methodology as described in Chapter 7.

4.3.5 Phase 4: Primary evaluation of pilot methodology

This phase accomplishes the fourth research objective and it is the first part of evaluating the principles of the pilot methodology. The purpose of the fourth phase of the research programme is to evaluate the pilot methodology in practice in order to ascertain whether it is workable, to determine whether the methodology provides a practical, procedural step in the activity of strategic positioning within global supply chains and to seek opportunities needed for methodology improvement.

Guidelines for the researching strategy are provided by Platts (1993). He suggests that the first testing should be applied in a small number of companies and the researcher should be involved as a direct observer, a participant observer or action research. He further comments in his later works (Platts et al., 1998; Neeley et al., 1996; Tan et al., 2004; Tan and Platts, 2005) on the effectiveness of action research for the testing process. In action research, the

researcher not only participates in the activity but seeks to direct and influence the way in which the activity is conducted. However, the role adopted by the researcher is not that of a consultant who independently assesses the organisation under study, making recommendations based on his/her observations, but is that of a “facilitator” who catalyses the process within the subject company (Platts, 1993; Tan and Platts, 2005). Therefore, the testing of the methodology in this phase will be undertaken by combining the roles of Platts’ three categories with the researcher acting as the user, facilitator, and participant in the case research, so called intervention method.

This intervention method used by the research to carry out the activity in this primary evaluation may be referred to as action research. Even though the words ‘action research’ have not been used specifically in this study, the work will involve participant intervention, which is a form of action-oriented research (Adesola, 2002; Eden and Huxham, 2002; Lim, 2007). Action research has become increasingly prominent among researchers involved in the study of organisations as an adopted pattern used to justify the validity of a range of research outputs (Susman and Evered, 1978; Eden and Huxham, 2002). The action research is defined as an involvement of the researcher in working with members of an organisation over a matter which is of genuine concern to them and in which there is an intent by the organisation members to take action based on the intervention (Eden and Huxham, 2002). The value of action research can be seen to be in developing and elaborating theory from practice. The outcomes of action research are solutions to the intended problems, intended and unintended learning and contribution to knowledge. The outcome must be capable of being couched in other than situation-specific terms.

Therefore the evaluation plans to assess and explain the results of the intervention. A case study with participant intervention is chosen as the appropriate research method to achieve relevance and rigour of the research aim. Detailed information on data collection protocol, company selection and the conduct of the case studies are provided in Chapter 8. The results from case study application will be used to refine the pilot methodology for wider testing in the next phase. The discussion of this phase is described in Chapter 8.

4.3.6 Phase 5: Secondary evaluation of refined pilot methodology

This phase serves the fifth research objective and it is the second part of evaluating the methodology. The purpose of this phase is to improve the refined pilot methodology through further evaluation in wider application. The wider application is to determine whether the methodology could be generic and robust and to find out whether the methodology is useful, usable and feasible in different environments.

Platts (1998), Adesola (2002) Tan and Platts (2004), Tan and Platts (2005) and Lim (2007) suggest in this wider company testing phase that there is some danger of the facilitators achieving success by means of their process consultancy skills developed during the testing phase. This is because the primary testing were conducted with the researchers who had been intimately involved in the development of the process. In order to minimise this effect, a second phase of testing should be undertaken to test the process more widely using facilitators who are new to the process. They further state that facilitators could be employees of the companies or graduate students who have not previously been involved in either strategy formation or management.

The participating companies will have to be selected by satisfying certain requirements and an appropriate data collection method may need to be chosen for the research. Once companies are selected, then the method of a case study without participant intervention will be adopted to test the independence of the methodology to the researcher. The researcher expects to act as a participant observer to the case studies and observe what goes on by using different research instruments such as questionnaires, telephone conversations and semi-structured interviews with the companies involved. It is planned that each company will conduct the methodology in their own organisation.

The results found in each company will be compared and a cross-case analysis will be made between the case studies. It is expected that this phase of testing will confirm the primary testing, and also result in a number of changes to the methodology to make it feasible, usable and useful for a much wider audience. These changes will enable the final refinement to the strategic positioning within global supply chains methodology. This phase of wider application and final refinement is discussed in Chapter 9.

4.3.7 Phase 6: Presentation and illustration of final SPGC methodology

The sixth phase corresponds to the sixth research objective. The purpose of this phase is to present and illustrate the final SPGC methodology, which is the main contribution of this research. This phase intends to show how the SPGC methodology has been formed and to present principles, structure, content, and stages of the final methodology. The outcome of this phase will be a fully tested and refined methodology in the form of documented workbook. The final phase is described in Chapter 10.

4.4 Chapter summary

This chapter has presented the research problem and then proposed a solution to assist practitioners involved in the decision of strategic positioning within global supply chains. Subsequently, the research aim and objectives for the thesis were established. A six-phase research programme realising six research objectives has been proposed that would fulfil the academic rigour and industry relevance. Phases 1 to 3 will enable the researcher to explore the actual strategic positioning within global supply chains decisions from leading manufacturing companies and to evaluate existing related methodologies. It will also enable the researcher to select the potential methodologies, with the aim of developing the methodology from academic theory and practitioner experiences. Phases 4 to 5 will then enable the researcher to evaluate the proposed methodology with real-life industrial case studies. The overall study will employ two typical approaches, which are the case study method and the intervention method, to guide the research. In phase 6, the final methodology and its application will then be presented and illustrated. All these phases are described in Chapters 5 to 10 in this thesis.

CHAPTER 5: EXPLORATION OF STRATEGIC POSITIONING IN PRACTICE

This chapter explores strategic positioning processes and important factors in strategic positioning decisions from leading manufacturing companies. This chapter commences by developing the method in this phase (Section 5.1). In line with this research method, the second section presents the design of data collection protocol (Section 5.2) and the third section presents the selection and engagement of companies (Section 5.3). The execution of case studies is then explained (Section 5.4) and finally the analysis of results from case studies is discussed (Sections 5.5 and 5.6).

5.1 Phase 1 overview objective and method

The objective of this phase of research is to explore the formation of a strategic positioning decision of leading manufacturing companies in global supply chains. As established in Section 4.3.2, the research method preferred in this phase is the case study method since it is suitable for qualitative, quantitative methods, single or multiple cases, and for building theory from empirical research (Eisenhardt, 1989; Lemke, 2003; Hartley, 2004). This means that the main focus of phase 1 is a rigorous exploration study through actual companies in manufacturing industry. Section 4.3.2 has also determined the guideline from Yin (2003) to carry out this phase which involves:

- designing data collection protocol;
- defining company selection;
- executing case studies;
- analysing results from case studies.

Therefore, this phase starts with the design of the data collection protocol, which concerns what data should be collected and how to collect data (Section 5.2). On what data should be collected, literature on strategic decision making is reviewed to form research questions about strategic decision content and strategic decision process for conducting case studies (Sections 5.2.1 and 5.2.2). Next, the selection of companies is discussed on the number of cases to study, criteria for selecting companies and company engagement (Section 5.3). Later, case study execution is then explained from the manufacturing companies that are in line with the defined company criteria (Section 5.4). Finally, case studies are analysed to propose findings from content results and process results (Sections 5.5 and 5.6).

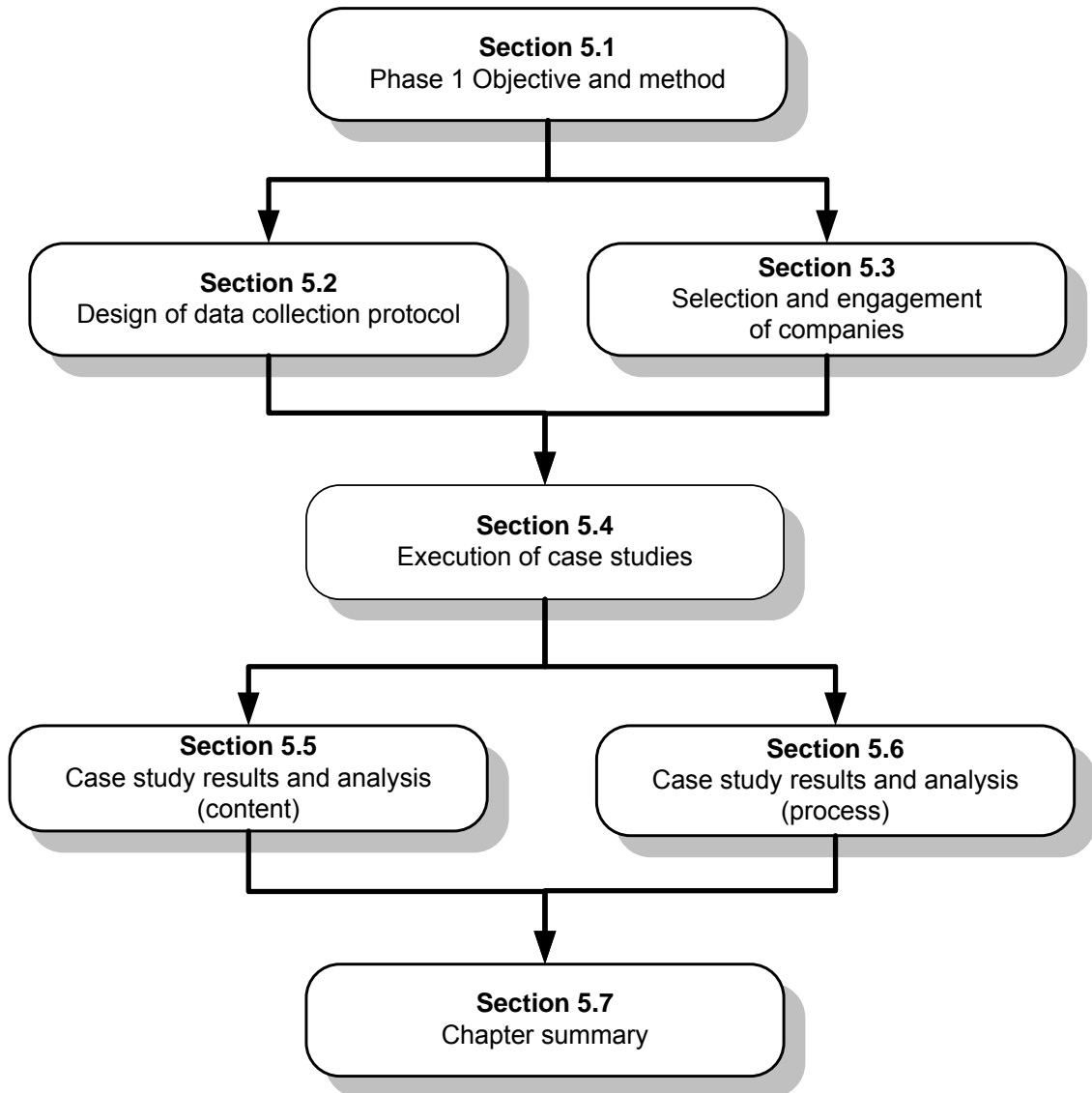


Figure 5.1 Method for exploration of strategic positioning decision formation

The content results will be used to set requirements of a new methodology from an industry perspective in Phase 2, Chapter 6, and the process results will be operated as a starting point to form a pilot methodology in Phase 3, Chapter 7. A graphical illustration of the process in this phase is shown in Figure 5.1.

5.2 Design of data collection protocol

Although Yin's work (2003) provides a good structure for conducting the case study research, it does not help in defining what and how data should be collected from the case study. Hence, this section aims to answer these two questions. Sections 5.2.1 and 5.2.2 answer the question of what data should be collected, and Section 5.2.3 deals with the question of how data should be collected.

5.2.1 Formation of research questions about strategic decision content

This section establishes the research questions about strategic decision content in order to conduct case studies in a structured manner.

Strategic decisions are the most fundamental and important decisions that a business has to make (Jennings and Wattam, 1998). These decisions have an impact on many aspects and functions of the organisation, and influence its direction, administration and structure in fundamental ways (Christensen et al., 1982). They are impinged upon by environmental forces, which create uncertainty about strategic issues (Shrivastava and Grant 1985). Strategic decisions deal with novel, ill-structured, complex sets of interdependent problems facing the organisation (Mintzberg et al., 1976). The study of strategic decision-making has long been of interest to both scholars and executives (Ireland and Miller, 2004) in different disciplines, such as cognitive psychology, social psychology, management theory, political science, sociology and economics (Dean and Sharfman, 1996; Papadakis et al., 1998; Boonstra, 2003).

A school of thought that is rooted in economics includes rational models of decision-making, such as classical models of strategic planning. A logical assessment of the business strategy, organisational goals and future trends are part of logical and rational decision-making processes. Rational models assume that there is some form of agreement among stakeholders about organisational means and ends, as well as room to design or search for alternatives. Hitt and Tyler (1991) describe rational decision-making as a series of analytical processes whereby a set of objective criteria are used to evaluate alternatives.

The school of thought rooted in psychology emphasises bounded rationality (a highly restricted view of reality with the goal of satisfactory instead of optimal

alternative), interruptions during the decision-making process and incrementalism (small changes in existing policies or procedures rather than radical innovations). Political science and sociology view decisions as outcomes of political and social processes among groups with diverse and conflicting interests and unequal power. Examples of some influential scholars within these traditions are Pettigrew (1973), Mintzberg et al. (1976), Quinn (1985) and March (1994). These authors emphasise, from different perspectives and in different ways, the fact that decision-making processes in organisations are often influenced by:

- the limited ability of people to process information;
- organisation's relationship to its environment;
- disagreement among stakeholders;
- change, uncertainty and indistinct objectives;
- psychological barriers of individuals and groups to adapt information and act in a rational way;
- the tendency towards incrementalism and arbitrariness in decision-making.

A variety of terms illustrate this thinking including: bounded rationality (Simon, 1960), garbage-can model – ambiguous behaviours (Cohen et al., 1972); politics (Pettigrew, 1973); incrementalism (Quinn, 1985; Eisenhardt and Tabrizi, 1995); groupthink (Janis, 1989) and irrationalities (Brunsson, 1982). Even though there are many approaches which could lead to a debate on strategic decision process, many authors suggest that researchers can identify general patterns and a basic logic in the decision-making process (e.g. Simon, 1960; Mintzberg et al., 1976; March, 1994). The review in this section results in the research questions on strategic decision content which are shown in Table 5.2. The next section will provide an overview and important issues of strategic decision process in order to form research questions about the strategic decision process.

5.2.2 Formation of research questions about strategic decision process

Various dimensions/aspects of strategic decision processes have been emphasised in the literature (Papadakis and Barwise, 1998). Many studies in the field of strategic decision processes describe the process as a sequence of steps, phases or routes at multiple levels of the organisational hierarchy, and through bilateral bargaining among stakeholder groups, in an environment characterised by a high degree of uncertainty and complex goal structures (e.g. Mintzberg et al., 1976; Fredrickson, 1984; Shrivastava and Grant, 1985). The strategic process is a pattern of organisation behaviour (Weick, 1979; Barnard,

1983) that is visible to executive-level members, and that the characteristics of that process tend to be consistent across decisions that are perceived as clearly strategic (Fredrickson and Mitchell, 1984).

Table 5.1 presents an overview of strategic decision processes proposed by various researchers in the decision making area. From general observation, there are three main similar stages in every methodology. These stages can be categorised into three phases: identification, generation of alternative solutions, and the analysis and choice of a feasible alternative. This three-phase process aligns with many researchers' suggestions on the decision process phase (e.g. DIO International Research Team, 1983; Hickson et al., 1986; Jennings and Wattam, 1998; Boonstra, 2003; Nicolas, 2004; Boer et al., 2006). Researchers have agreed and supported that the route towards a decision goes through three phases as proposed by Mintzberg et al. (1976).

- Identification phase: recognition the need for decision and develops an understanding of the decision issues.
- Development phase: developing one or more solutions or to the elaboration of an opportunity.
- Selection phase: evaluating the alternatives and choosing a solution for commitment to action.

The three-phase process proposed by Mintzberg et al. (1976) tends to cover all stages of other proposed processes, see Figure 5.2. Their model has been used widely in discussing strategic decision making processes. Their first phase, the identification phase, consists of two main activities: the recognition of a problem situation, and a tentative diagnosis of it. A decision-making process usually begins when a discrepancy between an actual and a desired situation is observed. Whether this observation will also lead to the resolve to do something about it depends partly on the estimated likelihood of finding a satisfactory solution. Then follows the diagnosis of the problem, which begins with an exploration of the usual information channels within the organisation. The diagnosis is by no means always explicit. Other sources (Pfeffer, 1981) attach considerable importance of this phase on the subsequent course of the decision making process.

The development phase, which takes up the most time, is described in terms of two basic processes: search and design. Search applied to an exploration of already existing solutions; design refers to designing new solutions, or at least adapting existing alternatives. The search is conducted along hierarchical lines. First, the most obvious, commonly recognised alternatives are considered. If they yield no satisfactory result, more inaccessible alternatives are explored. This confirms what Cyert and March (1963) have hypothesised concerning the simple-mindedness of the search process. If there are no solutions available, alternatives must be generated. Mintzberg et al. (1976) report that usually only

one solution is elaborated, which would agree with the results of Snyder and Paige (1958).

The selection phase in this model has three stages: screen, evaluation/choice, and authorisation. Screening is important if a large number of options are available. It is a rather superficial process whose main purpose is to rule out less acceptable alternatives. Later, after a more thorough evaluation, the most satisfactory one will be chosen. The evaluation/choice stage itself can take three different forms (Cyert and March, 1963; Hickson et al., 1986; Papadakis and Barwise, 1998).

- Judgement; one individual makes a choice in their own mind with procedures that the decision maker does not, or perhaps, cannot explain.
- Bargaining; selection is made by a group of decision makers with conflicting goals, each exercising judgement.
- Analysis; factual evaluation is carried out, generally by technocrats, followed by management choice by judgement or bargaining.

It is possible that routines can be repeated over and over again so that phases and whole processes turn back upon themselves. The final stage in the decision-making process is official endorsement of the decision. With strategic decisions, this usually takes place at the top of the organisation. A number of supportive processes run parallel to the three main phases of decision making: decision-making control processes, communication processes, and political processes.

The model by Mintzberg et al. (1976) provides a useful contribution to addressing the diversity of decision making. It is regarded by many management theorists as state-of-the-art for comprehending complex strategic decisions and as a constructive tool for the researcher who wishes to study strategic decision making in a structured and orderly manner (DIO International Research Team, 1983; Hickson et al., 1986; Jennings and Wattam, 1998; Boonstra, 2003; Nicolas, 2004; Boer et al., 2006). Therefore, this model is adopted for developing research questions about the strategic decision process for conducting case studies, shown in Table 5.2. Apart from that, the model will be used to display a common decision making process captured from case studies in Section 5.6.

Table 5.1 Decision process stages

Process	Stages
Decision making process Simon (1960)	Finding occasions for making a decision Finding possible courses of action Choosing among courses of action
Decision making process Simon (1947), Harrison (1995)	Identification and definition of the problem Seeking solutions Considering the alternatives Selection
Strategic decision process Mintzberg (1976)	Identification phase - decision recognition - diagnosis Development phase - search - design Selection phase - screen - evaluation - authorisation
Strategic decision process DIO International Research Team (1983)	Start-up Development Finalisation Implementation
Stages in decision making Cooke and Slack (1984)	Recognising the need for a decision Defining the problem Determining the options Evaluation Making the choice Implementation and monitoring
Strategic decision making process Shrivastava and Grant (1985)	Problem familiarisation Refinement of problem and solution Evaluation of other alternatives Development of a feasible solution Ratification by top management Specific decisions to actions and outline of general approach to policies
Managerial decision making process Harrison (1996)	Setting managerial objectives Searching for alternatives Comparing and evaluating The act of choice Following up and controlling the decision
A normative model of decision-making process Jennings and Wattam (1998)	Organisation goals and objectives Performance criteria Problem identification Choice Testing implementation and control
Decision making process Nicolas (2004)	Intelligent phase - the goal is to construct and to understand the issue. Conception phase - the purpose is to conceive the alternative solutions. Selection phase - the best solution is chosen.
Strategic decision making process Bhushan and Rai (2004)	Establish understanding of current and target state Define goal and devise careful plan or process towards goal Identify criteria to evaluate alternative approaches Check feasibility Identify the team and individual roles Evaluate various alternatives and come out with the possible solutions Rank them based on the risks and returns Deploy the best alternative and align its outcome with the goal
Conventional model of decision process McKenna and Smith (2005)	Identify the problem Generate alternative solutions Evaluate and choose Implement

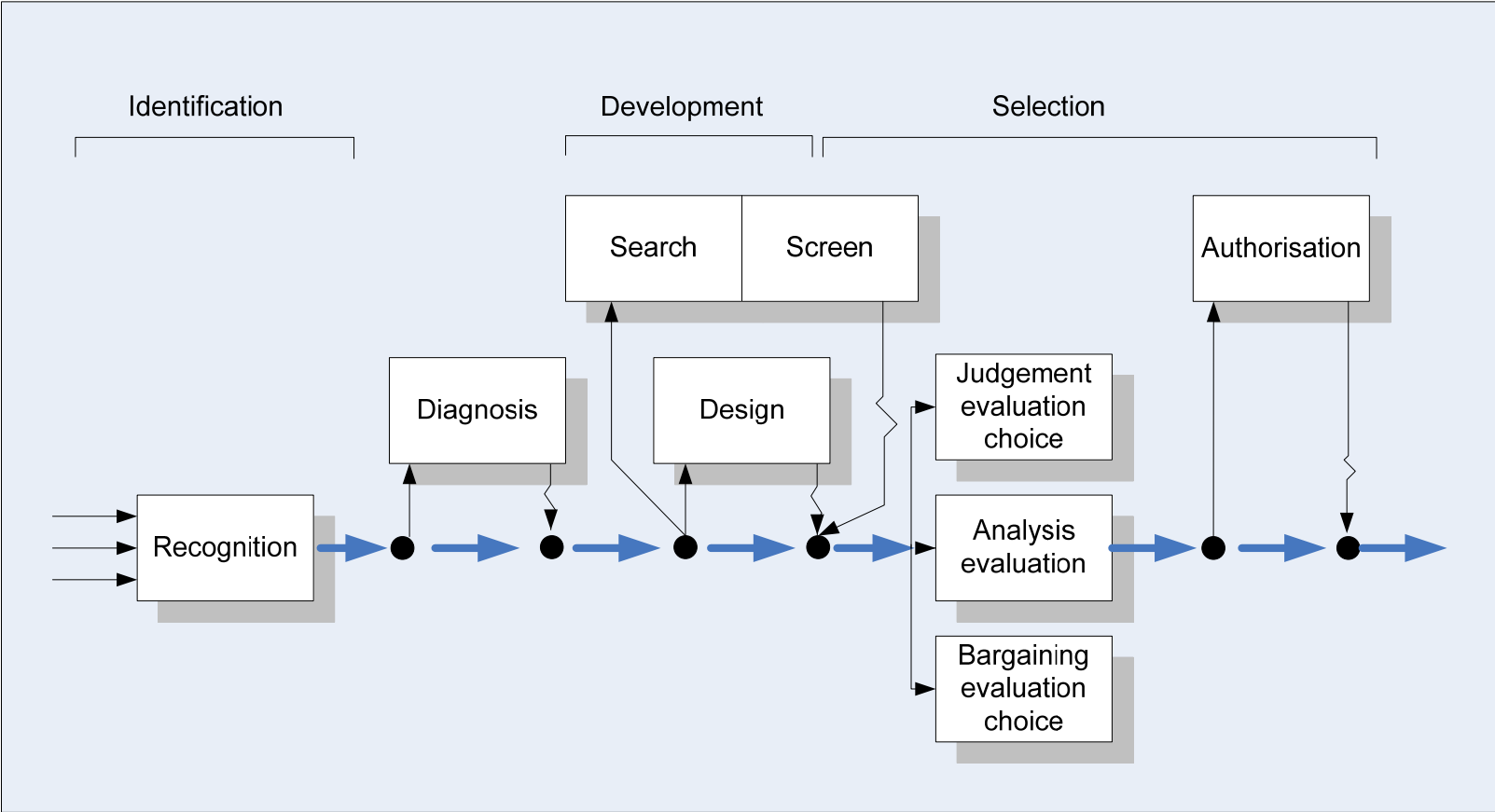


Figure 5.2 A general model of the strategic decision process (Mintzberg et al., 1976)

Table 5.2 Research questions

	Issues	Details
Decision content	Background	General background of the company such as size, product, variety/volume, location, management system, culture, history, business information, the company's supply chain etc.
	Strategic direction	Business strategies and competitive status
	Strategic decisions	Recent strategic decision making according to strategic position of the company
	Influences	Impacts of the organisation, individual and its environment to strategic decisions
Decision process	Decision process step	Process step by step from the initiate stage to the specific commitment to action Decision plan Decision makers, project team, authorizers and the reasons of choosing project team Process time
	Identification phase	Drivers for change, diagnosis drivers, goals and objectives
	Development phase	Searching/developing possible alternatives Screening method
	Selection phase	Criteria to evaluate choices Establishment of action plan Authorization method
Decision content	Tools, techniques	Tools, techniques that were used during the decision process
	Result	The results, satisfaction of results, measurement for success/failure
	Dynamic factors	Problems, obstacles, interferences, speed-up, influence factors
	Experiences	What went well? What didn't go so well? What would you do different next time?

5.2.3 Data collection method

The section deals with the question of how data should be collected in this phase. To realise that, several methods for data collection are reviewed. The chosen methods for data collection are from two sources: secondary sources where information required is already available and need only be extracted, and primary sources where the information must be collected (Kumar, 2005), see Figure 5.3. It is appropriate to use both secondary sources and primary sources in this phase as the advantages of secondary and primary sources could provide more quality and reliable information for the researcher (Maylor and Blackmon, 2005).

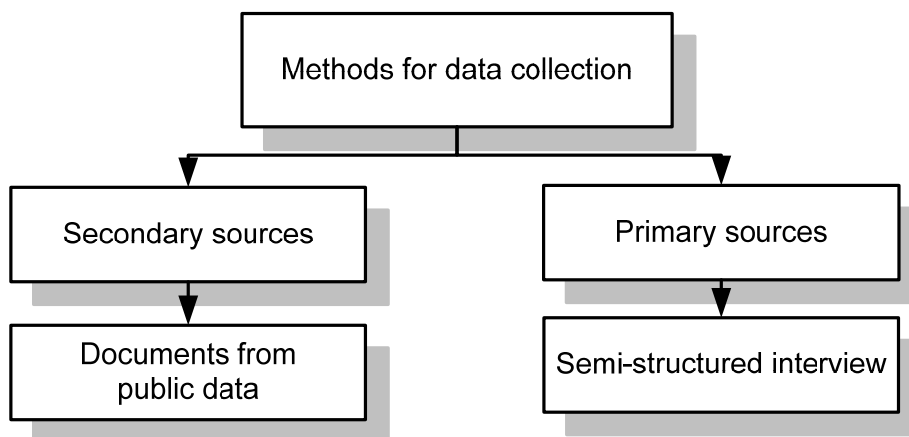


Figure 5.3 Method for data collection
(Adapted from: Nachmias and Nachmias, 2005)

Data on the company is available to the public in secondary sources such as web sites, electronic databases, company documents, company reports etc. For primary sources, there are three main methods of data collection, namely; observation, interviewing and questionnaires (Kumar, 2005; Maylor and Blackmon, 2005). Among these three methods, in this phase situation, a semi-structured interview is assessed as the most appropriate method to explore companies' experiences in making their strategic positioning decisions. This is because the interview is the most appropriate approach for studying complex and sensitive areas as the interviewer has the opportunity to prepare a respondent before asking sensitive questions and to explain complex ones to respondents in person. It is also useful for collecting in-depth information and questions during interviews can be explained to avoid wrong interpretation from respondents (Kumar, 2005). Consequently, the research questions about strategic decision content and the process developed in Sections 5.2.1 and 5.2.2 were used as interview questions to collect data on strategic positioning decisions from case studies.

5.3 Selection and engagement of companies

This section describes the process taken to define the selection of companies and the engagement of companies as part of the case study method.

5.3.1 Company selection criteria

This section justifies the selection of companies for the exploratory case study. There are three steps in selecting companies to study. The first step is to decide whether this phase of research should be based on a single case study or on multiple cases. Eisenhardt (1989) argue that both single and multiple case designs can be adopted for exploratory research. A single case study can provide valuable information about why a phenomenon occurs (Darke et al., 1998). However, in single case studies, the challenge is to disentangle what is unique to that organisation from what is common to other organisations. In this research phase, this limitation must be avoided and replication logic from several cases must be studied in order to explore unique and common issues among cases. Therefore, multiple case studies are adopted in this research phase because it serves the purpose of this phase to identify which features are unique to a case and which are common across cases (Yin, 2003; Maylor and Blackmon, 2005). The replication and contrast from multiple case studies provide a significant advantage over the single case study design during building and testing theory (Herriott & Firestone, 1983). The researcher can test or build theory by looking for a pattern across the cases, use individual cases to support or contradict propositions or develop a more complete theoretical picture (Maylor and Blackmon, 2005).

The second step is then to decide the number of cases to study in this phase. Eisenhardt (1989) suggests that between four and ten cases are desirable for theory building using a case study. With fewer than four cases, it is often difficult to generate theory and its empirical grounding is likely to be unconvincing. With more than ten cases, it is difficult to cope with the complexity and volume of data. From his suggestion, the number of cases in this phase therefore should be between four and ten cases.

The third step is to set criteria for selecting companies using the multiple case study method. The company criteria have been set as follows:

- The company must be in the domain of manufacturing companies.
- The company must be a leading company in its industry, and show its success in doing business and also in strategic positioning.
- The company must be from a different context: a different industry, and have a different range of product volumes and varieties in order to generalise key findings.

- The company must have experience in strategic positioning within global supply chains, either investing or divesting their supply chain infrastructure abroad through offshoring or offshore outsourcing, illustrated in the shaded blocks of Figure 5.4.

Location Firm	Domestic	Abroad
Internal – direct control	In sourcing	Offshoring
External – with involvement of a third party	Outsourcing	Offshore outsourcing

Figure 5.4 Scope of company selection

- In order to gain several companies' experiences in making strategic positioning decisions, each chosen company should have different overriding issues for their strategic positioning decisions such as offshoring for vertical integration, offshoring for focusing new markets, and offshore outsourcing for capacity expansion etc.

These criteria were used to select companies for the case study. The following section will explain details of the researcher's approach to companies in the case study.

5.3.2 Company engagement

When the guidelines for company selection have been determined, an approach to companies was adopted. An email describing the study's purpose and requesting permission for interviews was sent to companies of Executive MBA graduates and companies with a link to Cranfield Manufacturing Department. This was followed by phone calls to them one week later to answer their interest and queries. Emails were sent immediately when a company requested any further information.

After several attempts, four companies aligning with the company selection criteria agreed to participate in the study. The number of case studies falls in

the limit of case study number, as suggested by Eisenhardt (1989) and Yin (2003), to facilitate theory building and to verify similar results or highlight contrasting results. Therefore, in this research phase, four manufacturing companies are studied to explore their strategic positioning decisions.

The four manufacturing companies are all leading companies in their industries and have experiences in strategic positioning within global supply chains. They exist in different sectors of the manufacturing industry and produce different product volumes and varieties, which would reflect the similarities and contrasts of strategic positioning decisions from different perspectives, see Figures 5.5 and 5.6.

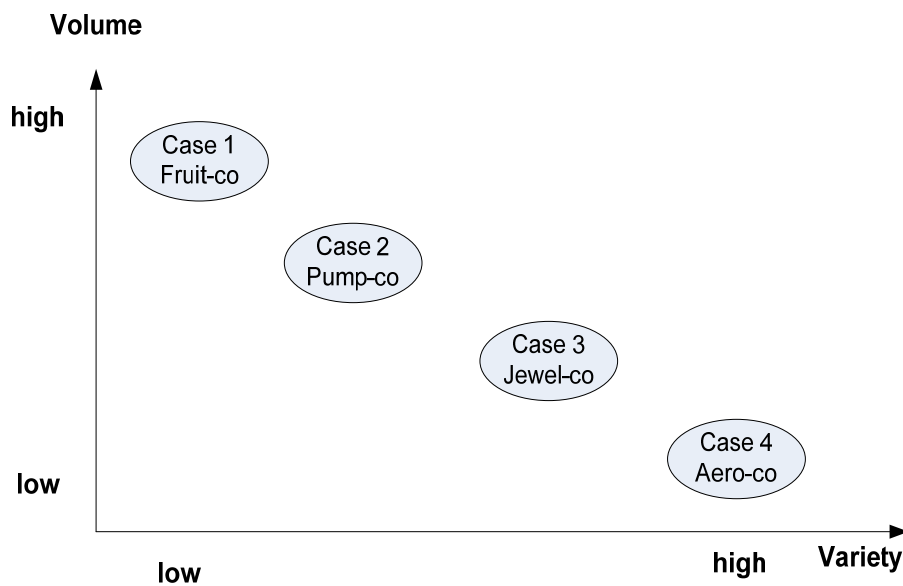


Figure 5.5 Volume and variety chart of case studies

Location Firm	Abroad
Offshoring – direct control	Pump-co Jewel-co Aero-co
Offshore outsourcing – with involvement of a third party	Fruit-co

Figure 5.6 Offshoring and offshore outsourcing chart of case studies

After the company agreed to be involved in the study, data collection started from secondary sources to get a picture of the company position in each case before it was visited. Basic data on the company was collected using publicly available data such as web sites, electronics databases, company reports etc. From this data, the historical developments of the case study companies were assessed to help understand how and why these companies came to succeed, and to comprehend how and why the companies manage the strategic position of its manufacturing operations within global supply chains. Then, semi-structured interviews were conducted in-person with the high level management of each company. These interviewees played key roles in the company's strategic positioning and were recently involved in repositioning projects in their organisations.

In each case, they were asked to answer the prepared research questions about their strategic positioning content and process (Table 5.2). They described how they went about the strategic positioning process, including how the project was initiated, the steps they went through, who were involved and the outcome of the process. Questions were also asked about the experience that they gained from the repositioning process, for example, what went well, what didn't go so well and what they want to improve in the decision process in the future. The four companies in these studies are all striving to maximise their competitive positions and their internal efficiencies. Because of restrictive disclosure regulations the names of the analysed companies are not allowed to expose but surrogate names are used to loosely reflect their core businesses.

5.4 Execution of case studies

An overview of the four case studies is presented in this section. Each case presentation contains brief background information about the company and a short summary of their strategic positioning decisions.

5.4.1 Case 1: Fruit-Co

Fruit-co is a vertically integrated agribusiness supplying fresh fruit globally. The company is South African based with sales offices and packing houses in the UK, Canada and recently in Belgium. The nature of perishable goods makes efficient operations and is key to the company's growth and success. The company's operations are complex because of the diversity of the product range, geographical spread of production estates and different supermarkets' 'route-to-market'. With these complex supply chains, the company selected a strategy to own its core competencies which are products and high technology pack-houses in South Africa and set up sale offices to deal with big markets in overseas countries while outsourcing pack-houses to local companies.

Fruit-co positions itself by having its own source of products and packing houses close to farmers and outsourcing operations further down in the supply chain in order to reduce business risk. However, it has also moved forward to the customer interface by setting up sale offices in Canada and UK which replace distributors' works. Recently, the company has established a new sales office in Belgium and outsourced a packing house to a local provider. The drivers to set up a new facility are the European market size and relationship with European supermarkets. The internal working team did a feasibility study, contacted customers, understood the cost change and made a proposal to the decision board to approve the project. Because the business environment is dynamic, they are now considering reducing the labour cost in Europe and Canada. To keep costs as low as possible, packing at source is one choice that the company may keep focusing on more, however, keeping the packing process close to its customers enables a company more flexibility to change packaging.

5.4.2 Case 2: Pump-Co

Pump-co is a leading supplier to the semiconductor industry. It has a unique position as a fully integrated supplier to the global semiconductor industry. It has expanded its business through both internal growth through product development and external acquisition. It acquired several businesses with the aim of complementing and enhancing the product range offered to its customers. After successfully broadening its range of products and services, it continues to improve its market position and embark on a restructuring programme to achieve cost savings. Among initiatives to reduce production costs, it has moved some manufacturing activities to lower cost economy countries. Because of the strong demand in Asia especially, in Taiwan and Korea, the company is focusing more on serving the market. In this research, the business unit of vacuum products was selected and studied in depth for the strategic positioning decision.

Pump-co has set up a new vacuum production plant in South Korea recently. The primary drivers of this project were cost reduction and the move of the customer base to Asia. The main reason for the new positioning was to have a faster response in terms of lead time and customer requirements to Asian customers. Initially, the company considered setting up a new production plant in China but after considering a number of risk issues such as logistics, customs process and intellectual property protection, the company changed direction to focus on South Korea where the company had a service facility. Moreover, the major customers are in South Korea. The company performed a business case analysis which included overall project information and financial analysis. The company used project metrics, which are mixture of shop floor operations and

in-office operations, to measure South Korea's capability and compare these to UK operations and set a target plan.

5.4.3 Case 3: Jewel-Co

Jewel-co is the world's leading supplier of fabricated precious metals to the jewellery industry. Demand for finished jewellery products is influenced to a large extent by both consumer confidence and consumer preferences. Consumer confidence has been depressed for a few years and this trend is exacerbated by the shift in customers' discretionary spend away from jewellery products and more towards consumer electronic products. Jewel-co decided its new position by launching restructuring programs such as closing two manufacturing sites in France and consolidating seven sales offices to three and reorganising to focus on gold products in the UK and silver products in Spain.

Jewel-co is in every level of the jewellery supply chain apart from retailer level. Recently, the company finished the restructuring of its manufacturing operations. It closed all manufacturing operations in France and moved some of its manufacturing offshore to the low cost labour countries and to factories that it has elsewhere in Europe with the same processes. The main drivers for this restructuring were profitability and industrial dynamic change. Seven business models and potential risk profiles of each strategic model were created and studied in depth. Jewel-co used financial factors such as pay back period, return on investment, etc. and business risks such as the success of training, amount of stock, etc. to make the selection. In order to improve the operations after restructuring, the company measures return of investment, operating profits, cash flow, customer satisfaction, delivery performance, customer feedback, employee satisfaction and other issues with labour union.

5.4.4 Case 4: Aero-Co

Aero-co is the world-leading provider of power systems. Its strategies are to address the target global markets, to invest in technology and to add value through the provision of product-related services. Cost reduction and development of aftermarket services are also a priority for the company's direction. The company made progress in operational and unit cost reduction by increasing productivity in plants, managing its supply chain better and buying more from low-cost sources. Additionally, the company focuses more in the Asia market because of rapid growth in Asia. It has invested and established joint ventures in some countries in Asia in order to expand engineering capacity over a range of new programmes.

The company positions itself successfully in the business. The high investments and competitive product portfolio create high barriers to entry into the industry.

Internal operations have been improved by a supply chain restructuring programme and site improvements. To decide what to make and what to buy, the company uses a make/buy chart developed originally by a university and a consulting company. This chart is used for planning in each component family. Each business group assesses products with the chart quarterly or monthly. At the meeting, the assessment changes then the strategic team will discuss the whole process and the consequences of the change. The change will be assessed again by a sourcing review board to approve or reject the change. The measurements such as scorecard, lead time, quality, delivery performance and cost are used for comparisons before and after changing.

5.5 Case study results and analysis (content)

The results of the four cases are analysed in Sections 5.5 and 5.6. Section 5.5 emphasises the analysis of content results, presenting findings of the factors that were taken into account in the strategic positioning decisions from case studies. Section 5.6 focuses on the analysis of process results, presenting a sequence of steps for the decision making process from case studies. Section 5.5 here presents the findings from the content results as follows.

5.5.1 The term of strategic positioning

The first finding is that the term of strategic positioning is not recognised by case study companies however the companies realised the critical importance of this decision, regarding the level of ownership and location of business activities within supply chains, to the success of the total organisation. They agreed that the decision has impact in the long term and is relatively irreversible especially when they invest or divest into foreign operations. Such decisions by the case study companies will be referred to as a strategic positioning decision in the rest of the analysis.

In the decision process of strategic positioning, senior management of the case study companies had a high level of involvement and played the main role in the decision making. In most cases, the decision had a direct influence throughout the organisation and affected the memberships of the supply chains. For example, a plant closure of Jewel-co in France had impact not only on the company itself but also on unions and suppliers of Jewel-co. Thus, the decision process takes time, from these four case companies, roughly more than a year. Pump-co indicated that it spent about four years from project initiation to implementation to build a new green field plant in South Korea and, similarly, Jewel-co spent 2 years in making its decision of a new strategic position. Fruit-co used about five years to complete the project. Fruit-co actually spent only

one year to set up an operation in Belgium, but it took longer to understand the market and deal with customers.

In the overall consideration, it is apparent that all cases from the study made their decisions internally from project initiation to implementation. The decisions from the case studies related to the level of ownership and location of business activities within supply chains will be referred as the strategic positioning decision in the following parts of the analysis.

Finding 1: Practitioners at the case study companies did not all recognise the term of strategic positioning, though they considered this decision as high value and carefully made.

5.5.2 Linkage of strategic positioning decision and company strategy

The second finding concerns the linkage of the strategic positioning decision and the company strategy. Company strategies such as cost reduction, profitability, serving a new market and adding new services to customers are the key drivers which lead all cases to reposition. Pump-co revealed that it has expanded its business through both internal growth and external acquisition. Hence, any change to the level of ownership and location has to be in line with these strategies. Consequently, the company reduces its cost by moving manufacturing operations to lower cost countries and acquiring several businesses with the aim of complementing and enhancing the product range offered. In Jewel-co, the main concern of the corporation is profitability and therefore the company repositioned itself by launching a restructuring plan including the closure of some production plants and consolidation of some operations. Aero-co revealed that it has followed the company policy in any strategic decisions.

Finding 2: Practitioners at the case study companies all took account of the wider business strategy when forming decision affecting strategic positioning.

5.5.3 Core competences and strategic positioning decision

The third finding is that all cases maintain their core activities internally and outsource non-core activities to third parties in order to reduce their business risks. The concept of core competency from academic theory was not recognised or used formally and explicitly but the case study companies examined how critical an activity was to the business and the impact from competitors before deciding to change the level of the ownership. They tended to keep their important activities in-house which give impact to their core competences and tried to reduce their risks and costs by outsourcing. The low cost economy countries or locations near to customers are destinations for

companies to outsource or offshore. The managing director of Fruit-Co said that they keep their core activities in-house and outsource operations further downstream to local providers in order to reduce business risks. Aero-co indicated that the company made the decision by considering the level of business criticality (core or non-core) and the level of competitiveness of certain particular activities. The result from this consideration could be outsourcing, controlling, investing, sourcing through partnership or joint venture. Aero-co explained further that by understanding its competencies, the company has not only gained the benefits of cost reduction through outsourcing, but also gained manufacturing practices from its sub-contractors, which enabled the company to apply these practices in the UK plant.

Finding 3: Practitioners at the case study companies all took account of core competences when forming decision affecting strategic positioning.

5.5.4 Holistic approach for strategic positioning decision

The fourth finding is that cases were not just concerned with one particular side of the supply chain interface when designing changes, but they were also concerned with other interfaces as well as their effects on other elements within the global supply chains. However the consideration of this holistic approach was done in an unstructured manner, depending mostly on the project members.

Fruit-co indicated that it is aware of the dynamic environment and therefore it does not focus only on its customers but also considers the whole supply chain when seeking opportunities to re-shape its competitive landscape. They are concerned with their end-customers further down in the supply chains. They commented that tools or visual aids could help them to be better aware of which elements in supply chain should be taken into account when making decisions.

Likewise, Pump-co stated that they compete with the supply chain, not just a company. They revealed that they did not have a pattern or structured method for considering the whole supply chain and some opportunities and threats were possibly overlooked. Jewel-co paid very much attention to the impact of a new position on the whole supply chain and also potential performances as a whole. Jewel-co commented that by understanding the whole supply chain, the company could decide where it wants to position itself in it.

Finding 4: Practitioners at the case study companies all attempted to take a holistic approach when forming decisions affecting strategic positioning.

5.5.5 Factors for strategic positioning decision

The fifth finding is that a strategic positioning decision is not made primarily on which option is slightly cheaper or faster to market. Pump-co indicated that the company did not select the cheapest cost option for moving to China, but considered other factors which would affect the business such as intellectual property protection, market and skill of labour - which may cost more. Jewel-co also stated that the company were more concerned with business risks affecting the longevity of a new positioning rather than financial factors. This finding is in-line with the work of Braithwaite and Christopher (1991). They stated that there is a danger for global companies, in their search for cost advantage, to take too narrow a view of cost and focus only on cost reduction in production. In reality it involves the total cost trade-off where the costs of longer supply pipelines may outweigh the production cost saving.

Finding 5: Practitioners at the case study companies considered a range of criteria, including cost, risk and flexibility when forming decisions affecting strategic positioning.

5.5.6 Importance of a structured methodology for strategic positioning decision

The sixth finding is that the importance of a methodology for strategic positioning decision is realised by the case study companies in order to make a decision in a more structured manner. Even though only Pump-co and Aero-co used tools from academic research for part of the decision process, all the cases revealed the importance of using a tool or methodology for guidance when making a decision. Although they have succeeded in their businesses, they asserted that tools or methodologies could shorten their decision process time and could help them avoid pitfalls. They indicated that they could make decisions in a structured manner and keep clear records of the decision process. However, they mentioned that they may also need to learn from real practices together with academic examples to get some practical experience. They indicated that they have not found any process based methodology that covers the entire decision process yet.

Finding 6: Practitioners at the case study companies all considered that structured methodology would be helpful when forming decisions affecting strategic positioning.

5.5.7 Well-defined procedures for strategic positioning

The seventh finding is that clarity of the project in the early stage can shorten the decision process time. This finding aligns with the previous finding on the need of a structured process for making the strategic positioning decision.

Pump-co mentioned that one of its success factors in decision process is defining the project in the early stage which drives the project to move forward quicker. The operations director explained further that having a clear starting point has enabled them to work more easily on a business case and cost benefit model. Fruit-co indicated similarly that participants and communication among participants of the project were key factors influencing the success and effectiveness of the decision. Jewel-co stated that the restructuring programme went successfully because the project team was very clear of what the company wanted from the programme and what situation the company was in. However, forming a strategic position may require in-depth supply chain design and negotiations with trading partners or customers to agree on major points. Most companies underestimated this time consuming process and interferences during the decision process, and therefore led to an extension of the decision process.

Finding 7: Practitioners at the case study companies all attempted to define clear aims, procedures and communication within organisation and other participants involved when forming decisions affecting strategic positioning.

5.6 Case study results and analysis (process)

This section presents a strategic positioning process from the results of the case study analysis. Table 5.3 shows the common stages of each case study which are grouped into Mintzberg decision routine and these routines were drawn by using Mintzberg's general decision model to illustrate the common decision process, as shown in Figure 5.7. The three phases and seven routine stages of the common decision process are described in the following sections.

5.6.1 Identification Phase – understand business issues, current company's position within supply chains and environment

The identification phase of strategic positioning comprises two routine stages: decision recognition and business diagnosis. In this phase, a decision process is initiated and business is diagnosed.

Decision recognition

The decision process from each case was evoked by each company's strategies and stimuli originating from both inside and outside the companies. The direction of a company, its problems, crises and opportunities, such as cost reduction and capacity expansion in Pump-co, non-profitable operations in Jewel-co, opportunity in new market in Fruit-co and creating new value-added service in Aero-co, are major stimuli that trigger a new positioning decision.

Table 5.3 Decision processes from case studies

Pump-co	Company's strategy and customer trend: To reduce cost and serve faster response to customer in Asia base	Study market and customer trends	Review company's supply chain	Decide to set up a new plant in lower cost economy country near to main customers in Asia	Plan what to produce in the new facility	Define criteria for location selection	Screen options to China and South Korea. See opportunities in China and select China for first in-depth study	Work on business assumption focusing on financial numbers and visit China. After the visit, consider risks in China especially logistics and IP protection risks	Change focus to South Korea option	Work on business assumption and make decision
Fruit-co	Consider a holistic view in supply chains and customer demand	See opportunity to open a new operation in Europe	Study market and talk to customers in European area	Decide to have own facility to deal directly with customers in Europe and outsource non-core activities to a local supplier		Consider criteria for location selection – includes supply chain, logistics aspects	Consider few choices and decide Belgium for a detailed study	Work on a feasibility study and contact customers to present benefits and get feedback from new position	Make decision	Set action plan
Aero-co	Company strategy – to increase productivity in plants, manage supply chain better and buy more from low-cost sources	Understand the company's current situation and supply chain	Review products quarterly or monthly	Assess proper actions for concerned products or activities	If assessment changes, whole process and consequence of change will be discussed	The change will be assessed again by sourcing review board.	Make decision	Work on consequences of decision made		
Jewel-co	Company's restructuring program – profitability and industrial dynamic change	Review company business situation and competitors	Understand demand and customer trend and review company's supply chain	Decide to close the operations in France. Identify functions and activities that get impact from the closure		Identify factors for consideration – financial factors and business risks	Identify possible options and come up with potential seven business models including outsourcing, transferring operations to other existing plants	Study seven models in depth including potential risk profiles and communicate the option to stakeholders including union	Make the selection by concerning the longevity of a new position	Set action plan
Mintzberg decision routine	Decision recognition	Business diagnosis		Action design		Criteria design	Configuration design	Evaluation		Authorisation and action plan

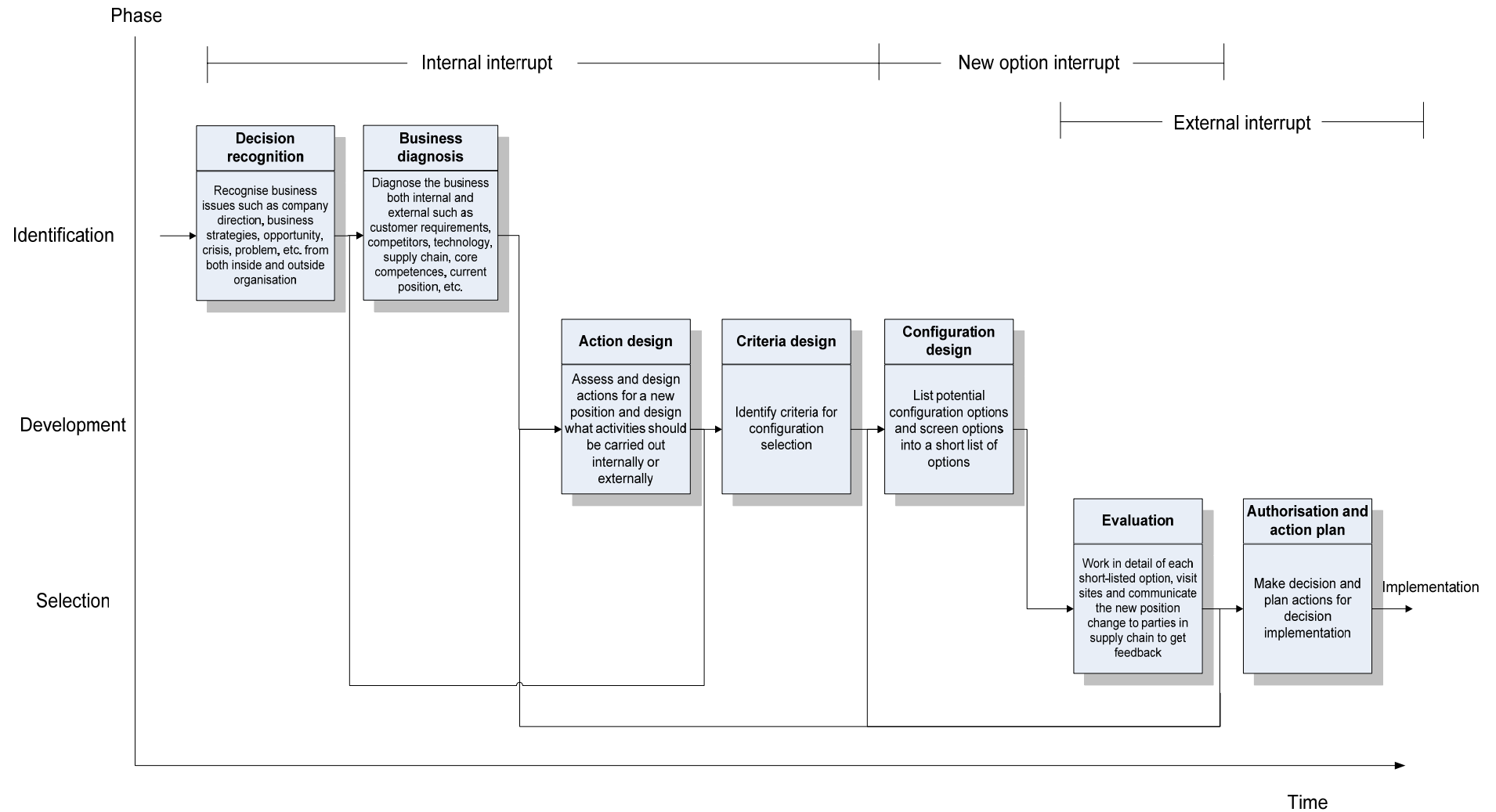


Figure 5.7 Strategic positioning process from case studies

Once the accumulation of stimuli reached a threshold level, all cases did a review of its business in several areas, included both internal and external environments such as their current positions, supply chain, customer requirements, market trends, competitors, political/economic change etc.

Business diagnosis

Jewel-co indicated that it reviewed its global supply chain position by using supply chain analysis which was carried out with a consulting company. It worked on a full analysis of internal and external environments and paid close attention to customer demand which has been decreasing by substitution of other luxury products. Fruit-co commented that it reviewed its own core competency and entire supply chain by referring to previous similar cases within the company and also spent much time on business diagnosis by analysing and communicating to its customers. Similarly, Pump-co, who moved nearer to customers in Asia, reviewed its position and strategy and worked on future customer trends. It expressed that it is very important to understand customers clearly before making any big change to position. However, Aero-co mentioned that sometimes they did not perform customer analysis if the concerned activity is not related to customers. After having carried out the business diagnosis, the companies tend to set objectives for the project according to their business issues and business analysis. For example, the main objective of Fruit-co was to serve the new potential market in Europe, and Pump-co wanted to reduce its manufacturing cost as well as to serve a new rapidly growing market in Asia.

The time duration for this phase varies from case to case. Some cases had initiated the project and left it for few years before starting the process again, mainly due to internal interference, while other cases carried on the process until completion of implementation. In summary, the identification phase focuses on understanding business issues, current company's position and environment, and defining the goal and objectives of the project.

5.6.2 Development Phase – develop actions and configuration

The development phase of strategic positioning comprises three routine stages: action design, criteria design and configuration design. The study supports that the greatest amount of decision making resources are consumed in this phase.

Action design

Once a company understands its internal and external environment, it tends to design actions to be taken for a new position and to analyse what activities should be done internally or externally. Pump-co decided to offshore some manufacturing operations to a lower cost economy country and to own the operations by itself. Fruit-co decided to set up a new facility in the growing market and outsource manufacturing operations to a local provider. Jewel-co

began by closing all non-profitable manufacturing operations in France. At this stage, there is evidence that companies may revise their actions again by going back to review their business diagnosis. This action design stage is important for a company to decide which activities it must keep and grow in-house and which activities should be done outside to reduce business risk. Cases indicated that good analysis in the business diagnosis would lead to the right action being made.

Criteria design

After designing the actions, most companies identified criteria for configuration selection, and the suitable place for those activities. The criteria that they used included financial factors, non financial factors, as well as the aim and objectives that the project wanted to achieve. Criteria were varied, depending on the individual company, its context, its current situation and its company strategy.

Configuration design

Then they tended to use these criteria to narrow down configuration choices into promising choices for further detail analysis in the next phase. They indicated that the selected criteria must align with the aim of the project, company strategies and competitive strategies. However, in this study, most companies were likely to have an idea for location therefore most companies did not start with a long list of configuration options.

This phase consumes most of the decision process time. The interferences from internal interrupt and new option interrupt may happen and cause the decision process delay. Pump-co is an example in having delay in this stage. It found the first choice that it selected has high business risks in some aspects therefore it had to spend time finding a more appropriate configuration location. In order to shorten the time duration in this phase, all companies agreed that the action and importance of factors must be clear.

5.6.3 Selection Phase – evaluation and communication

The selection phase of strategic positioning comprises two routine stages: evaluation, and authorisation and action plan. This is the last phase of the decision process, however the process stage might revert to earlier stages of the development phase to redesign positioning.

Evaluation

In this phase, companies worked on details of each promising options. Information on factors for selection was collected and analysed. The basic factors from most cases included financial factors: project cost, pay back period, return on investment (ROI), interest of rate return (IRR) and net present value

(NPV), and non-financial factors: competitive objectives, project resources, needed skills and trainings, logistics / transport, supply chain consideration, knowledge transferability, geographical factors, issues with employees and union, and business risks. However, the companies did not use only these factors to evaluate the configuration choices but also considered results from site visits and feedback from memberships in their supply chains, which may include suppliers, distributors, retailers, or customers and stakeholders. Every company visited the sites to collect information from real environments and talked to related people in the local area. Pump-co did a few site visits and communicated with customers about the new change and benefits of this change. Jewel-co visited the potential subcontractors a few times, tested the quality and reliability of products and planned a new logistics system before making its decision. Fruit-co indicated that feedback or opinion from customers is vital input for evaluating choices. They must make sure that their customers would benefit from any changes.

Authorisation and action plan

After making the decision, authorisation was carried out by the top management board. Authorisation appears to be a typically binary process, acceptance or rejection of the evaluation. The time for this phase is typically limited because of the time constraint to approve the new positioning. If the board accepts the evaluation, the implementation will be planned.

The process results from the case study companies in this section can be summarised into the main findings as follows:

- All stages of the case study processes can be divided into the three phases of Mintzberg (1979), identification-development-selection, and seven routines even if there are frequent feedbacks, delays and interruptions. The strategic positioning process begins with the identification of a stimulus for action and ends with the specific commitment to action.
- Strategic positioning decisions are multidimensional decisions which will have an impact on the future of the enterprise. Strategic positioning decision is directed towards defining the organisation's relationship to its environment and its own resources.
- Project members are very important to the strategic positioning process. Project members should involve people in different responsibilities to gain a number of perspectives to the business and they must understand the business well.
- The foundation of the strategic positioning process lies in the aim and managerial objectives that give it purpose and direction. A given

objective represents an end point towards which management directs its decision making.

- The evaluation choice of the routine from the company case studies tends to be an analysis mode (Mintzberg, 1979), carrying out factual evaluation followed by management choice by judgement or bargaining.

5.7 Chapter summary

This chapter has presented the first phase of the research programme. The objective of this phase was to explore the strategic positioning decision of manufacturing operations within global supply chains from real practices. In order to achieve the objective, four case studies were selected carefully in different industries to reflect the general process from leading companies.

There are a number of important implications for strategic positioning within global supply chains that arise from this study. Seven key findings on the results of strategic positioning content were proposed. The strategic positioning decision process derived from case studies, which comprises three phases and seven routine stages, was explained. The results of this exploratory analysis not only provide the rationale behind a strategic positioning process in a concise and comprehensible structure but also generate the valuable inputs from an industrial point of view for Phase 2 and 3 in setting requirements of a pilot methodology and developing a pilot methodology correspondingly. The following chapter continues the research programme by evaluating existing related methodology from literature contribution and selecting potential methodologies.

CHAPTER 6: EVALUATION AND SELECTION OF POTENTIAL METHODOLOGIES

This chapter deals with phase 2 of the research programme, namely, the evaluation and selection of potential methodologies. This chapter is structured to first present a brief review of the objective and method at this phase (Section 6.1). On the basis of this method the following sections present the establishment of the requirements of a methodology (Section 6.2), an overview of the various methodologies related to strategic positioning within global supply chains (Section 6.3), and an appraisal of the methodologies against the requirement set (Section 6.4). Finally, the chapter provides the selection of the potential methodologies (Section 6.5).

6.1 Phase 2 overview objective and method

The objective of the second phase of research is to evaluate existing methodologies related to strategic positioning within global supply chains in order to select potential methodologies. As established in Section 4.3.3, the research method preferred in this phase is to assess the capability of existing methodologies against the requirement set in order to select potential methodologies, as a foundation of knowledge to develop a new methodology.

At this phase of the research, it is important to evaluate various existing methodologies from several disciplines. The term 'methodology' focused upon here is a formal method from a qualitative approach which describes what steps to take, explains how each step should be performed and justifies why each step is taken (Jayaratna, 1994). However, with the paucity of strategic positioning research, methodologies in the concepts impacting on strategic positioning, reviewed in Section 3.2, are also included in the evaluation.

Section 4.3.3 has also established that this phase should define the requirements of a new methodology from industry and literature. Hence, the findings from the content and process results of the exploratory case studies (Sections 5.5 and 5.6) are extracted to provide requirements from industry. Requirements from literature are explored to find out what has been discussed in the area of methodology. This is performed by investigating research in the area of the methodology of forming a manufacturing strategy to extract requirements from a literature point of view. The combined requirements from industry and literature are then used for establishing the set of requirements, against which existing methodologies can be evaluated.

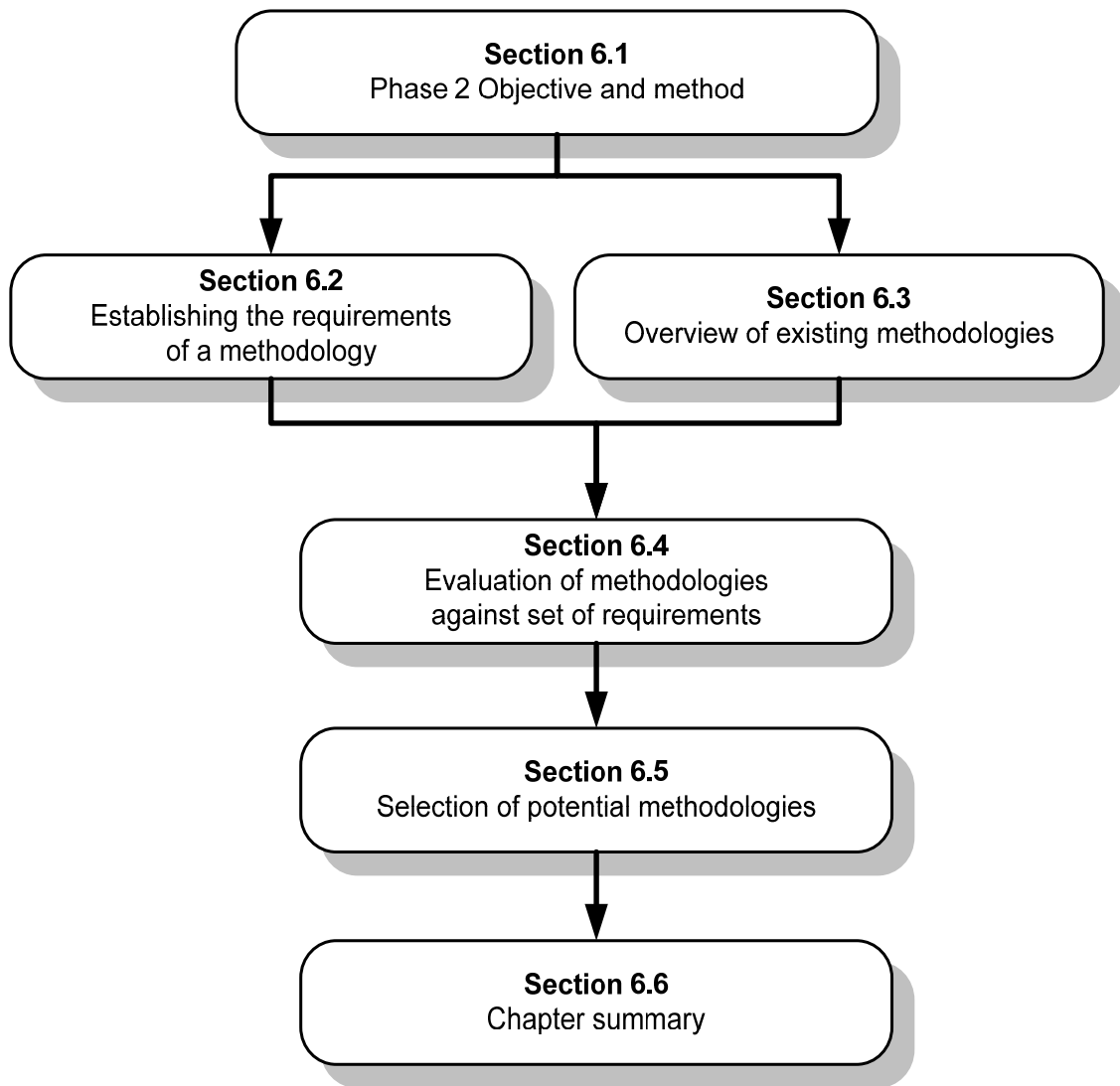


Figure 6.1 Method for evaluation and selection of potential methodologies

Phase 2 of the research programme has four parts as follows (exhibited in Figure 6.1).

- Establishing the requirements of a methodology for strategic positioning within global supply chains (Section 6.2)
- Providing an overview of existing methodologies (Section 6.3)
- Evaluating these methodologies against the set of requirements (Section 6.4)
- Selecting potential methodologies to be carried forward for a pilot methodology formation in the next phase (Section 6.5).

The following sections of this chapter are the product of applying this phase of the research method.

6.2 Establishing the requirements of a methodology

In order to evaluate existing methodologies, it is necessary to understand what the methodologies are expected to do and what should be included in the methodology. This section therefore sets out to define the requirements of a methodology from industry and literature.

6.2.1 Requirements from case studies in Phase 1

The four case studies in Phase 1 provide valuable experiences related to strategic positioning within global supply chains. The content and process results from the case studies are also beneficial for presenting requirements for a methodology from the industrial perspective. The requirements derived from the exploratory case studies in Phase 1 are illustrated in Table 6.1. The first column lists the findings from the content and process results (Sections 5.5 and 5.6), the second column formulates the findings into requirements and the third column gives the explanations of each requirement.

Table 6.1 indicates that from the perspective of industry, a methodology should incorporate seven requirements as follows: a strategic link to company strategies, core competency, holistic approach, non-financial factors, scope issues, global scope and configuration analysis. These requirements will be combined with those from the literature to become a set of requirements for a methodology for strategic positioning within global supply chains.

6.2.2 Requirements from literature

For the purpose of establishing the requirements of a methodology from literature, this research takes work in the area of manufacturing strategy formulation as a starting point. Platts (1994) draws from several sources of literature to set out four common characteristics of methodologies used successfully in the formulation of a strategy. In this context, Platts (1994) summarises the following characteristics:

1. Procedure: This is the fundamental requirement of a methodology; it specifies the steps to be taken. A methodology should be a well defined procedure, simple and easily understood tools and techniques for use within the procedure and a written record of the results at each stage.
2. Participation: A methodology should provide for individual and group participation, identify problems, develop improvements, and make decisions leading to actions.
3. Project management: A good methodology should provide project management to ensure that the project is adequately resourced and works to a clear timescale.
4. Point of entry: A good methodology should have clear scope, and indicate a clear view of the methodology cover and intended outcome which would result from the methodology.

These characteristics appear to be general requirements for strategy formulation methodology, and thus are relevant and applicable for evaluating existing methodologies related to strategic positioning within global supply chains. However, Viseras (2004) and Lim (2007) state that the four characteristics are too broad to evaluate a methodology. Viseras (2004) and Lim (2007) suggest further that in order to have more specific requirements, these four broad characteristics can be divided into seven specific requirements which are shown in Table 6.2. These specific requirements from Viseras (2004) and Lim (2007) represent the requirements from literature and are used in this research.

6.2.3 Developing the 'requirements set'

The purpose of this section is to combine the requirements from industry and literature to develop a set of requirements, as presented in Table 6.3. There are seven requirements from industry and seven requirements from literature. The importance of the set of requirements are later used to compare the various existing methodologies related to strategic positioning within global supply chains in order to select the potential methodologies.

Table 6.1 Requirements of a methodology from industry (case studies in Phase 1)

No.	Findings from case studies	Requirements	Descriptions
1	The link between strategic positioning decision and the company's strategy	Strategic link to company strategies	A methodology should provide a link between company strategy and strategic positioning decision.
2	The consideration of core and non-core activities in strategic positioning decision	Core activities	A methodology should provide defining core and non-core activities.
3	The adoption of a holistic approach in strategic positioning decision	Holistic approach	A methodology should provide a holistic approach concerning four supply chain boundaries to decide a strategic position of an organisation.
4	The concern of non-financial factors in strategic positioning decision	Non-financial factors	A methodology should provide financial and non-financial factors for deciding actions.
5	The importance of clearly defined aims, well-defined procedures, business issues for a strategic positioning decision	Scope issue	A methodology should provide an analysis of business issues in order to enable establishing a clear aim and scope of the decision.
6	The involvement of global factors and non-boundary business in strategic positioning decision	Global scope	A methodology should not be limited to the domestic setting but need to support a decision for strategic positioning within global supply chains.
7	The consideration of configuration analysis in strategic positioning decision	Configuration analysis	A methodology should provide configuration analysis for strategic positioning within global supply chains.

**Table 6.2 Requirements of a methodology from literature
(Adapted from: Platts, 1994; Viseras, 2004 and Lim, 2007)**

No.	Characteristics	Requirements	Descriptions
1	Well defined procedures, overall structure of the methodology (Procedure)	Structure	Provides overall structure of the methodology, well defined procedures, a step-by-step approach which assist the users to follow.
2	A written record of the results of each stage (Procedure)	Documentation	Provides a written record of process to ensure that data and assumptions can be revisited at future dates.
3	Simple and easily understood tools and techniques for use within the procedure (Procedure)	Tools and techniques	Provides appropriate tools and techniques to facilitate the process
4	Participation	Participation	Describes the intended participants in the methodology and their roles to achieve individual and group participation
5	Project management	Project management	Provides project management to ensure the project is adequately resourced and works to a clear timescale
6	Clearly defined outcome (Point of entry)	Deliverables	Describes what is actually produced in terms of deliverables at each stage and the final deliverables
7	Clear scope and objectives (Point of entry)	Scope and objectives	Provides defining objectives and scope of the project

Table 6.3 Set of requirements for a new methodology

No.	Requirements	Descriptions	
1	Strategic link to company strategies	Provides a link between company strategy and strategic positioning decision.	Requirements from industry
2	Core activities	Provides defining core and non-core activities.	
3	Holistic approach	Provides a holistic approach concerning four supply chain boundaries to decide a strategic position of an organisation.	
4	Non-financial factors	Provides financial and non-financial factors for deciding actions.	
5	Scope issue	Provides an analysis of business issues in order to enable establishing a clear aim and scope of the decision.	
6	Global scope	Supports a decision for strategic positioning within global supply chains.	
7	Configuration analysis	Provides configuration analysis for strategic positioning within global supply chains.	
8	Structure	Provides overall structure of the methodology, well defined procedures, a step-by-step approach which assist the users to follow.	Requirements from literature
9	Documentation	Provides a written record of the process to ensure that data and assumptions can be revisited at future dates.	
10	Tools and techniques	Provides appropriate tools and techniques to facilitate the process	
11	Participation	Describes the intended participants in the methodology and their roles to achieve individual and group participation	
12	Project management	Provides project management to ensure the project is adequately resourced and works to a clear timescale	
13	Deliverables	Describes what is actually produced in terms of deliverables at each stage and the final deliverables	
14	Scope and objectives	Provides defining objectives and scope of the project	

6.3 Overview of existing methodologies

This section presents an overview of existing methodologies related to strategic positioning within global supply chains. Section 6.1 has determined the term of methodology and also established that all concepts impacting on strategic positioning should be included in the evaluation. However, the results from research found that not every concept impacting on strategic positioning contributes to a qualitative and step-by-step methodology such as vertical/horizontal integration and core competency. Table 6.4 shows the overview of existing related methodologies from literature. A brief description of these methodologies is as follows:

6.3.1 Strategic Positioning

The existing strategic positioning methodologies are provided by Baines et al. (2005) and Lim (2007). Baines et al. propose a five-stage process, each stage being completed by carrying out between three and five smaller steps of analysis. They have captured the full detail of the methodology in a workbook, containing specialised worksheets for each stage of the methodology. Later, Lim (2007) propose a six-stage methodology of strategic supply chain positioning for SMEs in Singapore. He adopts a resource-based view methods in his methodology, simplifying for SMEs and covering other industries besides manufacturing. The methodology is structured, procedural and in the form of a computerised software tool.

6.3.2 Manufacturing Location

In this area, there are many research works available on the manufacturing location factor and quantitative approach, however, there is very limited work on methodology of the strategy decision process. Pongpanich (2000) develops a methodology for manufacturing location decisions in the form of workbook. His work covers the basic concepts, deals with the strategic considerations driving the need for location decisions, presents a systematic approach and tools for tackling the problems and comprises worksheets to complete the process.

6.3.3 Make or buy

There are three well-known methodologies in the make or buy area presented in the table. The first methodology is make or buy strategy for the manufacturing business from Probert (1997). In his methodology, there are four main stages to the strategic review of manufacturing operations that are the basis of the formulation of a make or buy strategy. The second methodology is a

methodology by McIvor et al. (1997). They develop a four-stage process for evaluating the make or buy decision. Their methodology involves a core competency concept by defining core and non-core activities of the business along with a comprehensive cost analysis. The last methodology is a generic model of the make or buy decision-making process by Humphreys et al. (2002). The model consists of five main stages. The researchers develop a knowledge-based system tool which incorporates these five phases into a make or buy decision.

6.3.4 Sourcing

Zeng (2003) proposes a generalised five-stage global sourcing process from a literature review. His process includes an analysis of company, customer, competitor and core activities. Nevertheless, the process seems to focus on supplier selection and development rather than deciding on the organisational boundary. Busi and Ball (2007) present a strategic sourcing model into four main phases with four to five sub-phases. The process includes the process of re-defining core competencies and strategy; deciding whether or not to outsource; looking for, evaluating and selecting outsourcing partners (and locations); defining the relationship and agreement between outsourcing partners and managing and monitoring the project.

6.3.5 Outsourcing

Pagnoncelli (1993) presents five phases for managing an outsourcing process. Lonsdale and Cox (1998) give six stages for the outsourcing process. They state that stage one and stage two are key stages - the internal and the external business analysis stage. Beyond these phases, there is a standard procurement process on stage three to six. Later, Zhu et al. (2001) describe the steps with four stages of outsourcing process. They also propose in detail some of the critical ingredients for a successful outsourcing effort in each of the four stages, including the business plan, the vendor agreement, the communication plan, etc.

Next, Momme and Hvolby (2002) amalgamate the results from exploratory integration, the case study and the action research into six operational phases of the entire outsourcing process. For each of these phases, a varying number of key activities with related performance measures and expected output are identified. The process links core competence thinking and outsourcing. In 2003, Franceschini et al. (2003) propose a four-phase process for managing the outsourcing process with the main aim of managing strategic decisions, economic factors and human resources.

Table 6.4 Overview of existing methodologies

Concepts	Methodologies	Stages
Strategic positioning	Baines et al. (2005)	Scope issue Identify key decision criteria Identify activity landscape Assess impact Consolidate outcomes
	Lim (2007)	Scope issues Identify activity and resource landscape Identify significant activities and critical resources Review competitive strategy Check alignment between performance and strategy Formulate strategy
Manufacturing location	Pongpanich (2000)	Investigation Identification Evaluation Selection and action plan
Make or buy	Probert (1997)	Initial business appraisal Internal/external analysis Generation and evaluation of strategic options Choosing optimal strategy
	Mclvor (1997)	Define core activities of the business Profile the appropriate value chain links Total cost analysis of core activities Analysis of potential suppliers for partnership
	Humphreys et al. (2002)	Identification of performance categories An analysis of the technical capability Comparison of retrieved internal and external technical capability profiles An analysis of suppliers' organisation categories Total acquisition cost analysis
Sourcing	Zeng (2003)	Investigation and tendering Evaluation Supplier selection & development Implementation Performance measurement & continuous improvement
	Busi and Ball (2007)	Define business strategy Define sourcing strategy Study outsourcing feasibility Supply chain implementation
Outsourcing	Lonsdale and Cox (1998)	Assessment of criticality of business activity Assessment of external supply market Selection of appropriate types of supplier relationship Supplier selection Supplier management Re-tender or return to in-house

Concepts	Methodologies	Stages
Outsourcing	Zhu et al. (2001)	Planning stage Developing stage Implementation stage Evaluation stage
	Momme and Hvolby (2002)	Competency analysis Assessment and approval Contract negotiation Project execution & transfer Managing relationship Contract termination
	Franceschini et al. (2003)	Core competencies evaluation Identification of process to be outsourced Types of relationships Activities stratification Outsourcer selection Service level agreement Temporal evolution Management of the outsourcing process
	Kakouris et al. (2006)	Initiate – needs identification Plan – determination and formulation of decision criteria Qualify – order-qualification of suppliers Win – order-winner (selection) Monitor – manage and review
	Ghodeswar and Vaidyanathan (2008)	Strategy Scope Negotiation Implementation Management Completion Support
Offshoring	Blunden (2004)	Deciding what to outsource Well-defined scope Choosing to go offshore Choosing a location Alternative offshore destinations
	Jahns et al. (2006)	Analysis delivery mode Vendor selection Contract negotiation Performance measurement Governance Transition management
	The Manufacturing Foundation et al. (2006)	The facts Your competitive position Establishing your priorities Reducing costs & managing the threat Seizing the offshore opportunities Securing your future Action plan

More recently, Kakouris et al. (2006) propose a process for outsourcing, evaluating and assessing possible suppliers. The process focuses in particular on the planning and qualifying phases which, respectively, set the criteria and prepare a shortlist for invitation, before the final selection. Ghodeswar and Vaidyanathan (2008) present an outsourcing process ranging from decisions to continuous management and performance evaluation along with the life cycle of the relationship between the host organisation and the business process vendor.

6.3.6 Offshoring

Blunden (2004) presents a loose process for offshoring decision making in five stages. Jahns et al. (2006) presents a step-wise methodology for creating an offshoring strategy, adapted from Robinson and Kalakota (2004). The methodology is presented in six main stages and sub activities.

The last offshoring methodology presented here is a methodology from consultants called 'Offshore? Be sure!' produced by a cooperation of the Manufacturing Foundation, the DTI manufacturing advisory service (MAS) and KPMG. This workbook is a step-by-step approach to decision making based on self-diagnosis and advisory guidance from the DTI manufacturing advisory board. This methodology workbook aims to support SMEs thinking and decision making on offshoring focusing on India and China options.

6.4 Evaluation of methodologies against set of requirements

The purpose of this section is to evaluate the existing methodologies against the established set of requirements, shown in Tables 6.5 and 6.6.

The set of requirements help to determine whether the methodologies meet the requirements of a new methodology. As Tables 6.5 and 6.6 illustrate, each of the criteria has been analysed according to whether a given methodology meets the criteria on a rating scale of 1 to 3. Scale 1 means no support, 2 for some support and 3 for full support. The scorings of each methodology are explained in detail as follows:

6.4.1 Strategic positioning

The two methodologies dealing directly with strategic positioning provide full support in many requirements. Nevertheless, the methodology of Baines et al. (2005) does not give support on core competency, in contrast to that of Lim (2007) which adopts resource-based view methods, emphasising resources, capabilities and core competencies of an organisation. It is apparent that both methodologies focus only on domestic setting of a strategic positioning decision

and do not provide configuration analysis for internal and external activities. Both methodologies show full support for every requirement from literature. This is because these two methodologies provide clearly each stage of the process in terms of what (the purpose), why (the justification), how (the mechanism), who (the people involved), outcome (the deliverables) and risks (the issues that may arise from not carrying out the step properly). That means both methodologies are comprehensive and can be used successfully in the formulation of strategy.

6.4.2 Manufacturing location

Pongpanich (2000)'s methodology exhibits no support for core competency or the impact of supply chain boundaries on a decision. The strengths of this methodology lie on the analysis of international configuration and the strategic link to critical business issues, as well as various financial and non-financial factors for decision making. This methodology also provides full support for many requirements identified from the literature. However, the methodology is not clear on the deliverables of each stage and the roles of participants required to achieve individual and group participation.

6.4.3 Make or buy

Probert (1997) addresses make or buy from a technological perspective. He proposes a competitive matrix to assess process technologies as a central part of his make or buy approach. His approach to developing a make or buy strategy addresses a number of issues such as the business strategy, the assessment of costing and non-costing and the assessment of the positioning of technologies with respect to their importance to the business and their competitiveness. Therefore his methodology scores 3 in strategy link, core competency, non-financial factors, and scope issues. Additionally, the methodology is well structured in the form of a book. The methodology contains the step-by-step guide on how a project team can work through the process of devising the new make or buy strategy. Divided into sections, each describing a step in the process, it gives guidance together with tools and techniques, hints and tips. This leads to the methodology being scored 'full support' in structure, tools and techniques, project management, deliverables and scope & objectives. However, his methodology does not include holistic approach, global scale and configuration analysis and misses out identifying participation and providing documentation for revisiting.

McIvor et al. (1997) address make or buy from a traditional resource-based view by focusing primarily on existing internal resources. Its principal consideration is in the collection and analysis of the information necessary to benchmark the capabilities of external sources in relation to internal sources.

Therefore the strengths of the methodology are a guideline for core competency consideration and providing a good step-by-step approach. However, the methodology lacks support in many other requirements.

Humphreys et al. (2002) propose a make or buy methodology for the purpose of procurement and therefore the methodology provides full support only on financial and non-financial factors. The methodology is developed in the form of a computerised software tool and as a result offers a good structure, documentation and tools and techniques. Besides those, the methodology lacks support for many of the requirements from industry and literature.

6.4.4 Sourcing

Zeng (2003) proposes a methodology which exhibits full support for strategy link, core competency, scope issues and structure. The methodology mentions non-financial factors but does not explain in detail what those non-financial factors should be and therefore gives only some support (score 2) for non-financial factors. Busi and Ball (2007) propose a methodology fully concerned with core competencies, business strategy, scope issues and a holistic approach (using value chain mapping). The methodology is also well structured, giving information for enabled outsourcing tools and a diligence team appointment. Nevertheless, the methodology is presented at a high level, in each sub-phase, it does not go into detail such as input, output, participants, activities, etc. As a result, the methodology does not provide documentation, project management or clear deliverables and rated at scale 1. An interesting point of these two global sourcing methodologies (Zeng, 2003; and Busi and Ball, 2007) is that both methodologies do not include global factors or configuration analysis. The methodologies tend to be a general process for sourcing.

6.4.5 Outsourcing

There are several methodologies from several disciplines of outsourcing methodology shown in the table. However, these methodologies give full support to only a few requirements. Moreover, the methodologies appear to provide less support for the requirements from literature. This implies that the given outsourcing methodologies discuss their respective methods at a relatively high level, and hence provide little guidance with respect to application of these stages and activities.

Table 6.5 Comparison of related methodologies against requirements from industry

Methodology \ Requirements	Strategy link	Core competency	Holistic approach	Non-financial factors	Scope issues	Global scope	Configuration analysis	Total
Strategic positioning Baines et al. (2005)	3	1	3	3	3	1	1	15
Strategic supply chain positioning for SMEs Lim (2007)	3	3	3	3	3	1	1	17
International manufacturing location decisions Pongpanich (2000)	3	1	1	3	3	3	3	15
Make or buy Probert (1997)	3	3	1	3	3	1	1	15
Make or buy McIvor et al. (1997)	1	3	1	1	1	1	1	9
Make or buy model Humphreys et al. (2002)	1	1	1	3	1	1	1	9
Global sourcing process Zeng (2003)	3	3	1	2	3	1	1	14
Global sourcing process model (Busi and Ball, 2007)	3	3	2	2	3	1	1	15
Methodology related to the outsourcing programme Pagnoncelli (1993)	3	1	1	3	1	1	1	11
Outsourcing process Lonsdale and Cox (1998)	1	3	1	2	1	1	1	10
Four stages of outsourcing process Zhu et al. (2001)	1	1	1	1	1	1	1	7
Outsourcing process Momme and Hvolby (2002)	1	1	1	3	1	1	1	9
A model for management of outsourcing process Franceschini et al. (2003)	1	3	1	1	1	1	1	9
Outsourcing methodology Kakouris et al. (2006)	1	1	1	3	3	1	1	11
Process of outsourcing Ghodeswar and Vaidyanathan (2008)	1	1	1	1	1	1	1	7
Offshoring obstacle course Blunden (2004)	3	1	1	3	1	2	2	13
A step-wise methodology for creating an offshore strategy - Jahns et al. (2006)	1	1	1	1	3	3	1	11
Offshore. Be sure The Manufacturing Foundation et al. (2006)	3	3	1	3	3	3	1	17

Rating scale: 1= No support, 2 = Some support, 3 = Full support

Table 6.6 Comparison of related methodologies against requirements from literature

Methodology \ Requirements	Structure	Documen tation	Tools and technique	Participation	Project management	Deliverables	Scope & objectives	Total	Sum of 2 tables
Strategic positioning Baines et al. (2005)	3	3	3	3	3	3	3	21	36
Strategic supply chain positioning for SMEs Lim (2007)	3	3	3	3	3	3	3	21	38
International manufacturing location decisions Pongpanich (2000)	3	3	3	2	3	2	3	19	36
Make or buy Probert (1997)	3	1	3	1	3	3	3	17	32
Make or buy Mclvor et al. (1997)	3	1	1	1	1	1	1	9	18
Make or buy model Humphreys et al. (2002)	3	3	3	1	1	1	1	13	22
Global sourcing process Zeng (2003)	3	1	1	1	1	1	1	9	23
Global sourcing process model (Busi and Ball, 2007)	3	1	3	3	1	1	3	15	30
Methodology related to the outsourcing programme Pagnoncelli (1993)	3	1	1	1	1	1	1	9	20
Outsourcing process Lonsdale and Cox (1998)	2	1	1	1	1	1	1	8	15
Four stages of outsourcing process Zhu et al. (2001)	2	1	1	1	1	1	1	8	17
Outsourcing process Momme and Hvolby (2002)	2	1	1	1	1	1	1	8	17
A model for management of outsourcing process Franceschini et al. (2003)	2	1	1	1	1	1	1	8	19
Outsourcing methodology Kakouris et al. (2006)	2	1	1	1	1	1	1	8	19
Process of outsourcing Ghodeswar and Vaidyanathan (2008)	2	1	1	1	1	1	3	10	17
Offshoring obstacle course Blunden (2004)	2	1	1	1	1	1	3	10	23
A step-wise methodology for creating an offshore strategy - Jahns et al. (2006)	2	1	1	1	1	1	1	8	19
Offshore. Be sure The Manufacturing Foundation et al. (2006)	3	3	3	1	3	1	3	17	34

Rating scale: 1= No support, 2 = Some support, 3 = Full support

6.4.6 Offshoring

Bluden (2004) proposes a process with full support for strategy link, non-financial factors, and scope and objectives. He states that the first few things to decide are which business processes it should outsource, the extent to which it should outsource, and whether or not it should go offshore. If a corporation has decided to go offshore, a destination must be chosen. Once an offshore facility has been established and contracts have been finalised, the corporation must manage quality control, intellectual property rights, and general security. The methodology presents a high level of global factors and configuration analysis, and moreover the methodology provides a loose structure to carry out each stage.

Similarly, Jans et al. (2006) presents a high approach for offshoring strategy. The methodology provides full support only for business issues and global scope. They explain that when deciding the business model to choose in their first stage (whether offshore outsourcing, joint venture offshoring or offshoring is more suitable), a key consideration is in creating value for customers. This aligns with the process results from the exploratory case studies in Phase 1.

The last methodology from The Manufacturing Foundation et al. (2006) shows full support in several requirements. However, the methodology is concerned with the impact of the supply chain interfaces to the decision and lacks support for configuration analysis. In addition, because the methodology is based on individual analysis in checklist style, a limitation of this methodology could be the difficulty of application to a group of team members. The methodology does not indicate the deliverables of each stage and pays less attention to the importance of participation, as well as focusing mainly on India and China options.

6.5 Selection of potential methodologies

In general, it is observed that many methodologies do not pay sufficient attention to business, industry, and environment analysis (scope issue) and do not set a scope for the project in the early stage (scope and objectives) but rather jump into identifying criteria and appraising suppliers, such as the methodologies from Zhu et al. (2001), Humphreys et al. (2002) and Franceschini et al. (2003). The lack of strategic actions may affect the efficiency of the decisions (Pagnoncelli, 1993). Many methodologies ignore the importance of the configuration analysis of internal and external activities for a strategic positioning decision. The analysis also shows that many methodologies include non-financial and financial factors for decisions but give less support on other dimensions in supply chain interfaces such as the impact

on supplier, customer, infrastructure and product range. This explains the gap in existing methodologies on the lack of holistic approach.

A number of methodologies discuss their respective methods at a relatively high level, and hence provide little guidance with respect to application of these stages and activities. Many methodologies do not give enough attention to the roles and responsibilities of the users that carry out the decisions and many do not describe outputs of each process stage or give clear deliverables from methodologies. There is room for improvement to provide a practical methodology for use of strategic positioning within global supply chains methodology.

The results from the comparison of methodologies against the requirements show that no existing methodology scored the maximum points. This confirms that there is no integrated methodology which is practical and procedural supporting strategic positioning within global supply chains. Nevertheless, a few published methodologies provide good support to requirements from industry and literature and the best parts of these methodologies can be adapted to build a pilot methodology together with the results from the exploratory case studies.

From the analysis, five methodologies (shaded rows), appear to satisfy the requirements on the stages and activities covered. These methodologies are: Baines et al. (2005), Lim (2007), Pongpanich (2000), Probert (1997), and The Manufacturing Foundation et al. (2006). The methodologies have scored the highest points in the group and appeared to have good support them practical and academic. All methodologies are captured in the form of a workbook or a computerised software tool for the delivery mechanism which provides a detailed well-defined approach.

None of these five methodologies has scored the maximum 42 points. The given methodologies still represent a good grounding for a new methodology formation where scale 3 for full support of these methodologies has spread to all the requirements. Among the five methodologies, Lim (2007) has the highest score. This means that it is a good methodology for strategy formulation for strategic positioning. However, the gaps still exist concerning global scope and inclusion of a configuration analysis for strategic positioning within global supply chains.

The five potential methodologies will be used to form a pilot methodology because they meet several of the requirements set, and also provide avenues for contents of a pilot methodology. The five methodologies and the results from the exploratory case studies in Phase 1 form the basis of a methodology for strategic positioning within global supply chains.

6.6 Chapter summary

This chapter has evaluated various existing methodologies related to strategic positioning within global supply chains. It has discussed the objective and method for undertaking the evaluation and selection and has established a set of requirements from industry and literature. Later, it reviewed relevant methodologies to strategic positioning within global supply chains area. The requirements were used to understand the current methodologies and to select five methodologies which will form the basis upon which a new methodology is formed in the next phase of research.

CHAPTER 7: FORMATION OF PILOT METHODOLOGY

This chapter deals with phase 3 of the research programme, namely, the formation of the pilot Strategic Positioning within Global Supply Chains (SPGC) methodology. This chapter first presents the objective and method of this phase (Section 7.1). Later, the content and structure of the pilot methodology are determined (Section 7.2 and Section 7.3). The subsequent section describes the methodology and its structure (Section 7.4). Finally, the selection of the delivery mechanism is further addressed (Section 7.5).

7.1 Phase 3 overview objective and method

The objective of the third phase of research is to form the pilot methodology for strategic positioning within global supply chains. In achieving this objective, Section 4.3.1 has argued that if possible, the methodology should be established from practical experiences and existing methodologies. The exploration studies of strategic positioning decision formation have been carried out in four companies in Chapter 5. Chapter 6 has established a set of requirements for a new methodology, evaluated comprehensively the capabilities of existing methodologies and selected the potential methodologies. Therefore, Phase 3 presented in this chapter must focus on the methodology formation based on real practices and academic theory by synthesising the selected methodologies with the results of the exploratory case studies, as illustrated in Figure 7.1.

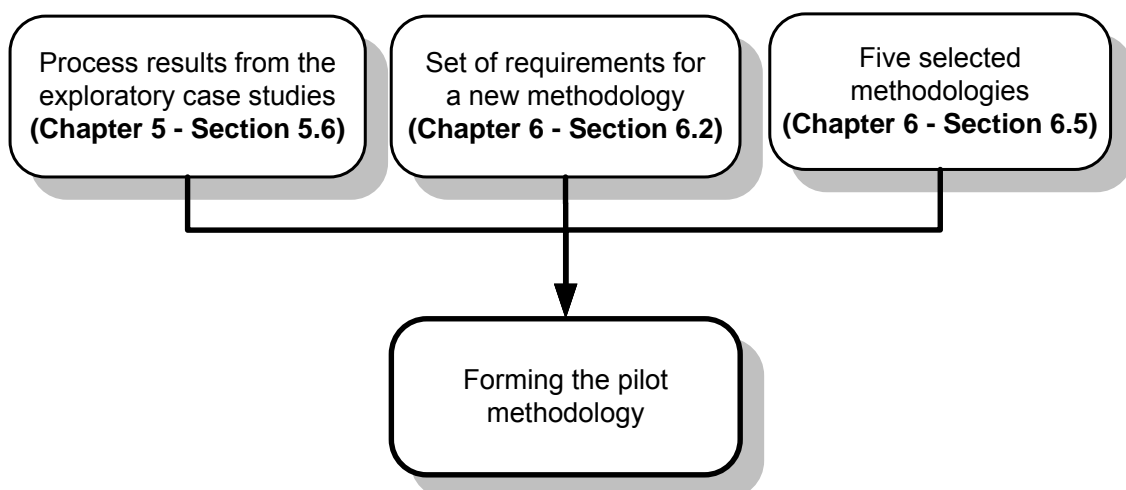


Figure 7.1 Formation of the pilot methodology

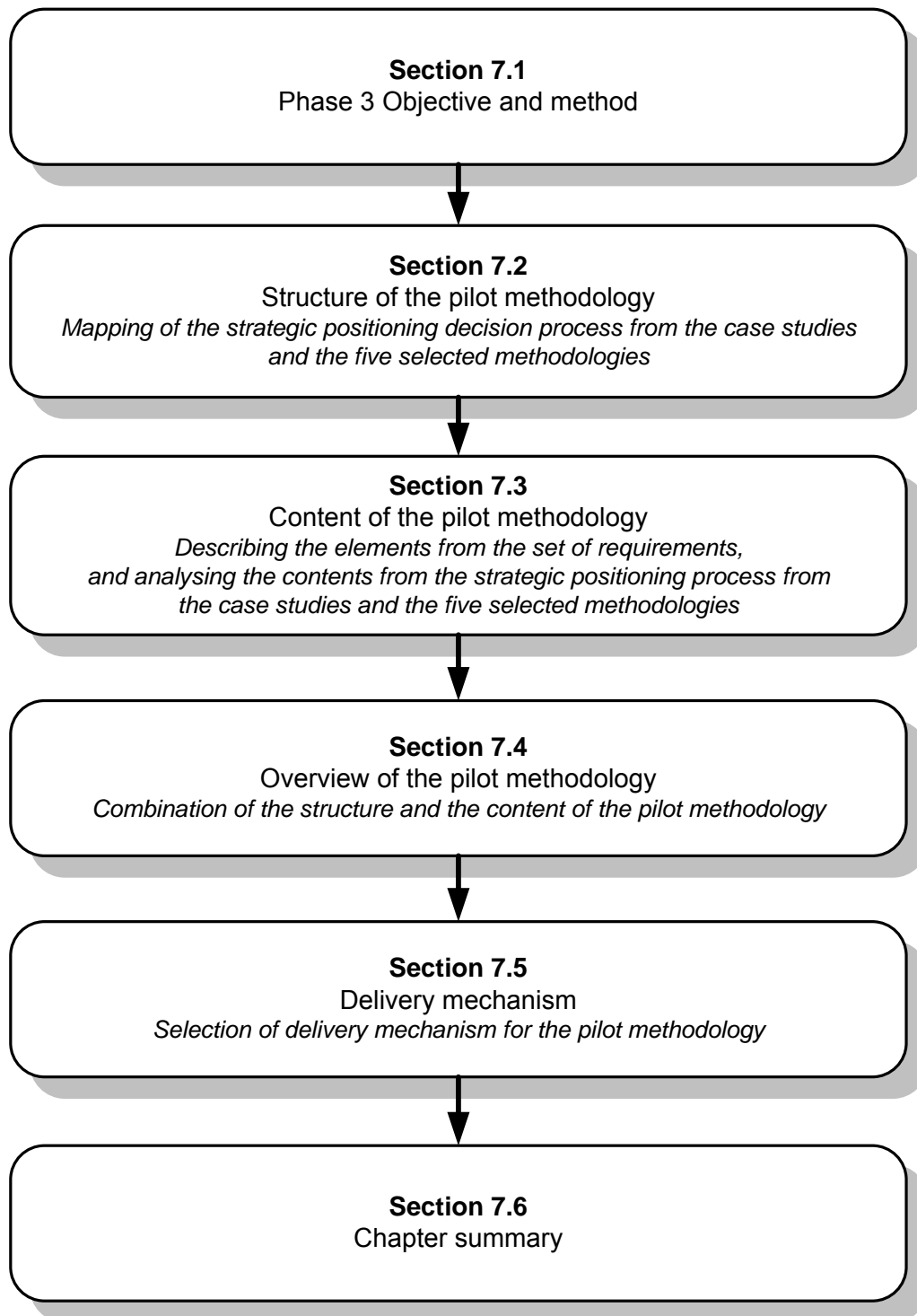


Figure 7.2 Method for formation of the pilot methodology

Section 4.3.4 has established the formation process at this phase that first determines the structure and then the contents of the new approach. The structure can be determined through mapping the strategic positioning process from the exploratory case studies (Section 5.6) with the five selected methodologies (Section 6.5). The content can be defined by describing the elements from the set of requirements and analysing contents from the results of the exploratory case studies and the selected methodologies (Section 6.2). Having established the structure and content, then these can be combined to form the pilot methodology.

In realising this phase, therefore there are four parts to this phase of research as following, exhibited graphically in Figure 7.2.

- Determining the structure of the pilot methodology (Section 7.2)
- Determining the content (Section 7.3)
- Describing an overview of the pilot methodology (Section 7.4)
- Discussing the delivery mechanism for the pilot methodology (Section 7.5).

The following sections of this chapter show the results of applying this phase research method.

7.2 Determining the structure of the pilot methodology

This section sets out to establish the structure of the pilot methodology. The structure is based on the process results of the exploratory case studies. This section therefore illustrates how the stages are mapped with the five selected methodologies to form a new structure.

The process of mapping the selected methodologies to the seven stages of the case studies is illustrated in Table 7.1. The table columns are divided into the number of stages from the case studies. The left hand column outlines the sources of methodologies. The details of each methodology mapped in the table are explained as follows.

The first methodology by Baines et al. (2005) covers the structure of the process from the case studies on Stages 1, 2, 3 and 7. Stage 1 and Stage 3 of Baines et al. (2005) relates to confirmation of a company's competitive strategy, determining of issue definition and generation of activity landscape and as a result fall into Stages 1 and 2 of the process from the case studies. Stages 2 and 4 from Baines et al. (2005) address the generation of decision criteria and a change in state for improving business performance against key decision criteria. These two stages relate directly to Stage 3: action design of the

process from the case studies. Stage 5 of the methodology by Baines et al. reflects on key outcomes from earlier stages, and identifies immediate associated initiatives which are in line with Stage 7: authorisation and action plan of the process from the case studies.

The second methodology by Lim (2007) is in a similar position to that of Baines et al. (2005), covering Stage 1, 2, 3 and 7 from the process of the case studies. His first, second and fourth stages address decision recognition and business diagnosis and fall into the first and second stages of the process from the case studies. Whereas his third, fifth and sixth stages focus on analyses of actions to be taken for the activities and resources to achieve the desired strategy and therefore deal directly with action design, Stages 3 and 7 of the process from the case studies.

Third, the first and second stages of the methodology from Probert (1997) deal with business/internal/external analysis and apparently cope with Stages 1 and 2 from the process of the case studies. His third and fourth stage, evaluating and deciding make or buy actions, cover Stage 3: action design and Stage 6: evaluation, correspondingly. Next, the methodology from the Manufacturing Foundation et al. (2006), the first, second, third and some parts of the fifth stage primarily focus on the key considerations for business and business analysis, and these stages take place in Stages 1 and 2 of the process from the case studies. Their fourth, fifth and sixth stages focus on deciding actions, either exporting or investing offshore, and lie in Stage 3 of the process from the case studies. The seventh stage of this methodology, action plan, aligns with the last stage from the case studies. The last methodology from Pongpanich (2000) tends to cover every stage of the process from the case studies. His first stage presents a high-level approach to designing actions while the following stages provide details of the configuration analysis and cover Stages 4 to 7 of the process from the case studies.

Having mapped the methodologies against the process from the case studies, the first stage of the new methodology should focus on critical issues of the business and the second stage should present the current status of business activities. The third stage should analyse future changes and design proper actions. The fourth stage should concern both criteria design and configuration design as the literature suggests. The fifth stage should present an in-depth analysis for promising configuration options and the last stage should deal with selection and the establishment of an action plan. As a result, the pilot structure comprises of six stages: issue analysis, activity landscape future analysis, configuration analysis, evaluation, and selection and action plan.

This section has defined the structure of a new approach. The next section sets out to determine the content.

Table 7.1 Mapping the selected methodologies against the strategic positioning process from the exploratory case studies

Source	Stages						
	1. Decision recognition	2. Business diagnosis	3. Action design	4. Criteria design	5. Configuration design	6. Evaluation	7. Authorisation and action plan
Strategic positioning Baines et al. (2005)	1. Scope issue 3. Identify activity landscape		2. Identify key decision criteria 4. Assess impact	-	-	-	5. Consolidate outcomes
Strategic positioning for SMEs Lim (2007)	1. Scope issues 2. Identify activity and resource landscape 4. Review competitive strategy		3. Identify significant activities and critical resources 5 Check alignment between performance and strategy 6 Formulate strategy (Steps 6.1-6.3)	-	-	-	6. Formulate strategy (Step 6.4)
Make or buy Probert (1997)	1. Initial business appraisal 2. Internal/ external analysis		3. Generation and evaluation of strategic options	-	-	4. Choosing optimal strategy	-
Offshore. Be sure The Manufacturing Foundation et a. (2006)	1. The facts 2. Your competitive position 3. Establishing your priorities 5. Harnessing competitive advantage and knowing your market (5.1-5.2)		4. Reducing costs & managing the threat 5. Seizing the offshore opportunities (5.3-5.4) 6. Securing your future	-	-	-	7. Action plan
International manufacturing location decisions Pongpanich (2000)	1. Investigation			2. Identification		3. Evaluation	4. Selection and action plan
SPGC stages	1. Issue analysis	2. Activity landscape	3. Future analysis	4. Configuration analysis		5. Evaluation	6. Selection and action plan

7.3 Determining the content of the pilot methodology

The purpose of this section is to determine what should be included in the pilot methodology. The content of the pilot methodology has been determined by incorporating the elements required and the result of content analysis from the five selected methodologies and the strategic positioning process from the case studies.

7.3.1 Methodology elements

The requirements from literature indicate the characteristics for the pilot methodology; structure, documentation, tools and techniques, participation, project management, deliverables, and scope & objectives. These characteristics represent the required elements for the pilot methodology contents which are presented as follows.

Structure – This represents a systematic step-by-step approach which dictates the order of the methodology. The identification of the stages from Section 7.2 has indicated a combined generic structure consisting of six stages, as demonstrated in Table 7.1. The pilot methodology is a well-defined process which explains the level of detail and activities in each stage.

Documentation – This requirement for documentation is to ensure that data and assumptions can be revisited at future dates. In order to achieve this, the pilot methodology provides templates in forms of worksheets to provide guidance on what information is required at each stage and to display the results from the analysis in a structured manner.

Tools and techniques – This element describes tools and techniques that can be employed by the users in the methodology to provide a suitable support for carrying out each stage of the methodology. The tools and techniques in the methodology are aimed at facilitating ideas and giving guidelines on each stage. Moreover, the pilot methodology is developed by incorporating practical visual aids to present the methodology process and to support understanding of company's strategic position.

Participation – This element describes the intended participants who will carry out the strategic positioning project using the methodology. The methodology is planned to be applied and used by the companies themselves without the need of an external consultant. The methodology is aimed at managers or a project team in manufacturing companies. It is for those who wish to ensure that their decisions and actions are consistent with business needs.

Project management – The methodology provides the resources required for carrying out each stage to ensure the project is adequately resourced and works to a clear timescale.

Scope and target – It is concerned with the applicability of the methodology. The methodology is designed for use in small and large organisations in the manufacturing sector. The methodology provides an integrated and holistic approach for strategic positioning within global supply chains decision. Such decisions associated with decisions in insourcing, outsourcing, offshoring, offshore outsourcing and location analysis for significant activities. The methodology can be used to confirm current strategies as well as to decide appropriate actions for improving and sustaining a competitive advantage. It also incorporates the way to identify business issues for scoping a project in the early stage.

Objective – This is defined as the desired outcome of the delivery of the methodology. The main objective of the methodology is to guide a company to define the most advantageous supply chain position tailored to the requirements of the company. It could help companies shorten the time to make decisions and keep a clear record of how and why they make decisions. The objectives of each stage in the methodology are clearly defined to support the achievement of the main objective.

Deliverables – This represents the output from the methodology. It is important to present what the methodology is producing in terms of deliverables at each stage and, in particular, the nature of the final deliverables (Avison and Fitzgerald, 2003). The output from the methodology includes the deliverables at each stage of the methodology. Each output forms an input to the next stage in the six-stage methodology.

7.3.2 Methodology content

The previous section has described the required elements of the methodology content according to the requirements from literature. The purpose of this section is to create comprehensive content with regards to the results from the exploratory case studies and the five selected methodologies. Table 7.2 illustrates the structure of each stage in the left column and provides details of content from the case studies, content from each of the selected methodologies in the following columns, and the content of the new methodology. The table shows how each methodology performs content in the structure of the pilot methodology and the content that should be included for the new methodology.

Table 7.2 Mapping content of the process from the case studies and the selected methodologies

Stage	Contents from the strategic positioning process from the case studies	Strategic positioning Baines et al. (2005)	Strategic positioning for SMEs Lim (2007)	Make or buy Probert (1997)	Offshore. Be sure. The manufacturing foundation et al. (2006)	International manufacturing location decisions Pongpanich (2000)	Content for the new methodology
1. issue analysis	<ul style="list-style-type: none"> - business issues such as company direction, business strategies, opportunity, crisis, problem etc. from internal and external - analyse the business from internal and external environments such as customer requirements, competitors, technology, supply chain - set scope of the project 	<ul style="list-style-type: none"> - select products and services with shared competitive strategy - review competitive strategy - analyse competitive gap between current and desired position - check alignment between performance and strategy - generate an issue statement 	<ul style="list-style-type: none"> - understand the current situation of the organisation and identify which part of the organisation to be analysed in the project - confirm the company's current strategy and the desired strategy for the future 	<ul style="list-style-type: none"> - assess or, if recent work has been done in this area, confirm the firm's overall business purpose and direction - compare company's level of performance with competitors (price, quality of goods, service produced, level of performance achieved with internal process) 	<ul style="list-style-type: none"> - understand the trends of global manufacturing and the influence that they could have on business - determine current competitive position - develop clear understanding of strengths, customers' needs, competitive position 	<ul style="list-style-type: none"> - assess current situation, strengths & weaknesses, industry & trends, competitors, market needs, current manufacturing facilities - decide the most appropriate level of ownership involvement in overseas plants - confirm the need for a location change 	<ul style="list-style-type: none"> - understand the current position of the organisation from internal and external environment and identify which part of organisation to be analysed in the project - confirm the company's current strategy, desired strategy for the future, competitive gaps between the company to customer requirements and competitors - from the analysis, set scope of the project by defining issue definition
2. activity landscape	<ul style="list-style-type: none"> - diagnose current supply chain position and core competences - give a holistic view and examine impacts of key supply chain boundaries 	<ul style="list-style-type: none"> - generate activity landscape by considering each key business area in turn, and for this, identify those activities that have greatest significance in the key decision criteria 	<ul style="list-style-type: none"> - produce an unfiltered landscape of all related activities and resources of the company that are involved in delivering the products and services identified 	-	-		<ul style="list-style-type: none"> - diagnose current supply chain position - generate a current activity landscape of all related activities by considering each key business area - identify current core activities

Stage	Contents from the strategic positioning process from the case studies	Strategic positioning Baines et al. (2005)	Strategic positioning for SMEs Lim (2007)	Make or buy Probert (1997)	Offshore. Be sure. The manufacturing foundation et al. (2006)	International manufacturing location decisions Pongpanich (2000)	Content for the new methodology
3. future analysis	<ul style="list-style-type: none"> - assess and design actions for a new position - include financial and non-financial factors 	<ul style="list-style-type: none"> - conduct analysis to generate decision criteria - identify those activities where a change in stake will improve/sustain business performance against key decision criteria - reflect on key outcomes from earlier stages, and identify immediate associated initiatives 	<ul style="list-style-type: none"> - identify a landscape of significant activities and critical resources - check the alignment considering the current and desired strategy, significant activities, critical resources, and competitive gaps. - combine all the decisions agreed upon, and propose the actions to be taken for the activities and resources 	<ul style="list-style-type: none"> - make some assessment of the possibilities open for change (considering the make-in and buyout options) 	<ul style="list-style-type: none"> - establish business priorities from current situation, willingness to change, and capacity to change - assess cost base and competitiveness, determine what should be made or bought, consider how to make it cheaper, identify how to but it for less - consider exporting, investing offshore (select investment option, consider partner, implement) - to identify response to the threats and opportunities presented by global manufacturing and offshoring 		<ul style="list-style-type: none"> - identify a landscape of significant activities where a change in stake will improve/sustain business performance - select factors for deciding future actions - conduct analysis to propose the actions to be taken for the significant activities from the results of decision factors

Stage	Contents from the strategic positioning process from the case studies	Strategic positioning Baines et al. (2005)	Strategic positioning for SMEs Lim (2007)	Make or buy Probert (1997)	Offshore. Be sure. The manufacturing foundation et al. (2006)	International manufacturing location decisions Pongpanich (2000)	Content for the new methodology
4. configuration analysis	<ul style="list-style-type: none"> - identify criteria for configuration - list potential configuration options and screen options into a short list of options 	-	-	-	-	<ul style="list-style-type: none"> - produce long list configuration options - develop a list of specific criteria for an ideal configuration, select top few locations further detailed evaluation 	<ul style="list-style-type: none"> - consider the locations for insourcing/ outsourcing activities - produce long list configuration options - use the issue definition from stage 1 to narrow the list down to few locations for further detailed evaluation
5. evaluation	<ul style="list-style-type: none"> - work in detail of each possible option, visit sites and communicate the new position change to parties in supply chain for feedbacks - include financial factors and non-financial factors such as risks, feedback from stakeholders in supply chains 	-	-	<ul style="list-style-type: none"> - evaluate and establish the optimal new strategy 	-	<ul style="list-style-type: none"> - evaluate the benefits and risks of each short-listed options, both financially and non-financially - site visits 	<ul style="list-style-type: none"> - select evaluation factors for decision - site visits - analyse factors of each option
6. selection and action plan	<ul style="list-style-type: none"> - make decision and plan actions for implementation - include performance measurement to monitor results of decision 	<ul style="list-style-type: none"> - consolidate outcomes and propose an action plan 	<ul style="list-style-type: none"> - summarise proposed actions and create an action 	-	<ul style="list-style-type: none"> - draw out the key issues from previous stages, begin to identify relevant action for business - produce and action plan to deliver competitive strategy 	<ul style="list-style-type: none"> - select the most appropriate location option, develop a plan for implementation activities 	<ul style="list-style-type: none"> - select the best option based on detailed analysis of each option, site visits, negotiation, and communication with memberships in the supply chain - check the alignment to the issues and competitive strategy - generate an action plan

The content of the new methodology in Table 7.2, as suggested by the process from the case studies and the selected methodology in Stages 3 and 5, should include factors for deciding future actions and selecting configuration options. Stages 3 and 5 should provide a comprehensive guide to an organisation as to which factors should be considered. The decision factors in Stages 3 and 5 were reviewed to ensure that a broad and holistic assessment is made.

Development of factors for deciding future actions in Stage 3

The factors in Stage 3 aim to help an organisation select which criteria to look for when deciding actions for significant activities. The factors are used for assessing the advantages and disadvantages of keeping activities internal or doing them external. The results from the factor review show that there are extensive research papers addressing factors for such decisions. Among these, Baines et al. (2005) study factor selection through 35 papers from the area of make or buy, strategic sourcing, core competence, technology acquisition, customer partnerships/strategic alliance, product/portfolio management and project selection from year 1979 to 2002. Baines et al. (2005) have grouped the factors into five sets and represented these with the term FACTS criteria. FACTS stands for financial, attitude/acceptability, competence/capability, technological and strategic fit. As their work collected factors from a wide range of papers in the area of designing organisational boundary, FACTS criteria are adopted in the pilot methodology. Nevertheless, in order to make FACTS more up-to-date and extensive, recent papers in offshoring, outsourcing and make or buy were reviewed and factors for these papers have been grouped into FACTS, as illustrated in Table 7.3. FACTS and each factor will be used in the methodology for giving guidance to users for designing actions in Stage 3.

Development of factors for selecting configuration options in Stage 5

The purpose of this part is to illustrate the development of factors for selecting configuration options in Stage 5. Stage 5 gives a number of factors from literature to guide an organisation as to what areas it should be looking at for evaluating the promising configuration options. The configuration analysis is a key aspect of strategic and logistical decision-making for manufacturing firms. The optimum locations and configurations may offer competitive advantage and may contribute to the success of an organisation. A very wide range of factors may potentially influence firms in deciding to locate operations across national boundaries. This stage provides a comprehensive set of factors and sub-factors that may influence international configuration decisions.

Table 7.3 Factors for action design – part A

		Jahns et al. (2006)	The manufacturing foundation et al. (2006)	Levin and Peeters (2006)	Vogel and Connelly (2005)	McIvor (2008)	Wu et al. (2005)	Beaumont and Sohail (2004)	Kremic et al. (2006)	Schniederjans & Zuckweiler (2004)	Ghodeswar & Vaidyanathan (2008)	Jiang and Qureshi (2006)	Kakouris et al. (2006)	Moschuris (2007)	Ruffo et al. (2007)	Water and Peet (2006)
Field																
Offshoring																
Outsourcing																
Make or buy																
Factors	FACTS															
Cost analysis/ comparison financial stability	F															
ROI of make/buy options	F															
Cost saving/cost reduction	F															
Investment cost	F															
Total acquisition cost	F															
Opportunity for exploitation of tax incentives	F															
Changing from fixed to variable cost	F															
Internal optimisation	A															
Environmental uncertainty	A															
Thrust on market positioning and new product development	A															
Risk analysis	A															
Supplier threat	A															
Management support/judgement	A															
Attitude to decision	A															
Attitude to decision making process	A															
Political/legal condition	A															
Culture fit	A															
Customer acceptance	A															
Core competence/capability analysis	C															
Focusing on business critical initiatives/key objectives/core activities	C															
Supplier market capability/quality/relationship	C															
Difficulty to imitate	C															
Language and communication	C															

Table 7.3 Factors for action design – part B

		Jahns et al. (2006)	The manufacturing foundation et al. (2006)	Lewin and Peeters (2006)	Vogel and Connelly (2005)	McIvor (2008)	Wu et al. (2005)	Beaumont and Sohal (2004)	Kremic et al. (2006)	Schniederjans & Zuckweiler (2004)	Ghodeswar & Vaidyanathan (2008)	Jiang and Qureshi (2006)	Kakouris et al. (2006)	Moschuris (2007)	Ruffo et al. (2007)	Water and Peet (2006)
Field																
Offshoring																
Outsourcing																
Make or buy																
Factors	FACTS															
Dependence on suppliers	C															
Technological/product importance/characteristics	T															
Technological competitiveness	T															
Access to technology and capability	T															
Support systems	T															
Product life cycle	T															
Process life cycle	T															
Strategic analysis/strategic fit	S															
Competitive advantage	S															
Change in market access/conditions	S															
Performance/value improvement	S															
Flexibility	S															
Policy change	S															
Customer service improvement	S															
Limited capacity, workers	S															
Reliability	S															
Exploitation of supplier innovation and capabilities	S															
Risk spread	S															
Location of suppliers	S															
Confidentiality/intellectual property right	S															
Supply continuity	S															

FACTS criteria – F = Financial, A = Attitude/Acceptability, C = Competence/ capability, T = Technological fit, S = Strategic fit

The results from the company cases in Phase 1 suggested that the factors in this stage should include factors from financial and non-financial perspectives. The financial and non-financial factor can be categorised according to the results from the case studies and literature as shown in Table 7.4.

Table 7.4 Factors affecting location decisions in international operations

Factors for analysis	Description	Literature support
Financial factors	Concerned with financial return and benefits of each option. Financial factors are always considered as a crucial factor for location decision. The most common financial measures are return on investment (ROI), new present value (NPV), payback period, and investment cost.	Artikis (1993), Padillo and Diaby (1999), Pongpanich (2000), Bhatnagar et al. (2003), MacCarthy and Atthirwong (2003),
Performance factors	Concerned with performance of the competitive priorities of the organisation. These competitive priorities can be identified according to the criteria in competitive strategies from Stage 1.	Padillo and Diaby (1999), Pongpanich (2000)
Business risks	Concerned with business risks that could happen when implementing the configuration option.	Padillo and Diaby (1999), Pongpanich (2000), Mazzarol and Choo (2003)
Geographic factors	Concerned with location factors that are potentially relevant to international location decisions.	Artikis (1993), Padillo and Diaby (1999), Pongpanich (2000), MacCarthy and Atthirwong (2003), Bhatnagar et al. (2003), Mazzarol and Choo (2003)

From the literature review, there are various factors dealing with internationally geographic factors. These factors are grouped into major factors and sub factors in the literature. To provide comprehensive and relevant geographic factors for Stage 5, the major factors were collected from several papers and have been grouped as shown in the first column of Table 7.5. The final major factors and sub-factors will be given in the final methodology, Appendix E.

Table 7.5 Geographic factors affecting location decisions in international operations

Major factors	Yoon and Hwang (1985)	Junthirapanich and Benjamin (1995)	Ulgado (1996)	Yang and Lee (1997)	Alberto (2000)	Ponpanich (2000)	Bhatnagar et al. (2003)	MacCarthy and Atthirwong (2003)
Labour characteristics								
Infrastructure								
Quality of life								
Competition								
Suppliers								
Integration with customers								
Legal and regulatory framework								
Economic factor								
Government and political factor								

This section has presented the content of the new methodology and therefore the pilot methodology has been created in this section by combining the structure with the content. An overview of the methodology is provided in the following section.

7.4 Overview of the pilot SPGC methodology

The purpose of this section is to provide an overview of the pilot methodology. The methodology is described by examining the process in terms of the structure and the steps. The first part of this section presents an overview and structure of the methodology and the following parts explains the six stages of the methodology.

7.4.1 Overview and structure

A six-stage practical methodology has been developed. The principal goal of the methodology is to guide practitioners to deal with strategic positioning within global supply chains using an integrated and holistic approach.

The pilot SPGC methodology consists of the following stage:

Stage 1 – Issue Analysis

Stage 2 – Activity Landscape

Stage 3 – Future Analysis

Stage 4 – Configuration Analysis

Stage 5 – Evaluation

Stage 6 – Selection and Action Plan

The stages of the methodology assume a linear progression but it also allows practitioners to adopt an iterative approach. In practice, there may be loops back among the stages of the methodology. For each stage, the methodology defines the objective in terms of what should be done and why it is done. Most stages have been broken down into three to four sections. The actions give a series of steps to be carried out in each section and are linked to the relevant tools and applicable worksheets. The methodology provides visual aids to illustrate a road map of the whole process and exhibits a process definition map of each stage. Each stage also describes the inputs, the expected achievements and the deliverables. Therefore, each stage in the pilot methodology is structured as shown in Figure 7.3.

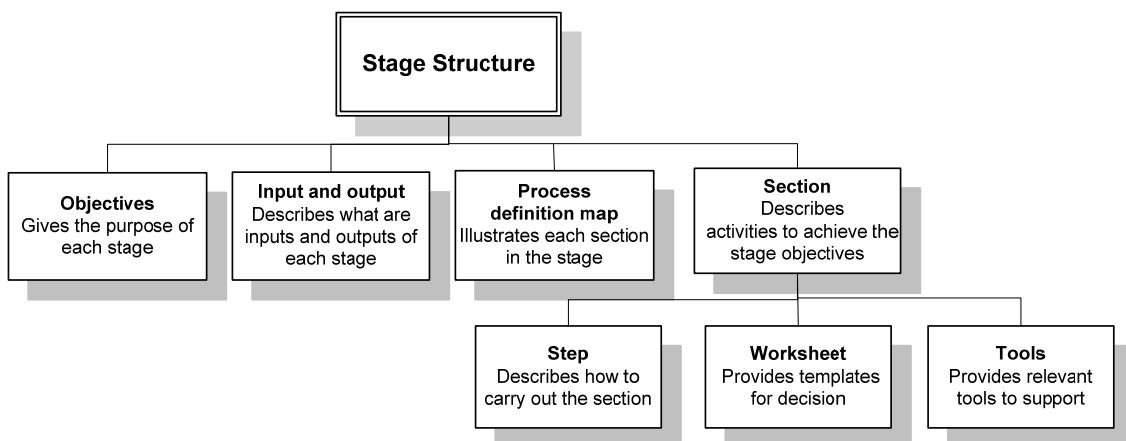


Figure 7.3 Stage structure

The final methodology will be fully described in Chapter 10. The subsections below provide a brief overview of the six stages.

7.4.2 Stage 1: Issue analysis

The overall purpose of this stage is to produce a qualified statement of the performance improvements sought by the manufacturer. This is achieved in the main by a review of the company strategy, a confirmation of over-riding issues, an analysis of internal and external environments (SWOT analysis) and the company's competitive status. The company competitive status is assessed on the basis of three value disciplines from Treacy and Wiersema (1995) which are Operation Excellence, Product Leadership and Customer Intimacy. Each discipline requires a company to emphasise different processes, different management structures, different measures of success and different cultures. The review and analysis then leads the project team to define desired improvements as an issue statement. The issue statement represents the goals and objectives of the project. This stage will provide a very critical focus to the project.

7.4.3 Stage 2: Activity landscape

The purpose of this stage is to diagnose the business of the organisation in terms of activities in supply chains that represent critical and potential adjustments in the strategic position of the organisation, when taking into consideration the issue statement generated in stage 1. The mapping tool is used as a model to map supply chain activities with the products and services identified in stage 1 that are carried out internally or externally. It is also used to distinguish core activities from other activities within the organisation. The tools for defining organisation activities and core activities are provided. The stage focuses on an understanding of current supply chain activities and core activities.

7.4.4 Stage 3: Future analysis

The purpose of this stage is to provide a balanced and objective assessment of the possible actions to activities that have significant impact towards the issue statement. Significant activities are identified in this stage by querying which activities (internal or external to the organisation) have a potential for significant impact towards improving the issue scoped if some form of action was taken. The actions for activities are then assessed by classifying the advantages or disadvantages for keeping them as internal activities, and the advantages or disadvantages for doing them as external activities.

7.4.5 Stage 4: Configuration analysis

The purpose of this stage is to identify potential configuration options of a new strategic position. In the previous stage, the possibilities of actions may include

selection of the most appropriate location within global supply chains. At this stage a list of possible sites is identified. This stage will narrow the field of possible sites to a more manageable list for detailed analysis in the next stage.

7.4.6 Stage 5: Evaluation

The purpose of this stage is to generate detailed analysis for a short list of configuration options. The detailed analysis includes the benefits and risks of each short-listed option, both financially and non-financially (financial analysis, competitive performance analysis, business risks and geographic analysis). The evaluation stage is based on the objectives of maximisation of financial performance, maximisation of strategic competitive performance, minimisation of business risks, and maximisation of geographic benefits. The lists of factors in performance analysis, financial analysis, geographic analysis and business risks are provided to the users to select the requirements of the organisation.

7.4.7 Stage 6: Selection and action plan

The purpose of the last stage is to select the most suitable configuration option and produce an implementation plan. Each option will be given the rating in terms of performance analysis, business risks and financial analysis. The option which provides the highest scores is the most likely suitable to the need of the organisation. This stage offers to produce an implementation plan and the performance measurement tool is also given for monitoring the decision.

7.5 Delivery mechanism

The medium that is used to present the pilot methodology to the intended users is discussed in this section. This section describes the type and selection of delivery medium and the relevant design requirements.

An interesting and challenging decision in the formation of pilot methodology is the selection of delivery mechanism which will be used to present and distribute the methodology. The choice of delivery mechanism is very limited to appear on a paper-based or computer technology. This research has investigated media selection from the instructional design. Gange et al. (2005) stated that the effectiveness of instruction depends upon the ability of the media, delivery methods and instructional strategies employed to provide the events of instruction. The selection of the media depends on the type of methodology outcome and user characteristics. From the works of Lockwood (1998) and Gange et al. (2005), the media employed for the self-instructional delivery system are often chosen on grounds of:

- Structured

- Target users
- Information transfer
- Objective of the methodology
- Learning task
- Convenience
- Cost effectiveness
- Flexibility

On these foundations, the medium chosen to deliver the pilot methodology is a paper-based workbook, primarily based on ease of use, access and flexibility to the target user environment. The objectives of the workbook are to:

- Be a transparent decision making process, encouraging communication among project teams and staff
- Promote and encourage discussion among the team members
- Enable flexibility of use with no requirements of computer or software
- Provide low-cost use
- Take a systematic, process-based and procedural view of the strategic position
- Achieve effectiveness and efficiency

The paper-based workbook has been proved efficient and effective through a number of methodologies using this medium for example, Department of Trade and Industry, 1995; Mills, 1996; Neely et al., 1996; Harrington, 1997; Pongpanich, 2000; Barrow, 2005; Westwood, 2005; the Manufacturing Foundation et al., 2006.

The next challenge in the design of a delivery mechanism is to determine the requirements for the design of a workbook. To address this, the requirements from user interface design were reviewed. The primary concern about the requirements for the workbook is an understanding of the users, the context of use and the information architecture (Hackos and Redish, 1998; People and Scane, 2003). With this basis, the requirements for workbook design can be summarised as follows:

- Ease of use
- Subjective user satisfaction
- Low cost

- Minimise the use of participant time
- Usability – the methodology can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use
- Providing easy access to individual steps and supporting the sequential structure
- Effective user-friendly material with an attractive look
- Knowledge transfer to take place as the user works through the workbook

In summary, the workbook for the methodology is designed to suit the context of use and users in manufacturing sector. The workbook is systematic and procedural. It can be tailored to a company's own needs, requirements and context. The workbook prescribes consistent steps and is descriptive in approach with room for flexibility within each step. It attempts to provide effective and efficient use to users.

7.6 Chapter summary

This chapter has explained the process of forming the pilot methodology for strategic positioning within global supply chains. A six-stage pilot methodology was created by combining the results from the exploratory case studies and the strengths of the selected methodology. An overview of the methodology and its structure was provided, followed by a brief description of each of the six stages of the methodology.

The methodology is delivered in the form of a paper-based workbook. It provides not only a baseline, systematic and procedural guide for practitioners and organisations to follow but also has well-defined activities in structured stages as well as associated tools and techniques. It is proposed to further develop the workbook methodology after application in companies. The pilot methodology is then evaluated through primary testing in industrial case studies in the next chapter.

CHAPTER 8: PRIMARY EVALUATION OF PILOT METHODOLOGY

The previous chapter has formed the pilot methodology. This chapter will proceed with the fourth phase of the research programme to evaluate the pilot methodology in industrial case studies. The chapter commences with a description of the research objective and method at this stage (Section 8.1). The second section designs the data collection protocol (Section 8.2). The third section discusses the selection of companies (Section 8.3). The fourth section then presents the execution of case studies (Section 8.4), from which the fifth and sixth sections draw a number of analysis results (Sections 8.5 and 8.6). Finally, the refinement is then made (Section 8.7).

8.1 Phase 4 overview objective and method

The objective of this phase of the research is to evaluate the pilot methodology in industrial case studies. Section 4.3.5 has established that the purpose of the evaluation is to observe the application of the methodology in practice in order to evaluate whether it is workable, to determine whether it provides a practical, procedural step, and to identify potential areas of improvements. In order to achieve this purpose, Sections 4.3.1 and 4.3.5 have established that the appropriate research method is to be a case study with participant intervention (sometimes referred to as action research). These two methods will assess whether the methodology is practical, useful and relevant to the practitioners.

The case study method involves a great deal of intervention and participation by the researcher. Section 4.3.5 has determined that the researcher's role at this stage is to apply, facilitate and identify and changes required. Taking into account these two methods, the design of the evaluation at this phase must address:

- Identification of the assessment criteria
- Design of data collection framework
- Identification of data collection instruments
- Choice of industrial test-site

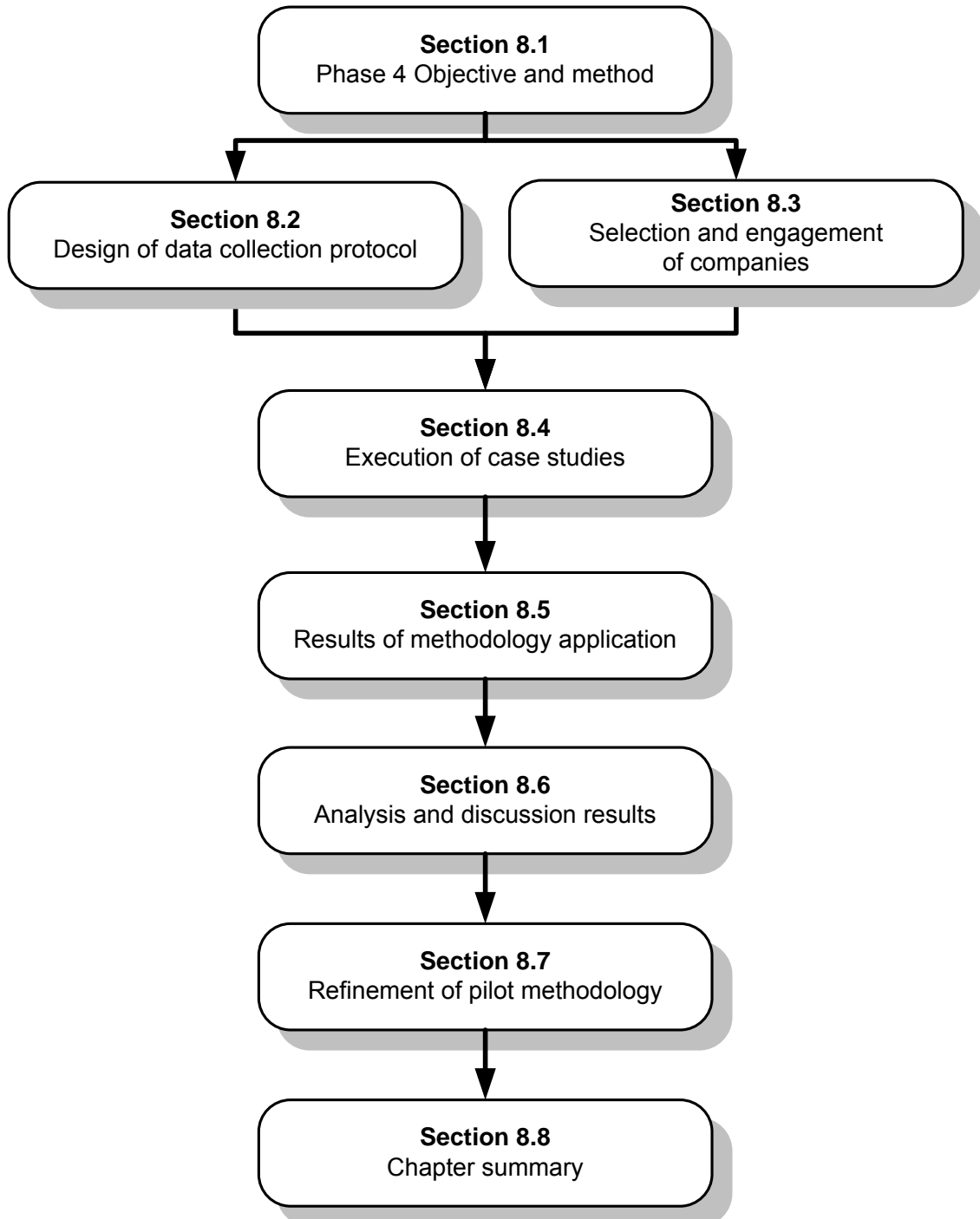


Figure 8.1 Method for primary evaluation of the pilot methodology

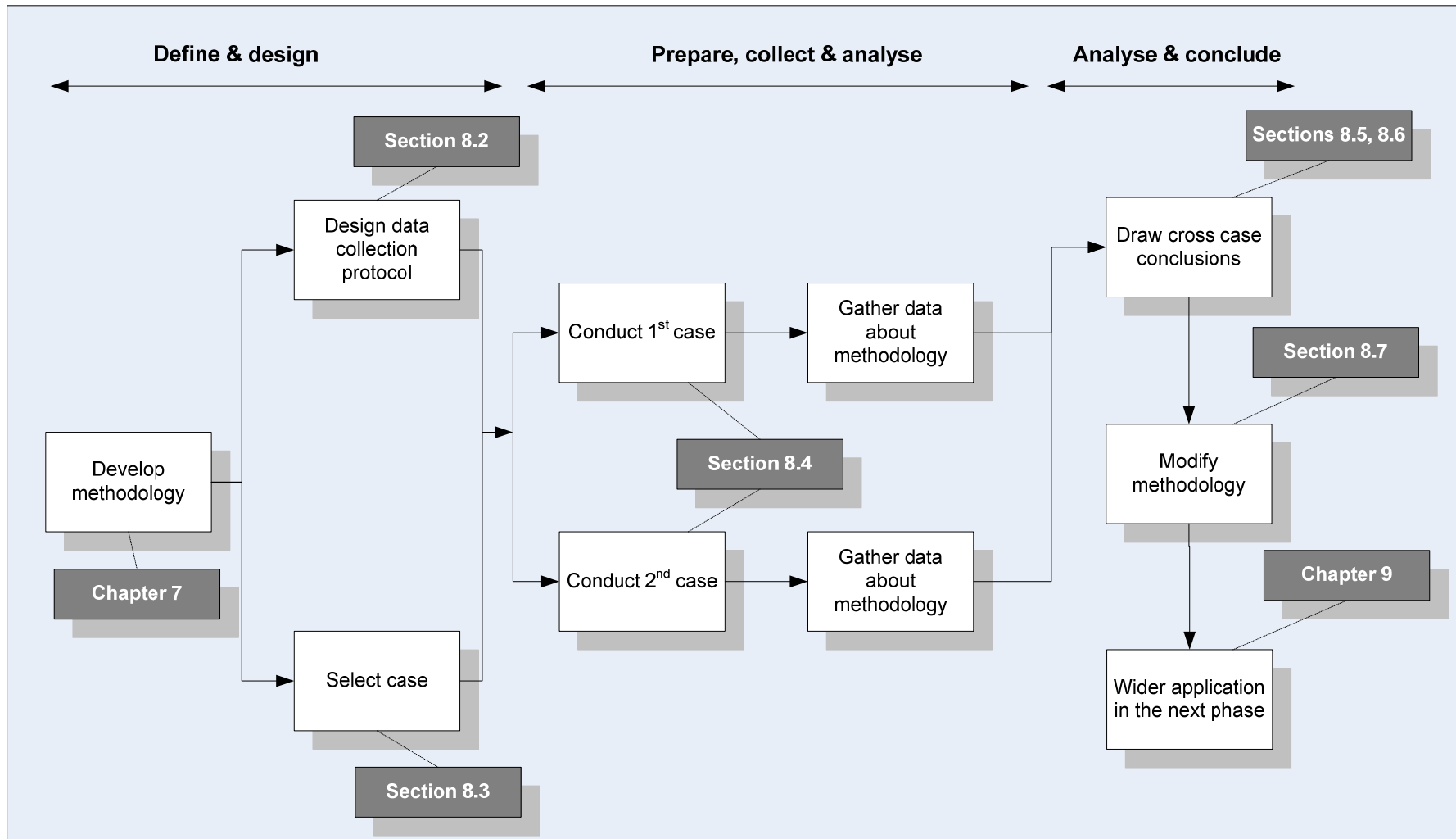


Figure 8.2 Overview of case study research design (Adapted from Yin, 2003)

On this basis, the design of the evaluation at this phase can proceed which leads to the structure of this phase as follows:

- Design of the data collection protocol, which involves identifying the assessment criteria (specific measures), data collection framework (who, when and how to collect data), and data collection instruments (Section 8.2).
- Selection and engagement of companies (Section 8.3)
- Execution of case studies, where individual case study is carried out as each complete study and data collected (Section 8.4).
- Presentation of the results of case study applications according to the assessment criteria (Section 8.5)
- Analysis and discussion of the results of case study applications (Section 8.6)
- Refinement of the pilot methodology (Section 8.7).

A graphical illustration of the process of this phase is shown in Figure 8.1, and the overall case study design is shown in Figure 8.2.

8.2 Design of data collection protocol

This section presents the process taken to design the data collection protocol for evaluating the pilot methodology as part of the case study.

8.2.1 Defining the assessment criteria

The purpose of this section is to define the assessment criteria for evaluating and testing the methodology. To achieve this, the criteria should be able to evaluate the effectiveness and success of the use of the methodology, but not focus on the outcome of the methodology. Assessment criteria for a process-based approach from Platts (1993), Adesola (2002), Bourne et al. (2002), Tan et al., (2004), Viseras (2004), Tan and Platts (2005), and Lim (2007) were adopted in this research. They suggest that successful tests of any practical methodology should constitute:

- Feasibility - Could the methodology be followed?
- Usability - How easily could the methodology be followed?
- Usefulness - Did the methodology provide useful results that met expectation?

The testing of feasibility is straightforward according to Platts. If each step in the methodology can be followed consistently as laid down, this demonstrates the methodology is feasible. The usability testing shows that for the methodology to be accessible to users and managers, the techniques and tools have to be relatively easy to use and user friendly. The testing of usefulness assesses the success following the completion of the methodology.

8.2.2 Data collection framework

Having established that data collection is to be based on feasibility, usability and usefulness, the purpose of this section is to determine the data collection framework. Table 8.1 presents the data collection framework designed to address the following research issues considered as part of the process research:

- What: What questions should be asked to be able to comment on each category of success?
- When: When should data be sought?
- Who: From whom should data be collected?
- How: How should data be collected?

8.2.3 Data collection instruments

In order to execute the evaluation, the next activity is to determine the research instruments used to gather the data. In this phase, the researcher acts as the facilitator and direct user while the companies were participants in the methodology application. Within this research phase, several sources of data can be taken into account. Interviewing techniques, diary and participant observation have been identified as the most appropriate data collection instruments to gather feedback from the companies in order to assess the application (feasibility, usability, usefulness) of the methodology. The tactical methods used for these research instruments are described below.

Participant observation and diary

The method of data collection most closely associated with contemporary field research is called participant observation, whereby the investigator attempts to attain some kind of membership in or close attachment to the group that the investigator wishes to study (Nachmias and Nachmias, 2005).

Table 8.1 Data collection framework

Categories of Assessment	Performance questions	When?	Who?	How?
In what ways can a methodology success be evaluated?	What questions should be asked to be able to comment on each category of success?	When should responses be sought?	Who should provide responses?	How should data be collected?
Feasibility	Could the methodology be followed?	Post completion	Facilitators and participants	Interview, diary, participant observation
Usability	How easily could the methodology be followed?	Each step of the methodology and post-completion	Facilitators and participants	Interview, diary, participant observation
Usefulness	Did the methodology provide a useful output that met expectation?	Post completion	Participants	Interview, participant observation

The main advantage of observation is its directness; it enables researchers to study behaviour as it occurs. It also enables the investigator to collect data firsthand, thereby preventing contamination of the factors standing between the investigator and the object of research (Robson, 2004). In this phase, the researcher should be directly involved in facilitating and observing the case studies as participant and observer. The role of researcher should be a team leader, share the team members' experiences and observe the methodology application.

Furthermore, the use of a research diary can play a significant part in recording about everything observed in the process: including description of people, physical environment, events and conversations as well as the observer's action (Taylor and Bogdan, 1984; Maylor and Blackmon, 2005). However, the challenge of participant observation is often the validity of observation which results from the researcher's preconceptions, existing knowledge and subjective interpretation situations (Foster, 1996). To reduce this bias, the researcher must cross check findings from the project participants and eliminate inaccurate interpretations.

Semi-structured interviews

Interviewing is one of the most important sources of case study information (Yin, 2003). The semi-structured interviews can be carried out intermittently to support the participation observation and diary in order to get any additional information. The loose interviews allow interviewees the freedom to comment on any aspect of the methodology (Oppenheim, 2001). This seems a good choice to promote fairness and to reduce subjectivity of data. The questions should focus on what the project participants feel on feasibility, usability and usefulness of the methodology and specific examples to illustrate their thoughts and ideas to increase the researcher's understandings. The questions for interviews include:

1. Feasibility: Could the methodology be followed?
2. Usability: How easily could the methodology be followed?
3. Usefulness: Did the methodology provide a useful output that met expectation?
4. What do you consider to be the major strengths of the methodology?
5. Was there anything else of significance that affected the methodology that had not been covered yet?
6. Can you suggest improvements to the methodology?

The information sought from the evaluation process will be analysed to provide a descriptive and general picture of the methodology application. The use of participation observation, diary and interviewing provides this research phase with the information needed to consider the evaluation and initial refinement of the pilot methodology.

8.3 Selection and engagement of companies

This section describes the process taken to define the selection of companies and the engagement of companies as part of the case study method.

8.3.1 Company selection criteria

This section presents a justification of the selecting on companies for the pilot methodology evaluation. First, it is to determine the term of the case: what the 'case' is. According to Yin (2003), the case is the unit of analysis which defines the subject in study. In this research phase, the focus is on the evaluation of the pilot methodology in actual manufacturing companies. Therefore, an appropriate unit of analysis is a manufacturing company.

Second, the number of case studies is justified. According to Yin (2003), single case design works well if it represents a critical case or when it represents an extreme or unique case. Other rationales for single case design are when it is a representative case or a longitudinal case where studying a single case is done at two or more different points in time. Since the subject in study does not fall in any of the above rationales for single case study, multiple-case design is chosen.

The next task is then to decide on the number of cases to study. Replication logic is considered for this decision (Hersen and Barlow, 1976). Evidence of replications in case studies will reinforce the significances of the findings. Yin (2003) has proposed that 6 to 10 case studies are considered to be adequate for multiple case studies. A few cases (2 or 3) would be literal replications, whereas a few other cases (4 to 6) might be designed to pursue two different patterns of theoretical replications. Thus, for the case of proving the validity of the methodology, two cases are selected for the primary testing and four cases are chosen for the secondary wider testing, which will be explained in Chapter 9.

The subsequent task is then to consider the choice of company for case study. The type and characteristics of the company which is to be chosen is considered to be an issue for which guidelines must be developed. To guide the researcher in what to look for in a test-case, the following criteria have been developed:

1. The scope of the project has to be big enough to test the validity of the pilot methodology but small enough to be carried out completely by the researcher as the user and facilitator.
2. The company should be considering a global supply chain positioning improvement initiative.
3. The company should have no methodology in place and is exploring a new structured approach.

8.3.2 Company engagement

The preparation and evaluation was carried out in the period of August 2007 to January 2008. When the company selection criteria had been determined, the researcher used a three-stage approach to select the companies. First, an email of invitation was sent to companies associated with the Manufacturing Department, Cranfield University. The second stage involved responding to any interested parties and giving further details about the methodology and the application. The final stage was to visit these companies for a formal introduction meeting, presentation and to discuss possibility of collaboration, project scope, time scale and roles. The presentation slides for project introduction are shown in Appendix A. At the end of the meeting, the companies made a decision whether to start the project or not and if so, what was the next step.

Once the selection process was completed, entry stages were defined. The first stage was to present the pilot methodology to the team members and to set scope with the companies. The second stage involved making several visits to carry out each stage of the methodology. The last stage was gaining feedback from the companies. During the process, the researcher was not allowed to use a voice recorder to keep record all conversations due to company confidentiality. This became a benefit with regards to the reliability of data because the use of taping could inhibit the group and researcher participation in its activities (Robson, 2004). Therefore, the participant observation, diary, and interviews played a highly significant role for collecting data from the case studies.

8.4 Execution of case studies

The previous sections have established the design of the pilot methodology evaluation programme. The purpose of this section is to present an overview of case studies. Each case study provided a useful and different perspective of strategic positioning within global supply chains to gain and sustain competitive

advantage. A detailed description of each case study application is set out in the Appendix C.

8.4.1 Case 5: Amp-Co

Background of Amp-Co

Amp-co is a British company which designs and manufactures music amplifiers. It first started as a small shop in the early 1960s. Throughout the 1960s the company has grown in popularity and powered the most influential and original guitar players. The brand is renowned for high quality amplifiers in the music industry and is held in high regard by musicians in the rock style. It has a customer base comprising 83 countries with their greatest market share of 40% in the USA. The company's brand value has been built on heritage and quality of its amplifiers and gives a marketing competitive advantage.

Amp-co has its main production in the UK and maintains a level of outsourcing for lower end product ranges to China, India and Korea (the Korea supplier has offshored to Vietnam). The UK plant has a floor space of 70,000 square feet and a workforce of 186. Production in the UK is characterised by high labour cost and the demand for high quality products and therefore there is pressure to maintain the brand image. Despite its long success, Amp-co is also facing intense competition from its competitors like many other companies in the world. It is looking for a global supply chain positioning improvement initiative and confirmation of its current strategy.

Overview of application of the pilot methodology in Amp-co

The intervention approach was adopted for the methodology application and the researcher has followed the methodology and tools from the workbook methodology. The project started with the company giving background, history, organisation structure, production layout and etc. to the researcher as a facilitator. The researcher also visited the production shop floor to get an understanding of production activities within the company. Then, a meeting was held to introduce the content and process of the workbook methodology. Due to human resource limitation of the company, the researcher worked mainly with the operations director for the project. Other departments such as purchasing, research and development, and marketing were contacted to get some information and opinions.

The application of the methodology began with Stage 1 where the scope of issues were identified. The internal and external environments were analysed and the business strategy was reviewed. The over-riding issues raised were to retain production activities in the UK, reduce production costs, maintain brand

reputation and succeed on the market place with new products. The current competitive strategy was assessed to be Product Leadership and so was the desired competitive strategy as its success is dependent on the brand name, quality and sound of the product. The summary of competitive gaps was analysed and showed that the company should focus on operations and production costs in the UK plant. The issue statement was set to maintain production of valve amplifiers in the UK by reducing costs, enhancing quality conformance and reinforcing the brand value.

In stage 2, the internal and external activities of the company were identified and mapped into an activity landscape. Core competences were defined as brand value and quality which were transformed into core activities as sales, customer relations, product support, research and design and final assembly. For Stage 3, significant activities according to the Issue Statement were identified and advantages and disadvantages from keeping in-house and external sourcing were assessed by using FACTS for consideration. A decision was made to keep all production activities for valve amplifier in the UK and outsource lower end products to subcontractors. Other strategic initiatives in supply chain improvement were also proposed to reduce inventory costs, improve communications within supply chains and improve quality. In stages 4 and 5, the current configuration was reviewed to assess the configuration of manufacturing activities outsourced to existing suppliers in China, India, and Vietnam. The factors for screening and evaluation were used to confirm the current configuration. The last stage was to set an action plan for further actions for supply chain strategic initiatives. The company felt confident after using the systematic methodology to confirm its current strategy. Previously, decisions have always been done in a fragmented way.

8.4.2 Case 6: Elec-Co

Background of Elec-co

Elec-co was founded in 1974. It is a world leader in the design, production and marketing of electronic drives for the control of electric motors. It has the main manufacturing site in UK and the subcontractor site in China. The company's strategy is to concentrate on delivering drives and servo products that enhance the productivity of its customers' machines and processes. From simple stand alone drives to complex multidrive applications, the company's strategy is focussed on delivering solutions at the process or machine level that make a difference to its customers. The company has established drive and applications centres around the world to distribute its products and add value by building its drive products into custom designed systems. The drive centres also provide the company with feedback and market intelligence.

The significant change for the company happened in 1995 when the company merged with a big American company group making Elec-co become a major player in the USA servo market. The company benefits from this merger with a huge pool of knowledge in all aspects of product and process. Moreover, the American group provides very strong financial stability and effective management processes. Elec-co's strategic direction is mainly in line with the American group of which it is part.

Overview of application of the pilot methodology in Elec-co

The access to Elec-co started from responding to interest in participating in the case study. A formal presentation was then made to the management team who agreed that the research project should be undertaken. At the end of the presentation the timescale of the project was agreed as 3 months, and resources and commitment from the management were discussed and agreed upon. On the commencement of the project, the researcher as a facilitator visited the company production processes to gain a common understanding of the company's business. The members of the project team comprised the vice president operations, the general manager and the quality manager.

For stage 1, the project members identified five product families for the business area to review. Overriding-issues were discussed, primarily inventory cost and lead time reduction and on time delivery improvement. SWOT analysis was then carried out within the scope of consideration. Elec-co's current competitive strategy was assessed to be Customer Intimacy and so was their desired competitive strategy which would also focus on providing total solutions to customers. However, the company wanted to raise the discipline of Operation Excellence in order to support the strategy on Customer Intimacy. The competitive gap analysis also showed that in the area of customer intimacy the company currently matched with the customer requirement and competitor performance, and exceeded in the area of after sales support. However, the company lagged behind its competitors in product availability, product price and time to market which the company saw as critical and threatening the success of its desired competitive strategy. Therefore, the issue statement for Elec-co was to improve operations and configuration of its manufacturing network in order to reduce costs, increase delivery reliability and support varieties of product mix. In stage 2, an activity landscape was drawn and core activities were defined as drive manufacturing, engineering, research and development, sales, product management, technical support, repair centre and system build.

Stage 2 identified significant activities in stage 3 which are despatch, drive manufacturing, production planning and activities in drive centres. The significant activities were assessed regarding to FACTS to identify advantages and disadvantages of changing status of those significant activities. The

decision was made to produce products for European, Middle East and African markets in the UK and to outsource production for Asian and American markets to the current subcontractor in China. Further actions were proposed to improve real time visibility in supply chains especially for drive centres in order to achieve the issue statement of the project. In stage 4 and 5, the current configuration was assessed and some changes were proposed. In stage 6, the decision was made to confirm the current configuration and to encourage direct shipment within the European market instead of delivering from drive centres. It was also decided to apply the postponement technique both in the UK plant and with the Chinese subcontractor.

8.5 Results of methodology application

This section presents the results of testing the methodology on the two cases based on researcher observation, diary and semi-structured interviews addressing the evaluation criteria of feasibility, usability and usefulness. The results from each evaluation criteria were highlighted as follows.

8.5.1 Feasibility

The feedback from the case studies showed the user's positive opinions with regard to the feasibility of the methodology. The sequence of stages was found to be correct and the steps in every stage were found to be clear and well defined. Amp-co stated that the sequence of the stages is consistent which leads them to understand the link of environment, competitive strategy, and resources to the strategic positioning decision. As mentioned previously the company had no methodology in place, but found that the methodology was important and applicable to the company. It further addressed that the methodology seems to be generic at different levels of company size and industry.

Similarly, Elec-co felt positive in the methodology application since the application of each stage went smoothly. They indicated that the introduction in the workbook gave them a clear understanding of what the methodology is about, why/when should they use this methodology, who should use this methodology, and what the outcomes of the methodology are. This showed what they could expect from the methodology. In the meantime, they agreed that the methodology did work in their organisation and the methodology can be followed in its entirety. The link to each stage was clearly shown with the outputs in the previous stage becoming the inputs to the next stage. Although the methodology proved feasible in two cases, the companies thought that the content of the methodology could be improved by modifying some details.

8.5.2 Usability

The methodology workbook was found to be easy to follow by the participants. Their perception was that there was no need for external resources to facilitate the application. They agreed that the objectives and steps of the methodology are clear at each stage. Amp-co and Elec-co indicated in the same way that the methodology road map and the definition map at each stage provided them with complete understanding of the content and order of the stages. However, at each stage they felt slightly lost as to where they were in the methodology. They suggested creating a small picture to show all stages and highlight in progress.

The participants from both cases further suggested that providing complete worksheet examples would enable a better understanding for the users. Another point about the usability was raised from Stage 3 where to guide the participants to map the activities of the organisation in an activity landscape. It seemed dependent on the skills and experiences of the facilitator at this stage. A modification is required to make it easier to use. On the point of time consumption, Elec-co mentioned that the timing of the methodology and stages of the project fit in well with other duties. This positive feedback might be because the researcher was the facilitator who conducted and prepared documents for the project. This issue can be further tested in the next stage when the researcher is only an observer of a project.

8.5.3 Usefulness

The overall feedback from the criteria on the usefulness of the methodology was positive. In particular its impact on the project was noticeable. The companies confirmed that they had learnt something new from the methodology application such as core activity identification, comprehensive factors for decision making, competitive strategy assessment, etc. The tools included were seen to be useful and beneficial to the project. Some participants thought the tools would be useful in some part of their work. The output of the workbook and all its stages were found to be appropriate and relevant.

When the researcher asked whether they would use the methodology again, most participants said “yes” and some participants said “maybe as a guideline for the next decision”. The general manager in Elec-co commented on the methodology usefulness, that “it provides a logical approach and useful outputs”, whilst the operation director in Amp-co stated that “it helps us confirm our current strategy and we feel more confident to go in this direction”. They indicated that the methodology enabled them to consider several aspects within supply chains simultaneously. It also provided them with a link from the decision to company strategy, environment, competitive strategy and resources of the company to identify its competitive space. They commented that the

methodology was also useful from a facilitation approach and led them to discuss problems and opportunities for changes in a structured manner.

8.6 Analysis and discussion results

The objective of this section is to discuss the results from the execution of the methodology applied to two case studies and present the analysis in a structured form. The analysis in this section follows the structure of strengths and weaknesses. First the strengths of the methodology are considered and then an analysis of the weaknesses is made.

8.6.1 Strengths of the pilot methodology

The purpose of this section is to analyse the strengths of the pilot methodology. The case study results indicate that there are quite a number of strengths in the decision process of the methodology. First, as a whole, the methodology is very comprehensive and systematic comprising six stages. Within these six stages, each has its own unique strengths, as shown in Table 8.2.

Table 8.2 Strengths of the pilot methodology

<p>Stage 1: Issue analysis</p> <p>Stage 1 provides useful analysis to set the scope of the project. The analysis includes over-riding issues, internal/external analysis, company strategy review, competitive strategy assessment and competitive gap analysis. By using the analysis, the companies commented that the methodology provides a robust perspective for setting scope of the project.</p>
<p>Stage 2: Activity landscape</p> <p>Stage 2 provides an activity map that features in the supply chains associated with the products and services identified in stage 1, then sifting through these to identify core activities. This stage provides a current state of a company.</p>
<p>Stage 3: Future analysis</p> <p>Stage 3 provides an approach to identifying significant activities from the aspect of a company's possible competitiveness regarding an issue statement. In addition, the methodology provides a set of quantitative and qualitative decision criteria (FACTS criteria) for evaluating and developing appropriate actions. This stage provides the future state of a company.</p>

Stage 4: Configuration analysis

Stage 4 provides a generic approach to identifying possible configurations. This stage shows how the issue statement is linked to configuration options by using the issues on the statement to screen configuration choices down to a manageable list.

Stage 5: Evaluation

Stage 5 provides an approach to generate detailed analysis for a short list of configuration options. This stage provides a set of comprehensive factors affecting location decisions in international operations for selecting the most appropriate configuration option. It also provides four perspectives for the analysis which includes strategic competitive performance, business risks, geographic location and financial performance.

Stage 6: Selection and action plan

Stage 6 provides an approach to select the most appropriate configuration option for an organisation and to develop an action plan. It offers a measurement tool for monitoring strategic position from the decision made.

8.6.2 Weaknesses of the pilot methodology

During the application of the methodology, weaknesses were noted in the decision process. This section highlights the weaknesses of the pilot methodology from the results of methodology application, as shown in Table 8.3.

Table 8.3 Weaknesses of the pilot methodology

Stage 1: Issue analysis

From the feedback obtained during the application of the methodology, a few statements in the tables for current competitive strategy and desired competitive strategy assessment were not clear to the participants. As a result of this when filling the worksheets of statements, the columns indicating 'Agree', 'Disagree' and 'Don't Know' votes were not accurate. In addition, they commented that they found it hard to use the 'Agree', 'Disagree' and 'Don't know' votes sometimes as some statements were partly agree or partly disagree. They thought that the modification of these three indications was required.

From the participant observation, information for establishing an issue statement came from several worksheets. This has led to participants feeling slightly lost when gathering information to establish an issue statement. Consequently, it consumed time for this stage. Hence, a worksheet which summarises results from the analysis in stage 1 was recommended to provide key points for setting an issue statement.

Stage 2: Activity landscape

Although a graphical map was shown to be a good media to facilitate communication among participants, the participants commented that the initial activity mapping was complex and this caused certain crucial activities to be left out. Therefore, many participants suggested that a more structured method should be introduced including a visualisation technique to show them how to map out the activities in the company systematically. The mapping guidelines provided should be improved.

Stage 3: Future analysis

The cases noted the weakness of this stage which is that it is complicated to understand. They suggested providing more guidelines, explanation and practical examples. They commented that this would increase users' understanding and hence facilitate its ease of use.

Stage 4: Configuration analysis

There was no particular comment in this stage. The comment was on cosmetic changes to the workbook. The companies revealed that as this stage is half way through the whole methodology when looking at each section they were unable to feel where they were in the methodology. The creation of a small picture showing each section is in the whole methodology and would help to reduce this confusion.

Stage 5: Evaluation

Likewise for stage 4, there were no particular weaknesses or areas of improvement mentioned from the participants in this stage. Some cosmetic changes on the format of the workbook were suggested to make it more attractive and professional as well as put more explanation of terminology.

Stage 6: Selection and action plan

The decision for selection is based on the choice of maximisation of strategic competitive performance, maximisation of geographical benefits, minimisation of business risks and maximisation of financial analysis. In order to make an action plan more effective, it was proposed to include a draft plan which offers an approach for minimising risks and maximising benefits of the selected configuration choice. This would extend benefits for the selected option as well as align it to the purpose of selection.

8.7 Refinement of pilot methodology

The purpose of this section is to use the feedback data gathered from the pilot test to identify, refine and improve the pilot methodology. From the testing, a number of areas for minor changes have been suggested by the participants. Areas needing further improvement include some changes to the contents, cosmetic changes, terminology and examples. Within the methodology stages, a number of suggestions were raised for each stage of the methodology; these are listed in Table 8.4.

Table 8.4 Changes of the pilot methodology

Methodology Changes	Changes of the pilot methodology
Stage 1	<p>Improvement on the statements for identification of competitive strategy</p> <p>Changing the columns indicating 'Agree', 'Don't agree', 'Don't know' to five columns 'Strongly agree' to 'Strongly disagree'</p> <p>Adding a worksheet for summarising the analysis in stage 1 in order to create clear picture of important issues in business area for review</p>
Stage 2	<p>Introducing supply chain mapping using swim lane technique as a visualisation technique to guide participants to map out the external and internal activities in the company</p> <p>Changing the name of stage to – Stage 2 Mapping Current Supply Chain Position</p>

Methodology Changes	Changes of the pilot methodology
Stage 3	Providing more guidelines and practical examples prior to use
Stage 6	Adding a section of draft plan – an approach for maximising benefits and minimising risks of the chosen configuration option
Cosmetic changes	<p>Changing the design of workbook to look more attractive and professional</p> <p>Adding more instructions for the application of tools and more explanation of the terminology</p> <p>Creating a picture showing stage in each section</p>

These changes were incorporated immediately, and the application of the first refined pilot methodology presented in the next chapter included these modifications. The refined pilot methodology is still based on the six-stage approach. Changes have been made to the contents and style of the workbook.

8.8 Chapter summary

This chapter has presented the third phase of the research programme, namely the evaluation of pilot methodology. The phase objective was realised through a series of activities. First, the research method was determined, followed by the design of data collection protocol. The selection of companies then was defined and two case studies were executed. The analysis of the evaluation and observations were carried out using a qualitative method. Finally, the changes performed to the pilot methodology from the evaluation were provided. The outcome of this phase was the refined pilot methodology which is ready for wider testing in the next phase. The pilot methodology was evaluated against the criteria of feasibility, usability and usefulness. The results show that the participants in the case studies positively evaluated the pilot methodology against the assessment criteria determined.

CHAPTER 9: SECONDARY EVALUATION OF REFINED PILOT METHODOLOGY

Chapter 8 discussed the results of the research applying the pilot methodology. This chapter deals with phase 5 to evaluate the refined pilot methodology more widely using new facilitators. Accordingly, the structure of this chapter is presented in these sections, namely: Section 9.1 describes the objective and method, followed by the design of data collection protocol in Section 9.2. Section 9.3 explains the selection and engagement of companies and an overview of the application of the methodology is presented in Section 9.4. The results and analysis of case studies are discussed in Sections 9.5 and 9.6, and finally the last refinement is highlighted in Section 9.7.

9.1 Phase 5 overview objective and method

The objective of this phase of the research programme is to evaluate the refined pilot methodology in a wider application. As established in Section 4.3.6, the evaluation of the refined pilot methodology is to determine whether the methodology is generic and robust and to find out whether the methodology is useful, usable and feasible in different environments. To realise this objective, wider evaluation and testing is the main focus of phase 5 of the research programme.

Section 4.3.6 also established that in this phase both industrial cases and the role taken by the researcher need to change. This is to:

- demonstrate that the methodology is not limited for only two sets of companies and environments as in the primary testing, and
- demonstrate that the methodology can be used independently of the researcher who developed the approach.

According to Platts et al. (1998), Adesola (2002) Tan and Platts (2004), Tan and Platts (2005) and Lim (2007), there is a danger that the facilitator might achieve success from methodology application by means of process consultancy skills. Drawing upon their suggestions, the appropriate method for this phase is to use facilitators who are new to the methodology. In this way, the effect of assumed consultancy skills is minimised.

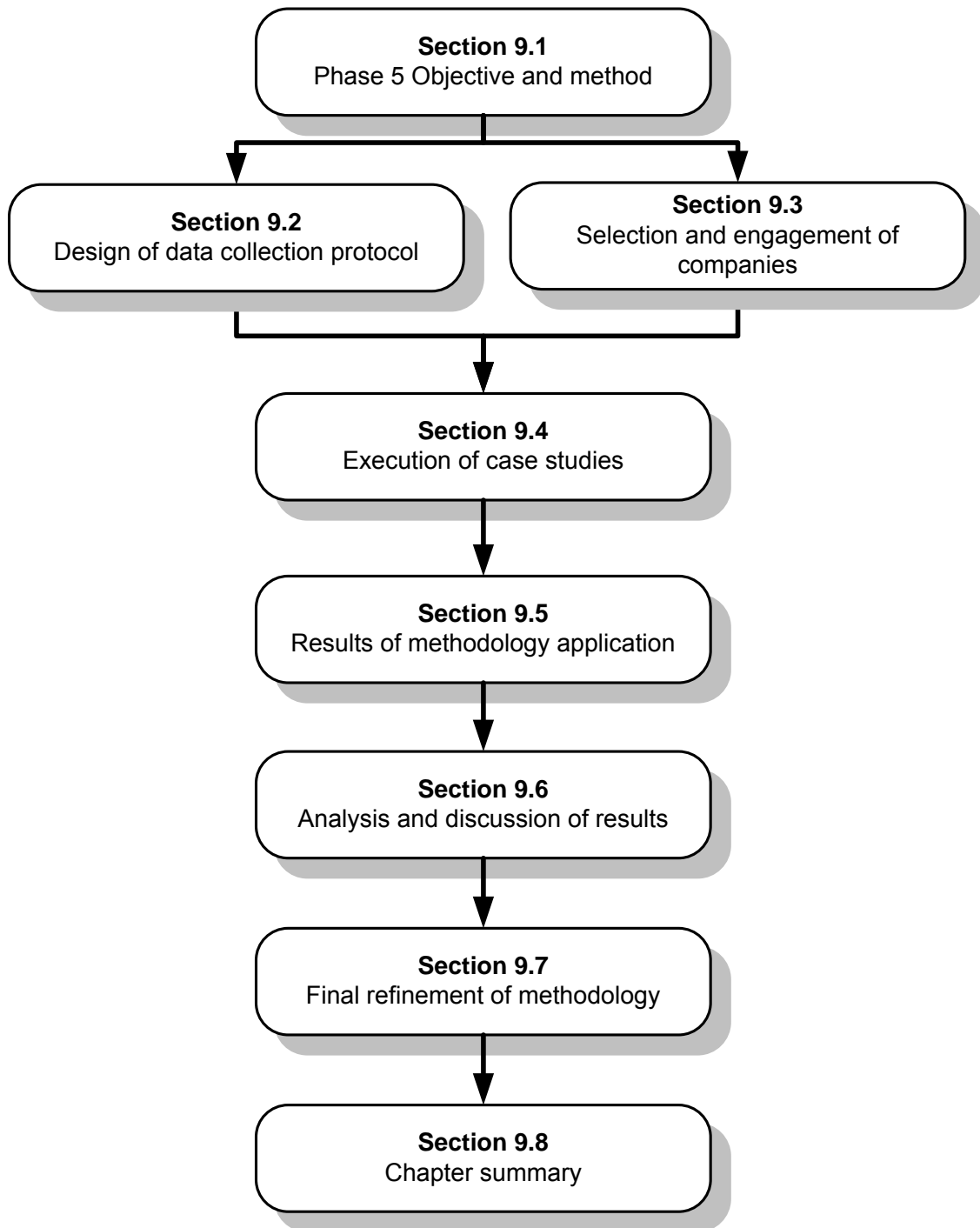


Figure 9.1 Method for evaluation of the refined pilot methodology

In contrast to Phase 4 in Chapter 8, the appropriate research method chosen, as addressed in Section 4.3.6, is a case study without participant intervention by the researcher. Consequently, the decision is made to use facilitators who are employees or consultants of the companies as this would allow them to use the methodology closely to reflect the long term aim of the research, namely the independent use of the methodology to the researcher (Baines 1994; Platts et al., 1998, and Lim, 2007). The role of the researcher in this phase is an observer maintaining periodic contact with the people involved within the case study organisations. Each company facilitated the methodology in their own organisation.

The design of the evaluation in this phase is adopted from Phase 4 which includes a multiple case study research design based on Yin (2003) as exhibited in Figure 8.2 (Section 8.1). The data collection protocol is also mainly adopted from Phase 4 which involves the assessment criteria (feasibility, usability and usefulness) in Section 8.2.1, the data collection framework (who, when and how to collect data) in Section 8.2.2 and data collection instruments (semi-structured interviews and participant observation) in Section 8.2.3. However, the researcher expects to act without intervention in the case studies at this phase and an employee or a consultant of the company acts as facilitator for applying the refined pilot methodology. Therefore, in order to collect feedback from facilitators on the use of the methodology, a questionnaire is an additional data collection instrument in this phase. Consequently, the assessment criteria are further developed to extract each assessment criteria to become performance indicators for the focus of questions in the questionnaires. This design of the evaluation leads to the case study execution and is followed by analysis and discussion of results to make the final refinement for the refined pilot methodology. A graphical illustration of the process is shown in Figure 9.1.

There are therefore five parts to this research phase:

- Design of the data collection protocol (Section 9.2)
- Discussion of the selection and engagement of companies (Section 9.3)
- Execution of the case testing (Section 9.4)
- Presentation of the results of the methodology application (Section 9.5)
- Analysis and discussion of the results of the evaluation (Section 9.6)
- Refinement of the refined pilot methodology (Section 9.7)

9.2 Design of data collection protocol

This section presents the process taken to design the data collection protocol for the evaluation of the refined pilot methodology. The design of the data collection protocol in this phase is mainly adopted from Phase 4 in Section 8.2. This involves the assessment criteria and the data collection framework and the data collection instruments. Participant observation and interviewing techniques are still the appropriate data collection instruments for gathering qualitative data in this phase. However, as the facilitator of the methodology has changed, an additional data collection instrument, namely a questionnaire, is used in this phase to obtain feedback from facilitators on the use of the methodology.

A questionnaire is an instrument that can be used to gather both qualitative and quantitative data from respondents (Brace, 2004). Advantages of using questionnaires include reliability in assuring respondent anonymity, demanding a reasonably low level of administration, processing a high level of standardisation, reducing the effects of bias introduced by interviewers, enabling the completion of questionnaires in the respondents own time, and requiring reduced resources (Sapsford and Jupp, 2006). Nevertheless, it is necessary to ensure that the questionnaires lack bias and are clear to respondents.

Churchill (1998) provides a nine-step guideline to help researchers develop a sound questionnaire. The application of Churchill's steps encourages discipline and thoroughness in the formation of the questionnaire (Viseras, 2004). His guideline was then used as the basis for the questionnaire development in this phase of the research. The nine steps of the guideline were considered and they are described as follows:

Step 1: Specify what information will be sought – The information sought in this phase is the assessment criteria: feasibility, usability and usefulness. Adesola (2000), Viseras (2004), and Lim (2007) argue that it is necessary to extract the assessment criteria to create a set of performance indicators to develop questions. This set of indicators would measure whether the methodology is performing well (Viseras, 2004). Therefore, the performance indicators for the assessment criteria from Adesola (2000), Viseras (2004), and Lim (2007) are adapted for this research phase. The definitions of each of the indicators are provided in Table 9.1. These performance indicators are information that need to be sought from questionnaires.

Step 2: Determine type of questions and method of administration – This step describes how the information should be collected. A paper-based questionnaire was selected because of the relatively low number of respondents required and the consequent ease of data processing and data analysis. The paper-based questionnaire was designed into two sets of questionnaires: the each stage questionnaire asking about the usability of each

stage of the refined pilot methodology and the post-completion questionnaire asking for all assessment criteria after the completion of the refined pilot methodology, see Table 9.2.

Step 3: Determine content of individual questions – With a total of 13 performance indicators identified for the assessment criteria, questions were categorised into sections to match the performance indicators of the assessment criteria. The questions are shown in the questionnaires for each stage and post-completion in Appendix B.

Step 4: Determine form of response to each question – For the purpose of this study, it was decided to adopt an approach that would allow respondents to quantitatively reflect their opinions. All the questions regarding the performance indicators were designed to have closed answers and some open answers to gain the respondents' opinions. The scale used to measure respondents' attitude to the questions was also under consideration. In this research, a five-point scale was chosen for the post-completion questionnaire, where 1 indicates 'not at all' (strong disagreement) and 5 indicates 'very' (strong agreement). The main reason for using a five point scale was to restrict the number of choices required thereby avoiding neutral ground.

Step 5: Determine wording of each question – To ensure clarity and lack of bias, attention was given to the wording of the questions. The questions were designed so that they were simple and unambiguous in their wording. The language used is neutral and in no way leading or implicitly seeking preferred responses (Schuman and Presser, 1996).

Step 6: Determine sequences of questions – The sequence of questions was designed according to the assessment criteria of feasibility, usability and usefulness in the post-completion questionnaire. For the each stage questionnaire, the questions focus only on usability of the stage.

Step 7: Determine physical characteristics of questionnaire – The questionnaire concentrates on functionality, ease of use and visual appeal. Questions are laid out in a manner that facilitates ease of answering.

Step 8: Re-examine steps 1-7 and revise if necessary – The questions were revisited several times for the previous seven steps and revisions made after careful considerations.

Step 9: Pre-test questions and revise if necessary – There are two issues for pre-testing which are the content and the face validity. The content validity refers to how adequately the contents of the questionnaire reflect the body of knowledge in the subject. The face validity considers whether or not the scales appear to be applicable and satisfactory to the respondent (Cronbach, 1970). Both content and face validity were tested with MSc students at Cranfield

University to obtain comments on the contents of the assessment criteria, the indicators and questions and to anticipate any problems which may arise.

**Table 9.1 Performance indicators for assessment criteria
(Adapted from Adesola, 2000; Viseras, 2004; and Lim, 2007)**

Assessment criteria	Performance indicators	Definition
Feasibility	Completeness	Completeness of all the stages in the methodology
	Consistency	Consistency of the sequence of all the stages in the methodology
	Applicability	Applicability of the methodology in the company
	Contingency	Capability of the methodology to provide alternative solution
Usability	Time	Amount of time sufficiently allocated for each stage of the methodology
	Ease of use	Ease of use of the tools in each stage of the methodology
	Understanding	Understanding of each stage during execution, terms used, and problems encountered
	Flexibility	Changes made to the stages of the methodology during application
Usefulness	Efficiency	Efficiency of resources used to apply the methodology
	Satisfaction	Willingness to use the methodology again
	Success	Success of the overall process of the methodology
	Practicality	Practicality to provide practical process
	Benefit	Benefits from using the methodology

Table 9.2 Data collection framework

Categories of Assessment	Performance questions	When?	Who?	How?
In what ways can a methodology success be evaluated?	What questions should be asked to be able to comment on each category of success?	When should responses be sought?	Who should provide responses?	How should data be collected?
Feasibility	Could the methodology be followed?	Post-completion	Facilitators	Questionnaire, Interview
Usability	How easily could the methodology be followed?	Each step of the methodology and post-completion	Facilitators	Questionnaire, Interview, participant observation, diary
Usefulness	Did the methodology provide a useful output that met expectation?	Post-completion	Facilitators	Questionnaire, Interview

9.3 Selection and engagement of companies

This section sets out to determine the selection and engagement of the test site for the wider application. As established in Section 8.3, a unit of analysis for the case study is a manufacturing company and the number of cases for the secondary wider testing in this phase is four cases. In addition, the pre-defined criteria for selecting companies are adopted from Phase 4 (Section 8.3). A number of different types of cases were identified to cover different environments of manufacturing companies which include geographical location, managerial culture, industry segments, and company strategies. To select the companies for the four cases, the three-stage approach from Phase 4 was also adopted, using the main communication through telephone conversations and emails with companies.

Table 9.3 Characteristics of participating companies

	Case 7 Steel-Co	Case 8 Garment-Co	Case 9 Tool-Co	Case 10 Tyre-Co
Size	50 employees	660 employees	260 employees	350 employees
Ownership	German group	Thai owner	Japanese group	Singaporean owner
Location	UK	Thailand	Singapore	Thailand
Industry segment	Manufacturer of special tool steel	Manufacturer of casual apparel and sport wear products	Manufacturer of machine tools	Manufacturer of tyres, wheels and car accessories
Facilitator	Operations manager	Quality manager	Consultant	Consultant
Date of case project	Feb – May 08	Mar – June 08	Feb – May 08	Mar – June 08

The four selected companies for the case studies were different from those of phase 4 so as to demonstrate that the refined pilot methodology was not limited to two types of organisation as in Phase 4. The facilitators were to be employees for two case studies and consultants for the other two case studies. This would demonstrate that the methodology is able to work with facilitators

from inside and outside of a company and independently of the researcher who developed the methodology. Table 9.3 shows a profile of the characteristics of participating case companies. Detailed information of each company is given in Section 9.4. All the preparation, gathering information and evaluation took place between November 2007 and June 2008.

9.4 Execution of case studies

An overview of four case studies is presented in this section. Each case study provides a useful and different perspective of strategic positioning within global supply chains. A detailed description of each case study application is explained in the Appendix D.

9.4.1 Case 7: Steel-Co

Background of Steel-co

Steel-co is a subsidiary company of a German group which is the world's largest manufacturer, processor and distributor of special long steel products. The group has more than 11,000 employees and Steel-co, located in UK, has 50 employees. Steel-co is a leading supplier of tool steels and speciality steel forgings used for general engineering application, oilfield equipment and continuous casting plants roll. The products are supplied to companies within the group and to worldwide customers. The company's business strategy is to focus on niche markets, gain more market share in UK, and diversify products in related markets.

Overview of application of the refined pilot methodology in Steel-co

The application of the methodology began with Stage 1 where an issue statement is defined. The business strategies were reviewed and overriding issues were raised. The company issues included development of tool steel sales, maintenance of production equipment, efficiency of plant layout and improvement of operator experiences. The internal and external environments were analysed to explore the strengths, weaknesses, opportunities and threats of the company. The current competitive strategy was assessed to be Customer Intimacy and so was their desired competitive strategy as their utmost priority is customer satisfaction. The company aimed to focus on delivering what specific customers want, and cultivating relationships with customers. The summary of competitive gaps was analysed and showed that the company exceeded in Customer Intimacy. The issue statement was identified as an evaluation of manufacturing and distribution in the UK: either investing in existing plant or relocating to alternative premises. In Stage 2, mapping the current supply chain

position identified the supply chain position, activity position and core activity position. Core competences were analysed as research and development, technical support and complete manufacture.

In Stage 3, the significant activities were identified as machining, purchasing, warehousing, sawing, heat treatment, machining for finished product and sales and marketing. The advantages and disadvantages of keeping significant activities in-house or doing them externally were assessed by using FACTS. The decision was made to keep the internal and external activities the same as before. They proposed six strategic initiatives to improve the significant activities according to the issue statement. For Stage 4, the company listed three potential options and used screening factors derived from the issue statement and the desired competitive strategy to cut the list into two options. The two options were studied in depth for investment analysis, geographical analysis, performance analysis and business risks in Stage 5. For the final stage, the decision was made to confirm the current configuration however, the action plan was set out to improve the existing configuration with regard to the issue statement.

9.4.2 Case 8: Garment-Co

Background of Garment-co

Garment-co is a local Thai company, founded in 1971. The company is in the garment manufacturing business, producing casual apparel and sport wear products. It has a production capacity at 120,000 – 150,000 garments per month. Ninety-nine percent of its customers are in Europe and 1% is domestic. Currently, the company is facing a tough challenge from lower cost countries such as China and Vietnam. The company is looking for strategic positioning initiatives to improve its competitive position.

Overview of application of the refined pilot methodology in Garment-co

The application of the methodology began with Stage 1 where the project members have identified the whole company as the business area for review. The business strategies focus on quality of the products and customer satisfaction as the company manufactures according to customer orders. A SWOT analysis was carried out to raise issues from internal and external environments. The current competitive strategy was assessed to be Customer Intimacy as the company currently offers high customisation to the customers. In the future the company would like to focus on best quality product and providing the best total cost and delivery on time. Clearly the desired competitive strategy of the company was assessed to be Operation Excellence, supported closely by Customer Intimacy. According to the competitive gaps

analysis, Garment-co was found to have critical gaps in operational excellence on product availability and product price, and in product leadership on time to market and new product introduction rate. The issue statement for Garment-co was to reduce costs, improve quality and increase delivery on time. In stage 2, using the supply chain map, the supply chain position was analysed according to the four key supply chain interfaces (customer, supplier, infrastructure and product range). After that, the project members identified company level activities for the activity position map and assessed the core competence of the company. The core competences were identified as sales and marketing and company image. However they realised that these core competences do not last long term as their competitors can also reach the same stage of core competency.

In Stage 3, the significant activities were identified and internal/external assessment was analysed. Garment-co decided to retain the level of ownership of the significant activities. Garment-co also proposed eleven strategic initiatives to be carried out for the significant activities to achieve the issue statement. For Stage 4, the panel members listed potential configuration options. The potential options include retaining and improving the existing plant in Thailand, relocating manufacturing operations to Vietnam, downsizing the plant in Thailand and offshoring some manufacturing operations to Vietnam in order to take advantage from lower cost. These options were assessed in detail in Stage 5. The decision was made to improve the efficiency of the existing plant in Thailand for two years and review the performance, geographical factors, financial factors and business risks for the opportunity to set up the manufacturing operations in Vietnam every six months.

9.4.3 Case 9: Tool-Co

Background of Tool-co

Tool-co, located in Singapore, was founded in 1973. The company was bought by a Japanese machine tools manufacturer in 1992. Tool-co designs, manufactures and markets Computer Numerical Control (CNC) machining centres regionally. It has placed a strong commitment on research and development to enable the company to become a leading regional machine tools builder. It offers many types of products and services including major overhauling and retrofitting on all types of milling machines, factory automation and robotics.

Overview of application of the refined pilot methodology in Tool-co

The application of the methodology began with Stage 1 where the project members identified the milling machine business area to review their

competitive position. Tool-co's internal and external environments were analysed and the current competitive strategy was assessed to be Operational Excellence while their desired competitive strategy was Product Leadership as the company plans to focus on invention, commercialisation and market exploitation, by frequently reviewing their product portfolio. The competitive gap analysis showed that the company had critical performance gaps in the areas of product attributes, time to market and new product introduction rate. The overriding issue for Tool-co was to become the regional leader in CNC machine tools and to increase production output, and shorten the lead-time and delivery time to customers. They also wanted to sustain customer orders, stay competitive in the market, introduce new technologies, strengthen R&D to design and build value-added intelligent machines.

In stage 2, brainstorming was done by the panel to map out the current supply chain position considering the four key business areas (suppliers, infrastructure, customers and product range). The supply chain position was broken down into the activity position and core competence was analysed as managerial know how, resources, cutting technology, brand name and image. Then these core competences were mapped to illustrate the core activity position in the supply chains. In stage 3, the significant activities were identified into 10 activities. The internal and external assessment was analysed on each significant activities. The actions were designed to keep and grow design and prototyping, design definition and specification, customer service, and new product development. It was proposed that rough/fine machining of raw castings, optional features sub-assembly, and final sub-assemblies would be outsourced, while standard parts supply and product transfer were to be brought in-house.

For stage 4, the current configuration was considered and the new outsourced activities were reviewed to decide potential locations. The existing configuration includes the manufacturing plant in Singapore, a headquarter in Japan, outsourcing suppliers in China and India, local vendors in Singapore and regional customers in Asia. After listing the potential configurations, these configurations were studied in depth to identify benefits from investment and performance as well as business risks that could occur. The decision was made to improve the Singapore plant and take advantage of its global connections and outsource the concerned activities to existing suppliers both in China and India.

9.4.4 Case 10: Tyre-Co

Background of Tyre-co

Tyre-co is a Singapore-based global distributor and retailer of tyres, wheels and car accessories. The company has a manufacturing facility in Thailand producing custom designed aluminium alloy wheels primarily for the aftermarket

sectors. The plant has a capacity to produce 480,000 wheels annually with both the first and second production lines producing 40,000 wheels per month. Eighty percent of the wheels are to be exported to the markets of South East Asia, Asia Pacific, America and Europe while the rest are distributed in Thailand.

Overview of application of the refined pilot methodology in Tyre-co

The application of the methodology followed the same format as the above cases. In Stage 1, the project members identified after-market aluminium alloy rim wheels to review their competitive position. The challenges were with rising material prices and catching up of technology advancement from the low-end producers. The current competitive strategy was assessed to be Product Leadership and so was their desired competitive strategy. According to the competitive gap analysis, the company matched the customer requirement in all criteria and lagged behind competitors in product price. As a result, the company established an issue statement focusing on cost reduction and moving up the technology and design chain to compete in the high-end market. For Stage 2, the company mapped its supply chain position, activity position and core activity position. Core competences of the company were identified as the production of aluminium alloy wheels and tilting gravity castings, and the activities creating core competences were specified as research and development, product design, engineering, casting and testing.

In Stage 3, the significant activities were identified and mapped into the supply chain map. The internal/external assessment was carried out by using FACTS to consider advantages for keeping activities in-house and going external. The decision was made to retain the same level of ownership status and to propose five strategic initiatives to achieve the issue statement. In Stage 4, the company listed four potential configuration options concerning the location for research and development, and marketing. The two lists were screened out in this stage and the remaining two options were carried forward to be studied in-depth in Stage 5. For Stage 6, the decision was made to confirm the current configuration however the factors for configuration selection were determined to be reviewed again in the next eight months.

9.5 Results of methodology application

The purpose of this section is to present the results of testing the methodology on the four cases based on the stage questionnaires and post-completion questionnaire, addressing the assessment criteria of feasibility, usability, and usefulness. The post-completion questionnaire provides a way of recording the overall performance of the methodology on all the criteria established for the

application and assessment of the methodology in both quantitative and qualitative ways. Quantitative questions were rated on a 5-point scale (5 being the most positive response, 1 being the most negative response, and 3 being don't know). Where zero is shown, this indicates no response was given.

The total percentage against each criteria is calculated as follows: the sum of scores is divided by the maximum possible score given to the total number of questions. The results of the methodology application from each evaluation criteria are now discussed in the following sections.

9.5.1 Feasibility

The feasibility criteria were intended to establish that the methodology can be easily followed. The four companies followed the methodology and demonstrated that the methodology is feasible because the average of the scores from the four cases is 78.75%. Table 9.4 summarises the scores made by the facilitators in each case study regarding the feasibility of applying the methodology during the post-completion questionnaire. Steel-co responded to the questions on feasibility and rated the methodology at 85%, as did, Garment-co and Tool-co. Tyre-co rated the feasibility test at 60%. Most participants had similar feedback in that the overall structure of the methodology proved feasible and did work for their companies.

9.5.2 Usability of applying the methodology

The measure of usability was also tested post-completion and here the researcher sought both quantitative and descriptive statements from the facilitators. The usability criteria were intended to prove that the methodology can be easily followed. The scores made by the facilitators of four companies were summarised as shown in Table 9.5. The usability of the methodology was rated at 74% based on the average scores of the four companies. Based on the five quantitative questions, the facilitator in Steel-co rated the usability of the methodology as 84%, 80% in Garment-co, 64% in Tool-co and 68% in Tyre-co. The rating was positive. The comments concentrate on the usability problems or issues raised by the participants in each stage and after completion that will be used to further highlight the opportunities to refine the methodology.

Table 9.4 Feasibility results of applying the refined pilot methodology

Respondents	Feasibility			
	Steel-co	Garment-co	Tool-co	Tyre-co
Q.1 Completeness	[4] "Mostly"	[4] "Mostly"	[4] "Mostly"	[2] "Partly, it is not the lack of completeness but the overlapping of processes can be improved."
Q.2 Consistency	[5] "Yes"	[5] "Yes"	[5] "Yes"	[4] "Quite"
Q.3 Applicability	[4] "Mostly, we were limited in re-configuration options, therefore we may not have explored the full potential"	[4] "Mostly"	[4] "Mostly"	[2] "Partly, individual stages are good but too many new terms to learn and use along the way"
Q.4 Contingency	[4] "Mostly"	[4] "Mostly, the methodology helped us to collect ideas and opinions from the project members in a structured manner and led us to brainstorm new ideas as well as open opportunities to discuss some hidden issues among departments."	[4] "Mostly"	[4] "Mostly"
Results	85%	85%	85%	60%
	78.75%			

Table 9.5 Usability results of applying the refined pilot methodology

Respondents	Usability			
	Steel-co	Garment-co	Tool-co	Tyre-co
Q.5-6 Time	[4] "4 months, 15 man-day efforts. The timing fits into other duties quite well."	[4] "around 4 months, 18 man-day efforts. The timing fits into other duties quite well."	[4] "The timing fits into other duties quite well."	[3] "Don't know"
Q.7 Ease of use	[4] "Quite easy"	[3] "Don't know"	[2] "Not very easy"	[3] "Don't know, it is easy to understand the individual stages but there are many new terminology in the whole workbook"
Q.8 Understanding	[5] "Very clear"	[4] "Quite clear"	[2] "Partly clear"	[2] "Partly clear, within a stage is clear but as a whole it is a bit confusing because of new terms used"
Q.9 Understanding by providing examples	[4] "Useful"	[5] "Very useful"	[4] "Useful"	[5] "Very useful, especially if a single case study is given across the whole workbook"
Q.10 Flexibility	[4] "Quite flexible"	[4] "Quite flexible"	[4] "Quite flexible"	[4] "Quite flexible"
Results	84%	80%	64%	68%
	74%			

Table 9.6 Usefulness results of applying the refined pilot methodology

Respondents	Usefulness			
	Steel-co	Garment-co	Tool-co	Tyre-co
Q.15 Success	[4] "Successful, worth doing. The methodology has contributed to the areas of communication, evaluation and justification."	[4] "Successful, worth doing. The methodology presents an integrated approach for discussion among employees."	[4] "Successful, worth doing. The methodology provides holistic view for deciding actions"	[4] "Successful, worth doing. Stages 2 and 3 have been good and easy to follow."
Q.16 Efficiency	[5] "Not consume excessive resources of time and people"	[3] "Consume resources of time and people in average"	[2] "Quite consuming of excessive resources"	[2] "Quite consuming of excessive resources"
Q.17 Practicality	[4] "Quite practical"	[4] "Quite practical"	[4] "Quite practical"	[3] "Average"
Q.18 Benefit	[5] "Beneficial, issue analysis was particularly beneficial in setting the context for strategic decision making."	[4] "Quite beneficial, We will implement the action plan"	[4] "Quite beneficial"	[4] "Quite beneficial, some new tools to assist the decision making"
Q.21-22 Satisfaction	[4] "Quite, Logical process which communicates effectively. I would use the methodology again."	[4] "Quite, I would use the methodology again to review the strategic position of the company."	[4] "Quite, I would use the methodology again."	[2] "Quite, I would use the methodology again because there are certain stages that are useful"
Results	88%	76%	72%	60%
	74%			

9.5.3 Usefulness of applying the methodology

The measure of usefulness of the methodology was intended to determine the perceived success of the workbook and the outcome of the strategic positioning effort. All indications pointed to the fact that the methodology was perceived as very good by Steel-co and Garment-co. The overall feedback from the interviews and questionnaires on the usefulness of the methodology was positive; on the whole 74% was recorded, shown in Table 9.6.

Of the five questions asked, the facilitator from Steel-co scored 88%, 76% in Garment-co, 72% in Tool-co, and 60% in Tyre-co. Steel-co indicated the usefulness in an email communication with the researcher, "As you will see, your work is really proving a practical help to me". Similarly, an email correspondent from the facilitator of Tool-co presented the feedback from him that "Overall the methodology can provide a good guidance to the users". The net result is that, using the methodology in industry settings by practitioners, the methodology has been successfully implemented. All companies agreed in the same way that they would use the methodology again in their organisations.

9.6 Analysis and discussion of results

The objective of this section is to use the results from testing of the methodology to analyse the strengths and weaknesses of the methodology.

9.6.1 Strengths of the refined pilot methodology

From the results of the four case studies, it was observed that there are quite a number of strengths in the decision process of the methodology. First, as a whole, the methodology is comprehensive and systematic comprising of six stages which can be followed in its entirety when applying to the case studies. The sequence of the stages is consistent and makes sense in delivering the final result. The application of the methodology fit in well with the other duties in their organisations. The methodology has shown that the overall process has been successful and worth doing. The methodology provides a practical process and gives benefits and lessons learnt from the methodology application in case study application.

The result also provides a new strategic direction for the long-term plan of the organisation to achieve a sustainable competitive advantage by providing a holistic approach for decision making and focusing on company strategy, internal/external environments and the firm's internal core activities. The methodology provides a way to enable an organisation to make an integrated decision from deciding its organisational boundary to configuration of the

concerned business activities, which are not available in most other methodologies. Finally the methodology is able to conclude the actions to be taken, based on the significant activities and core activities of the company, and to identify its competitive space and appropriate configuration to respond to the gaps and opportunities in the market.

Secondly, the strength of each stage has also been indicated by the cases. Steel-co indicated in the post-completion questionnaire that the major strengths of the methodology are all in Stages 1 to 4. Case 3 stated that “Stage 1 was particularly beneficial in setting the context for strategic decision making and Stage 4 was useful in generating potential options for reconfiguration. This was logical and explored in sufficient depth.”

Garment-co gave comments that “each stage has its own unique strength, for example Stage 1 provides a useful guide to understanding critical business issues; Stage 2 provides a visual approach in identifying the current supply chain activities; Stage 3 provides the identification of significant activities and the analysis of actions to be taken; Stages 4 and 5 provide useful factors for configuration analysis; Stage 6 provides a useful method for developing an effective action plan”.

In Tool-co, the facilitator specifically indicated the strength of Stage 6 in his email communication and the each stage questionnaire for Stage 6 as follows:

“I found that Stage 6 is very good and systematic. As such there are no changes that I can suggest for stage 6, except just to give good comments. It enables the user to consolidate all the findings from the other stages and to produce a selection of plans, draft plans and finally the action plan.”

Tyre-co revealed in the questionnaires that each stage of the methodology is good especially the key core stages at Stages 2 and 3. The facilitator for Tyre-co stated that “Stages 2 and 3 have been good and easy to follow”.

In summary, the results from four case studies have given a number of strengths of the methodology. However, the feedback from the four case studies also provided weaknesses of the methodology, some suggestions for the methodology improvement and the reasons if they stall in any stage of the methodology application. This will be discussed in the next section.

9.6.2 Weaknesses of the refined pilot methodology

This section deals with the feedback from the wider test to identify the weaknesses of the refined pilot methodology. The application of the methodology raised the weaknesses and a number of suggestions for changes.

Table 9.7 Weaknesses of the refined pilot methodology from the wider test

	Case 3	Case 4	Case 5	Case 6
The overall methodology	Less prescriptive in Stages 5 and 6	Too many steps	-	Example of completed worksheets is necessary. Providing an example across the whole methodology.
Stage 1	Inclusion of a formal stakeholder analysis process	-	Unnecessary tool on SWOT analysis. The competitive gap analysis is similar to SWOT analysis, but better in that it covers the gap with competitor and customer.	Some terms are difficult for layman. The stage is fine. The problem is getting the correct or good quality input for it.
Stage 2	-	Unfamiliar terminologies. There is a need for more simple explanation and not too academic.	Confusing of terminologies related to core competence The alignment of core competence and competitive strategy	Unclear terminology for core competence. Emphasising a sequential link between Stages 1 and 2.
Stage 3	-	Reducing number of tools	Changing the tool for another worksheet. Inconsistencies of terminologies used	Emphasising the link between worksheet 3c and the tools
Stage 4	-	-	Perhaps there is a need to provide quantifiable numbers from 1 to 5 to shortlist the configuration options.	Associating the screening factors listed with the configurations
Stage 5	A large choice of factors for consideration. It would assist the user if further guidance could be provided.	-	Stage 5 can be merged to Stage 4 for simplicity reason.	Combining stages 4 and 5
Stage 6	The scoring mechanism	-	-	Many requests for the same information in Stages 4 to 6. Recommend to employ a similar form in Stages 4 to 6

Table 9.7 outlines some of the weaknesses and the areas suggested by the four cases for further improvements. Feedback has been gathered from the responses to the questions, followed by discussions. Whilst the methodology provided a rigorous and disciplined structure, there were weaknesses mentioned by the four case studies. Many of the areas requiring further changes relate to style, use of technical terms, comprehensiveness, and specific changes to each stage of the methodology, as detailed in Table 9.7.

9.7 Final refinement of methodology

This section presents the refinement of the refined pilot methodology. The purpose of this section is to use the feedback data gathered from this secondary evaluation to refine and improve the refined pilot methodology to become the final SPGC methodology.

From the application, a number of areas for changes have been suggested by the facilitators in the four companies, as discussed in the previous section. Suggested changes for the methodology have been used for refinement aimed at improving the usability of the methodology. Table 9.8 illustrates the main changes resulting from the application of the methodology. The changes have been made to the workbook methodology within the time allowed to complete this research. Most changes refer to simplify the term used in the methodology and ensure its consistency use. The refined methodology from the primary evaluation comprises a six-stage approach but this time, as suggested by the cases, Stages 4 and 5 have been merged together. The refined methodology, shown in Table 9.9, therefore consists of the five stages. For the contents, the link of output in each stage is more emphasised to represent logical approach of the methodology and any repetitive forms have been removed and improved. In terms of layout, the navigation diagrams have been simplified. The final SPGC methodology is described in the next chapter, whilst the final workbook methodology is exhibited in Appendix E.

Table 9.8 Main changes to the refined pilot methodology

Methodology Changes	Changes to the refined pilot Methodology
Overall structure of the methodology	Combining Stages 4 and 5 Highlighting the link of each stage
Stage 1	Simplifying the explanations of the term used for competitive gap analysis Removing SWOT analysis as it is perceived to be repetitive with over-riding issues and competitive gap analysis
Stage 2	Simplifying the related terms to core competence Confirming the consistency of the term used Emphasising a sequential link between Stages 1 and 2
Stage 3	Adjusting tools and removing unnecessary tools
Stage 4	Simplifying factors for configuration analysis
Stage 5	Employing similar forms in Stages 4 and 5

Table 9.9 Structure change to the SPGC methodology

Stages (before)	Stages (after)
Stage 1: Issue analysis	Stage 1: Issue analysis
Stage 2: Mapping current supply chain position	Stage 2: Mapping current supply chain position
Stage 3: Future analysis	Stage 3: Future analysis
Stage 4: Configuration analysis	Stage 4: Configuration analysis
Stage 5: Evaluation	
Stage 6: Selection and action plan	Stage 5: Selection and action plan

9.8 Chapter summary

This chapter has addressed the fifth objective of the research programme, namely, to evaluate the refined pilot methodology over a wider application. This is to gain greater knowledge about how well the methodology works in actual application, to determine whether the methodology could be generic and robust and to find out whether the methodology is useful, usable and feasible in different environments. The evaluation was performed in four case studies in manufacturing companies. The case studies have clearly demonstrated that the methodology performed well against the criteria of feasibility, usability and usefulness. This second phase of evaluation confirmed the findings of the primary evaluation of the pilot methodology (Chapter 8), but also resulted in a number of modifications to the methodology. The final SPGC methodology is described in the next chapter.

CHAPTER 10: PRESENTATION AND ILLUSTRATION OF SPGC METHODOLOGY

In Chapter 9, the secondary evaluation was carried out to test the wider applicability of the methodology. As a result, a number of changes emerged (Section 9.6). This chapter presents Phase 6 of the research programme, namely, presentation and illustration of the final SPGC methodology. It starts by stating the objective and method (Section 10.1) and is followed by an overview and description of the final SPGC methodology (Section 10.2).

10.1 Phase 6 overview objective and method

The objective of Phase 6 of the research programme is to present and illustrate the SPGC methodology. This is the final phase of the research programme and this phase has been arrived at by combining the following logical sequence of phases, shown in Figure 10.1:

- Phase 1: Exploration of strategic positioning in practice (Chapter 5)
- Phase 2: Evaluation and selection of potential methodologies (Chapter 6)
- Phase 3: Formation of pilot methodology (Chapter 7)
- Phase 4: Primary evaluation of pilot methodology (Chapter 8)
- Phase 5: Secondary evaluation of refined pilot methodology (Chapter 9)

For this phase, Section 4.3.7 has established that it is to present and illustrate the final SPGC methodology from the results of carrying out the five previous phases. From the wider testing carried out at phase 5, the refinements have been identified and made to finalise the SPGC methodology. The final structure of the methodology is based on five-stage approach and the outcome is the documented workbook shown in Appendix E.

Having outlined the sequential phases for developing the final methodology, the next section provides an overview and a description of the final SPGC methodology.

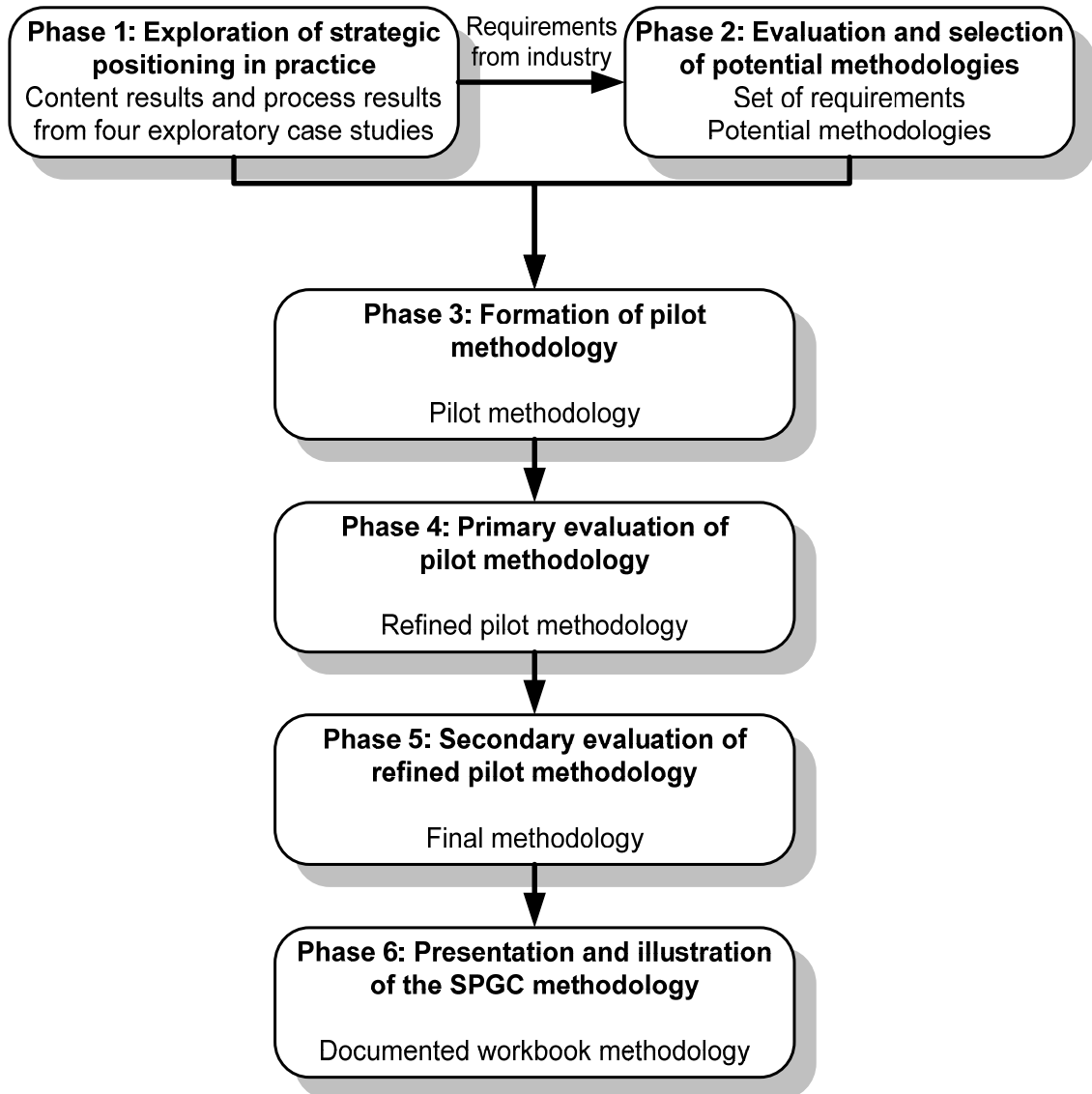


Figure 10.1 Phases leading to the final methodology

10.2 Overview of the SPGC methodology

This section provides an overview of the workbook and a detailed description of the methodology to illustrate the structure, the stages and their use when following the methodology. Firstly, the structure of the documented workbook is provided. Secondly, an overview of the final methodology is presented and finally, a detailed description of each one of the stages in the methodology is given.

10.2.1 The structure of documented workbook

The workbook methodology is structured in three parts as depicted in Figure 10.2. The first part provides the user with the introduction of the methodology. The second part gives an overview and the use of the methodology. The third part lays out the stages and its detailed guide to carry out the methodology to deliver a strategic position within a global supply chains project.

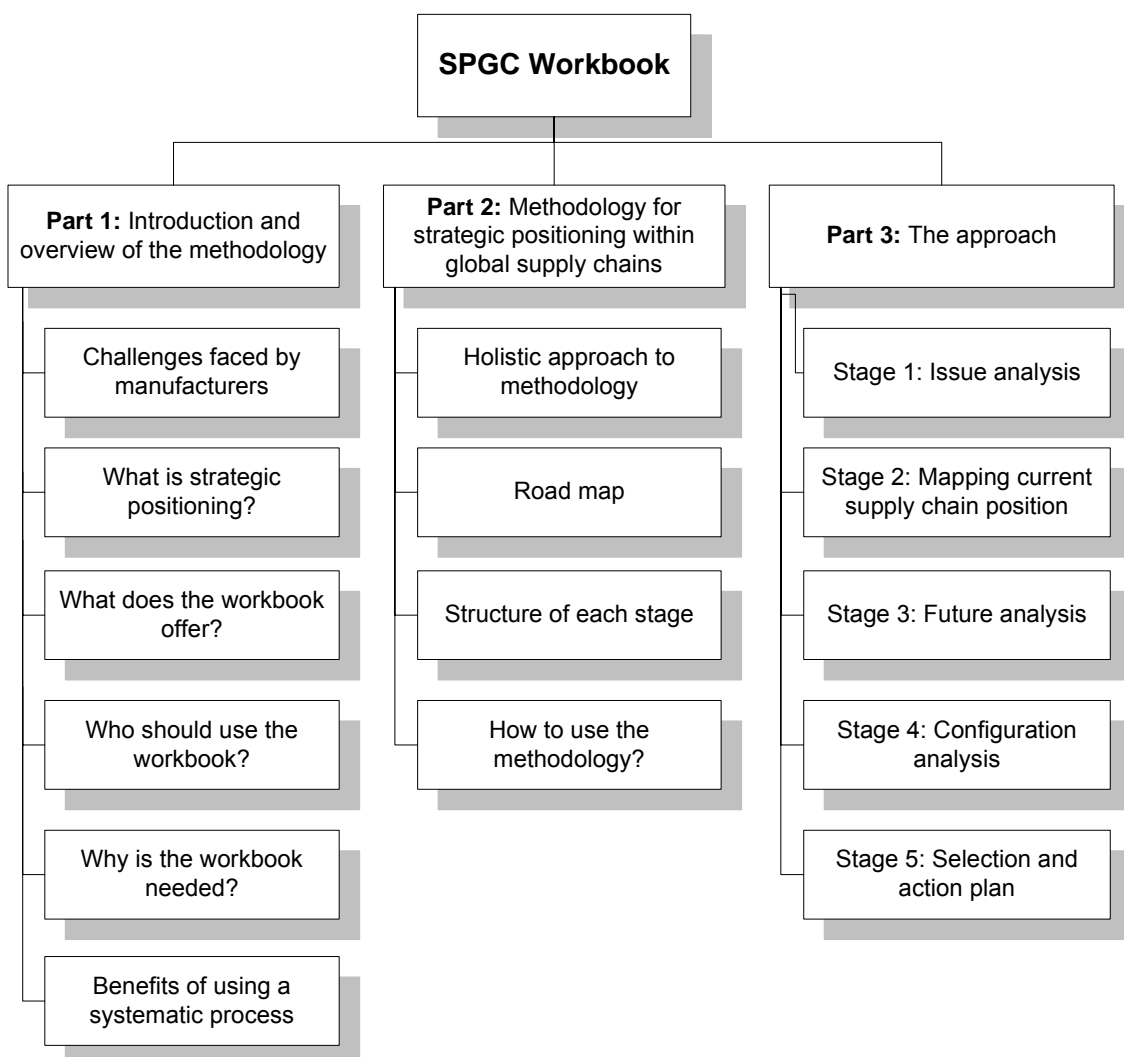


Figure 10.2 SPGC workbook methodology structure

10.2.2 Overview of the final SPGC methodology

This section gives an overview of the SPGC methodology, the content, structure and its stages. The SPGC methodology is principally for senior executives and focuses on defining the strategic position or competitive space that a manufacturing organisation should occupy; in other words identifying those manufacturing related activities that should remain internal to the business, those that should be carried out by external suppliers, partners and customers, and identifying the most appropriate locations for those internal and external activities within the global supply chain network.

The final SPGC methodology has been developed to help companies to better choose their competitive space within their manufacturing global supply chains. The methodology provides a holistic approach to consider all supply chains associated with manufacture. This means considering within the same analysis all inbound, outbound, and infrastructural supply chain issues across all products. This view includes:

- Supplier activities and all associated activities at the supplier interface
- Customer activities and all associated activities at the customer interface
- Product range activities and all associated activities which identify, develop and market the company's products or services
- Infrastructure activities and all associated activities which produce and support the products and services of the company.

All activities, both internal and external, can be interlinked, and as such as change in one area can have an impact in another. Therefore this methodology treats these key interfaces simultaneously. Furthermore, the methodology links all decisions about activity ownership and configuration to competitive strategy, the market conditions and acceptability of an initiative to the company.

As Figure 10.3 shows, the final SPGC methodology comprises the following five stages that guides the actions and decisions of a project team.

- Stage 1: Issue analysis
- Stage 2: Mapping current supply chain position
- Stage 3: Future analysis
- Stage 4: Configuration analysis
- Stage 5: Selection and action plan

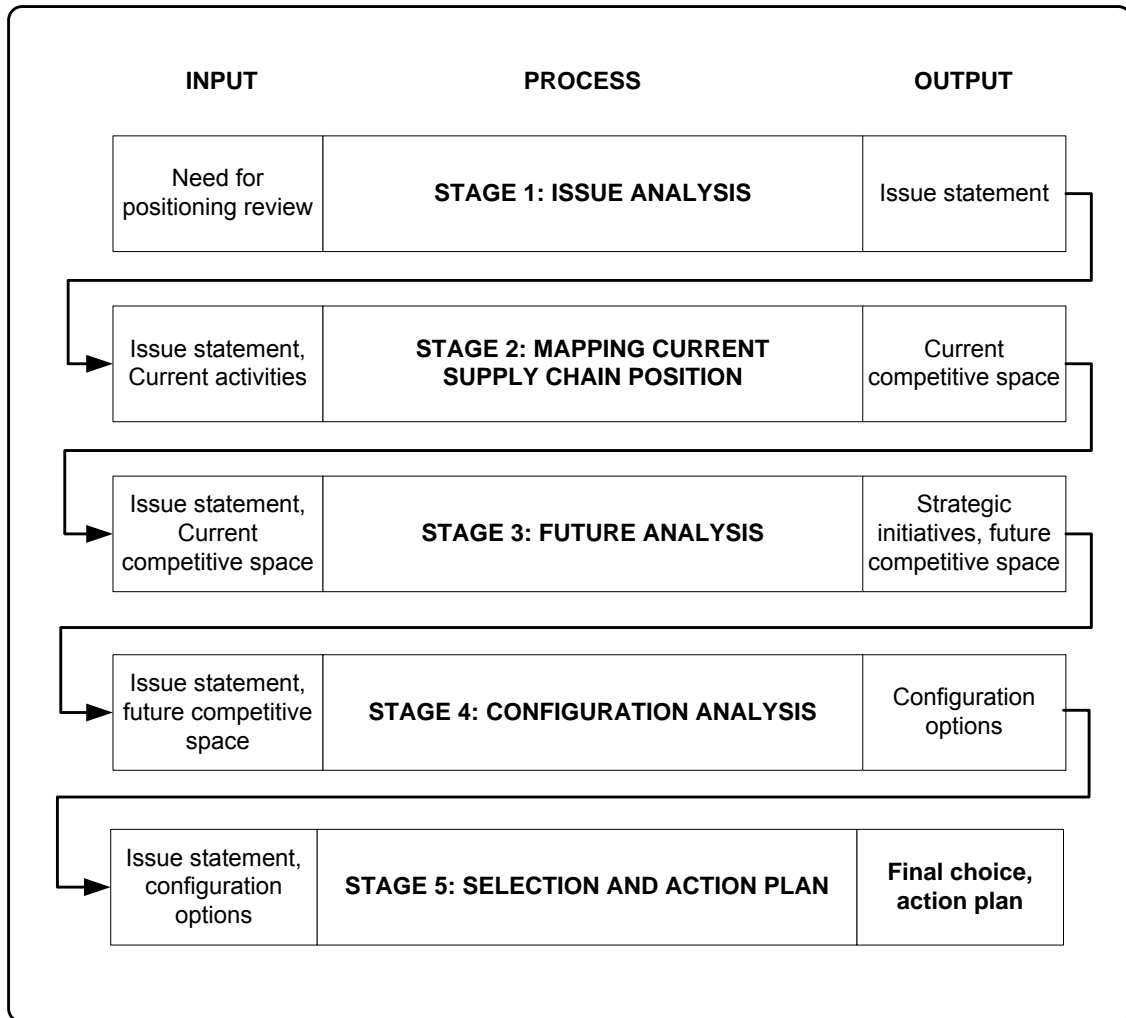


Figure 10.3 Overview of the final SPGC methodology

Each stage is completed by carrying out between three and five smaller sections of analysis. Each stage is explained in terms of what (the objective), why (the justification), how (the mechanism), and outcome (the deliverables). The specialised worksheets for each stage of the process are also provided in the workbook. The structure of each stage for the final methodology, containing the same structure as the pilot methodology, is shown in Figure 10.4.

The methodology execution first requires a panel of senior executives to be brought together. The composition of this panel is likely to depend upon the size of the company, organisational structure, etc., but must include personnel who are knowledgeable about each of the key business areas. One person should also take on the role of facilitator. Table 10.1 summarise the personnel who are likely to be involved. The entry point to the process is then Stage 1, and can commence either reactively, for example, in response to corporate initiative or some form of external change, or proactively, as part of a formal strategic

planning meeting. The duration of carrying out the methodology is estimated to be a period of two to three weeks. This gives the panel opportunity to reflect on the outcomes of each stage and gather any additional information needed.

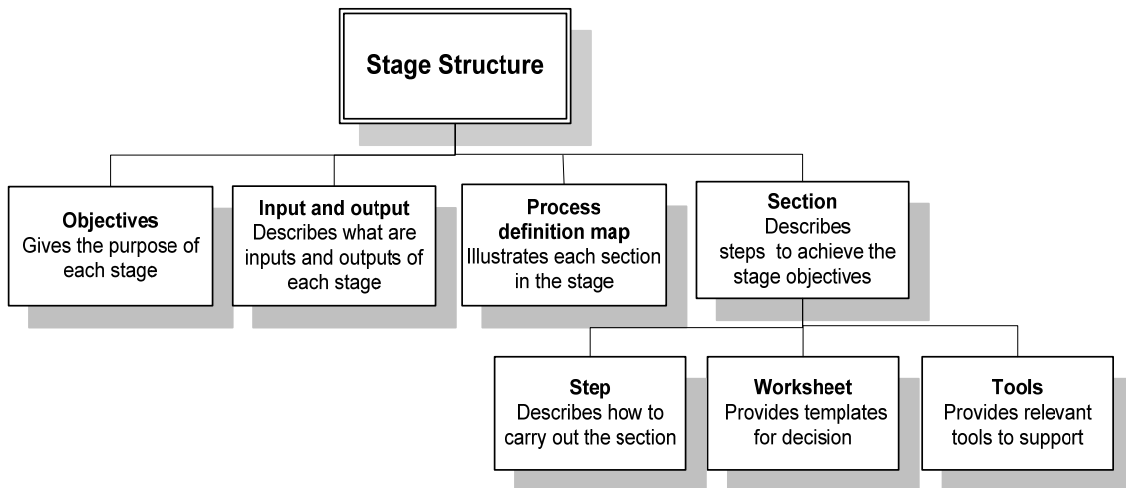


Figure 10.4 Structure of SPGC methodology stage

Stage 1 of the methodology focuses on the issue analysis to understand the current situation of the organisation and to identify the boundary of the organisation to be analysed. This stage is also concerned with competitive strategy analysis, check that any issues being raised are consistent with the company's competitive strategy, and explore any gaps that may exist between current and desired position. An issue statement is then produced. Stage 2 follows on the identification of the current activity landscape by mapping supply chain, activity and core activity maps. After mapping, Stage 3 continues with the identification of significant activities to the issues identified in Stage 1, and the analysis to find the appropriate actions to be taken for the significant activities. Next is stage 4 to identify potential configuration options for the concerned activities and perform the analysis of performance factors, financial factors, business risks and geographical factors for each promising option. Lastly, stage 5 is to evaluate and select the most appropriate configuration option, combine all the decisions agreed upon and propose the action plan to strategically position the company to achieve the issue statement.

An overview of the final SPGC methodology has been presented in this section. The following sections now provide a more detailed description of the analysis carried out in each of these stages.

**Table 10.12 People involved in the SPGC decision process
(Adapted from: Baines et al., 2005)**

Role	Responsibilities	Typical position
Company project leader	Organise and arrange all the necessary internal resources for each meeting Ensure that all necessary work between meetings is carried out Champion recommendations made through the decision process	Can be from a senior management position
Inbound sourcing/supply chain expert(s)	Provide knowledgeable and experienced input about inbound logistics from suppliers, along with activities, opportunities and threats in supply base	e.g. supply chain director
Outbound supply chain and logistics expert(s)	Provide knowledgeable and experienced input about outbound logistics, and activities with customers and distributors, along with activities, opportunities and threats in supply base	e.g. marketing director, logistics director
Manufacturing expert(s)	Provide knowledgeable and experienced input about the relevant manufacturing activity	e.g. manufacturing director; operations director
General infrastructure expert(s)	Provide knowledgeable and experienced input about the relevant manufacturing activity	e.g. technical director
Customer/commercial activity expert(s)	Provide knowledgeable and experienced input about the relevant product range activity associated with the business areas under consideration	e.g. financial director

10.2.3 Stage 1: Issue analysis

The overall purpose of this stage is to produce a qualified statement that states which areas of the organisation are to be analysed and some over-riding issues, challenges and performance improvements to be tackled in the project. This is achieved in the main by an analysis of the business issues and the competitive (market) strategy of the organisation, and leads the executive panel to quantify desired improvements as an issue statement. This analysis is based on amalgam of the work of Traacy and Wiersema (1995), Porter (1985), on marketing and business strategy, along with work on competitive profiling and analysis of Hill (1993), Platts (1993), etc.

The stage comprises five sections which, as mentioned above, may commence either proactively or reactively. These lead the panel to consider whether all or only part of the strategic business unit should be targeted; which products and services are involved; and how these compete in the market place. This review of competitiveness is undertaken by agreeing whether the company's approach to achieving competitive excellence is to be based on customer intimacy, operations excellence or product leadership (Traacy and Wiersema, 1995). Then, through the use of a generic set of performance criteria (adopted from the work of Baines et al., 2005), the panel is guided to identify where any gaps in performance with competitors exist and hence all analysis leads to the generation of the issues statement. To realise Stage 1 of the methodology, there are five sections to be carried out, summarised in Table 10.2.

Table 10.2 Stage 1 of the SPGC methodology

Stage 1: Issue analysis	
Confirm company's business strategy, internal and external business issues, competitive strategy, gap between current and desired position and problem definition	
Section 1.1 Identify clear business area for review	Output: Agreement on scope of review
Section 1.2 Identify current and desired competitive strategies	Output: Agreement on current and desired competitive strategy
Section 1.3 Analyse competitive gaps	Output: Understanding of competitive gaps
Section 1.4 Check alignment check between competitive gaps and strategy	Output: Agreement on critical performance gaps
Section 1.5 Generate issue statement for review	Output: Issue statement

The details of each section of Stage 1 are explained as follows:

Section 1.1 Identify clear business area for review – The objective of this section is to understand the current situation of the organisation and identify which part of the organisation is to be analysed in the project. This is necessary otherwise the process will be very wide and the result will be too general if it is applied to the entire company as there will be many departments and activities to view at the same time. In addition, although the company size may be small enough to apply the methodology, the management team may sometimes want to focus only on particular activities or department. It is also important at Stage 1 to confirm and review the business strategy of the company as all decisions should link to the business strategy. A worksheet is provided to define the part of the organisation under consideration, confirm the business strategy and raise over-riding issues from internal and external environments.

Section 1.2 Identify current and desired competitive strategies – The objective of this section is to identify, confirm and select the current and desired overall competitive strategy for the part of the organisation selected in Section 1.1. This strategy will place emphasis on either of the generic strategies of customer intimacy, operational excellence or product leadership (Traacy and Wiersema, 1995). A worksheet is provided to guide the project members to assess the company's current approach to business with their main products and services. This is to establish the current strategy of the company. Using the same worksheet, the project members assess how the company should be doing business in the future with their main products and services. This is to establish the desired strategy for the company in the future.

Section 1.3 Analyse competitive gaps – The objective of this section is to understand and analyse the performance gaps between the company and customer requirement and competitor performance. A worksheet is provided to guide project members to analyse how their current company performance, as measured by a number of key criteria, compares with customer requirements. With the same worksheet, project members analyse their company performance as compared with competitor performance. The results from the worksheet are used to discuss and explore the reasons behind the different scores.

Section 1.4 Check alignment between competitive gaps and strategy – The objective of this section is to agree areas where the current company performance does not match the requirements of its desired competitive strategy. A worksheet is provided to give a synopsis of the results of competitive gaps, current and desired competitive strategy to discuss the results, assess each area where the performance is below par and agree whether or not each performance gap is critical, i.e. is it threatening the success of the chosen competitive strategy?

Section 1.5 Generate issue statement for review – The objective of this section is to generate a common definition of the issues statement for the subsequent stages of the analysis that is aligned with the part of the organisation under review, over riding issues, business strategy, competitive strategy, and the competitive gaps identified. The worksheet is provided to record the qualified issues statement for the review.

10.2.4 Stage 2: Mapping current supply chain position

After defining the issue statement, this stage 2 is to produce a current competitive space to show the position of current supply chain activities of the company. As shown in Table 10.3, there are four sections to create the current competitive space in this stage; mapping supply chain position, mapping current activity position, identifying core competence and mapping core activity position. The mapping in this stage is based on the organisational processes which have four interfaces to the supply chain such as suppliers, customers, product range and infrastructure.

With the view of considering the supply chain interfaces simultaneously, the company can adopt a systems style of thinking, considering that each business area is impacted by, and impacts upon, each of the remaining three business areas. The output from this stage is the current competitive space of the company. This competitive space illustrates all activities and core activities that sit within the company, along with the external activities in the wider supply chain, which are directly related to delivering the products and services relevant to the 'issue statement' generated in the first stage.

Table 10.3 Stage 2 of the SPGC methodology

Stage 2: Mapping current supply chain position	
Identify and map all the related activities and core activities within the company which have the four interfaces with the supply chain, namely: suppliers, customers, infrastructure and product range	
Section 2.1 Identify supply chain position	Output: Supply chain map
Section 2.2 Identify activity position	Output: Current activity map
Section 2.3 Identify core competences	Output: Core competences
Section 2.4 Identify core activity position	Output: Current competitive space

The details of each section of Stage 2 are explained as follows:

Section 2.1 Identify supply chain position – The objective of this section is to review the company's supply chain of the identified business area which have the four interfaces with the supply chain, namely: suppliers, customers, infrastructure and product range. The worksheet is provided to identify supply chain functions against location and parties in the supply chain. It generates an overview supply chain picture of the company in a simple and structured format.

Section 2.2 Identify activity position – The objective of this section is to break down supply chain functions to activity position. Mapping all activities is crucial and no filtering should be carried out. When breaking down supply chain functions to activities, it is important that they are considered and identified at the appropriate level which is neither broad nor narrow. Therefore, a worksheet using the swim-lane and process activity block approach is provided to guide the project members to visually map out all the activities in blocks, which may be internal or external to the company. In the worksheet, the company functions or departments are mapped first and are then followed by the detailed process activities which are taking place within them.

Section 2.3 Identify core competences – The objective of this section is to identify core competences of the company in order to prevent threats of losing the company's core competence when deciding actions in Stage 3. The impact of losing core competences and core activities could be significant to the competitive position of the company. A guideline for identifying core competence is provided together with core competence examples in the worksheet of this section. The worksheet also emphasises checking the alignment of core competence to the current and desired competitive strategy of the company, discussing how the core competence supports the competitive strategies. An example of the same core competence used to excel different competitive strategies is also provided. The outcome of this section is identification of core competences.

Section 2.4 Identify core activity position – The objective of this section is to identify core activities which deliver the core competences identified in Section 2.3 and map these activities in the activity map from Section 2.2. A table of functions against core competences are provided to guide the project members to identify what functions in the organisation relate to the delivery of each core competence. Then, the project members can identify what activities in each function relate to each core competence and map to the activity map to become the core activity map. This core activity map shows the current competitive space of the company by using the visual map to illustrate what activities the company currently carries out internally, those that are carried out externally, and what are the current core activities.

10.2.5 Stage 3: Future analysis

The objective of stage 3 is to analyse the activities that have significant impact towards the issue statement and identify immediate associated initiatives. In performing this stage, it is important to identify the significant activities which play important roles for the company to achieve the desired stage according to the issue statement. The significant activities are those that have the potential to have a significant impact on positively affecting the issue statement through a change in ownership/state. After identifying the significant activities, these activities are analysed and assessed by using decision criteria (FACTS criteria) to propose the actions to be taken for the activities to achieve the issues on the statement and desired competitive strategies, and to minimise the competitive gaps. The output from this stage is the proposed actions which form the future competitive space of the company. To achieve this stage, there are three sections, as exhibited in Table 10.4.

Table 10.4 Stage 3 of the SPGC methodology

Stage 3: Future analysis	
Identify those activities that have significance to the issue statement, and from this, analyse and propose immediate associated initiatives	
Section 3.1 Identify significant activities	Output: Significant activity map
Section 3.2 Assess changes for significant activities	Output: Assessment of significant activities
Section 3.3 Propose actions for significant activities	Output: Strategic initiatives and future competitive space

Section 3.1 Identify significant activities – The objective of this section is to identify the significant activities from the core activity map identified in Section 2.4. A worksheet with all the activities and core activities identified earlier is provided for the project members to brainstorm, evaluate and identify the significant activities. It has the potential to have a significant impact by positively affecting the issue statement through a change in ownership/state. This section enables the project members to identify the activities that need to be changed and improved in order to achieve the issue statement.

Section 3.2 Assess changes for significant activities – The objective of this section is to assess advantages and disadvantages of changing the ownership status of the significant activities. A worksheet for internal/external assessment is provided to guide the project members to assess advantages/disadvantages

for keeping the activities in-house and advantages/disadvantages for doing the activities externally. In this section, comprehensive assessment criteria including financial, attitude to risk/acceptability, capability/competence, technological and strategic perspectives, termed FACTS, are also given to guide what to look for when doing the internal/external assessment.

Section 3.3 Propose actions for significant activities – The objective of this section is to analyse the results from the previous assessment and propose actions to be taken for the significant activities to achieve the issues on the statement and the desired competitive strategies, as well as to minimise the competitive gaps. A worksheet is provided for the project members to brainstorm and record the proposed actions. Possible appropriate actions could be adding/changing suppliers, growing or nurturing in-house, leaving outside, outsourcing, strengthening the activity, developing suppliers, opening a new plant, offshoring etc. This section also provides tools to guide the project members for deciding actions.

10.2.6 Stage 4: Configuration analysis

The objective of this stage is to identify and analyse configurations for the significant activities. After proposing the actions to be taken for the significant activities, it is necessary to consider locations for the significant activities within the global supply chains which have considerable impact on the performance of the company in delivering products and services. At this stage a list of potential locations is identified and recorded into the provided worksheet. The process will narrow the potential configuration options to a more manageable option to study both benefits and risks in detail. To realise this stage, there are three sections, as shown in Table 10.5.

Table 10.5 Stage 4 of the SPGC methodology

Stage 4: Configuration analysis	
Conduct analysis to generate detailed analysis of promising configuration options	
Section 4.1 Identify potential configuration options	Output: Potential configuration options
Section 4.2 Identify short-list configuration options	Output: Short-list configuration options
Section 4.3 Detailed analysis of each option	Output: Detailed analysis of each option

Section 4.1 Identify potential configuration options – The objective of this section is to identify potential configuration options. A worksheet is provided for the project members to list potential configuration options for the significant activities or to confirm and review the current configuration.

Section 4.2 Identify short-list configuration options – The objective of this section is to select the top two or three configuration options on the list for further detailed analysis. During this stage, a worksheet is provided to the company to eliminate any configuration options that do not meet the company's key requirements on issue statement, competitive strategy, and competitive gaps. The project team members should discuss and identify key criteria from issue statement, competitive strategy, and competitive gaps for screening the long list of options identified in the previous section. The analysis required will often be a desk research. The data can normally be obtained from secondary sources – such as journals, articles and web sites.

Section 4.3 Detailed analysis of each option – The objective of this section is to perform detailed analysis of short-list options. The analysis includes financial factors, geographical factors, competitive performance factors and business risks. The guidelines of these factors are provided to help the project team members conduct an effective analysis and ensure that important factors are not overlooked. Site visits are also recommended in this stage to develop knowledge of the proposed options and to obtain meaningful and reliable information about the location.

10.2.7 Stage 5: Selection and action plan

The objective of this stage is to select the most appropriate configuration option and develop an action plan for implementation. During the final stage, it is important to remember that new decisions and issues from previous stages may have arisen which may not have been noted so that the project team members should discuss any area that is unclear. Finally, scores should be allocated to each option based on financial benefits, geographical benefits, performance benefits and business risks in the provided worksheet. After completing the scoring, the project team members should be able to select the most appropriate configuration and develop an action plan. To achieve this stage, there are three parts to carry out, as given in Table 10.6.

Section 5.1 Select the most appropriate option – The objective of this section is to select the most appropriate configuration option. A worksheet for selection is provided to the project members to allocate a score for the financial benefits, performance benefits, geographical benefits, and business risks of each option. Alternatively, the project members may prefer using discussion of benefits and risks of each option rather than using a scoring mechanism. The project members select the most appropriate configuration option in this section.

Table 10.6 Stage 5 of the SPGC methodology

Stage 5: Selection and action plan	
Select the most appropriate configuration option, check alignment to earlier stages, and develop a plan for implementation activities	
Section 5.1 Select the most appropriate option	Output: Selected configuration option
Section 5.2 Establish draft plan	Output: Draft plan
Section 5.3 Establish action plan	Output: Action plan

Section 5.2 Establish draft plan – The objective of this section is to create a draft plan which aims to maximise benefits and minimise risks from the selected option. With the draft plan, the company will get the most benefits with more awareness on risks from the selected option.

Section 5.3 Establish action plan – The objective of this section is to allocate future actions and assign responsibilities and timescales for the company to implement the decision. A worksheet is provided for project members to record necessary activities for implementation of the selected configuration option and strategic initiatives resulting from stage 3. Another worksheet is provided to combine necessary activities and the draft plan from the previous stage to become an action plan. This stage also recommends key performance measurements that should be included in the action plan to monitor and measure the effectiveness of the strategic positioning decisions.

10.3 Chapter summary

This chapter has presented the final SPGC methodology. It provides a holistic view of the stages, sections and key activities. The methodology is structured, procedural and descriptive, and focuses on how to carry out strategic positioning within global supply chains effectively from the start to the end. The next chapter will conclude the research programme, make a contribution to knowledge and recommend further research in the field.

CHAPTER 11: CONCLUSIONS

This research set out to create a methodology that would guide practitioners in strategic positioning within global supply chains. This chapter summarises the research contributions (Section 11.2). The limitations of the research are discussed (Section 11.3), and the directions for future work suggested (Section 11.4). Finally, the concluding remarks are given (Section 11.5).

11.1 Overview of research aim, objectives and programme

The research aim in this work was developed in Section 4.2, namely:

“To develop a generic and practical methodology that is an integrated and holistic approach that assists practitioners to deal with strategic positioning within global supply chains.”

This research aim has been achieved by completing the following six research objectives, again, these were established in Section 4.2, namely:

1. Explore how strategic positioning decision formation takes place in practice and the challenges raised
2. Evaluate and select potential methodologies related to strategic positioning within global supply chains
3. Form a pilot methodology to aid practitioners in the strategic positioning within global supply chains decision
4. Conduct primary evaluation of the pilot methodology to evaluate its practicability in actual use
5. Conduct secondary evaluation of the refined pilot methodology to evaluate its wider applicability
6. Capture the complete methodology in a workbook for wide dissemination to practitioners

A six-phase structured research programme, developed in Section 4.3, has been executed to realise the research aim and objectives, and has resulted in the development of a methodology for strategic positioning within global supply chains (SPGC).

- Phase 1: the practices from industry were explored to form the basis of the structure and the content of a pilot methodology (Chapter 5).
- Phase 2: existing methodologies related to SPGC from literature were critically reviewed with the purpose of selecting the potential methodologies (Chapter 6).
- Phase 3: the pilot methodology was formed, based on the results from the exploratory case studies in Phase 1 and the selected methodologies in Phase 2 (Chapter 7).
- Phase 4: the pilot methodology was evaluated with two practical case studies in real industry settings, to demonstrate the feasibility, usability and usefulness of the methodology, and to refine and improve the pilot methodology (Chapter 8).
- Phase 5: the refined pilot methodology was further evaluated and tested with another four case studies to identify particular characteristics for final refinement. This was to show the methodology's validity and reliability in different environments and different facilitators (Chapter 9).
- Phase 6: the final SPGC methodology for wider use was presented and illustrated (Chapter 10).

This section has provided an overview of the research aim, objectives and programme. The major contributions of this thesis are now presented in the next section.

11.2 Summary of research contributions

The research presented in this thesis makes two principal contributions to knowledge regarding the subject of strategic positioning within global supply chains. Furthermore, in executing the research programme a number of advances have been made that are themselves important contributions to knowledge and deserve highlighting. This section summarises both the primary and secondary contributions of this research.

11.2.1 Primary research contributions

The novel contribution to knowledge that this research programme has provided is a practical and procedural methodology for strategic positioning within global supply chains.

The purpose of the methodology developed in this thesis is to guide practitioners through an integrated and holistic approach with a series of well-defined structured stages to make informed, consistent and efficient improvements to manufacturers for strategic positioning within global supply chains. It brings together a series of tools and worksheets to analyse, improve, evaluate and review activities and processes in an organisation's supply chain. This structured and procedural methodology for strategic positioning within global supply chains forms the main research contribution of this thesis, and is arrived at by combining six logical sequences of phases, as shown in Figure 11.1.

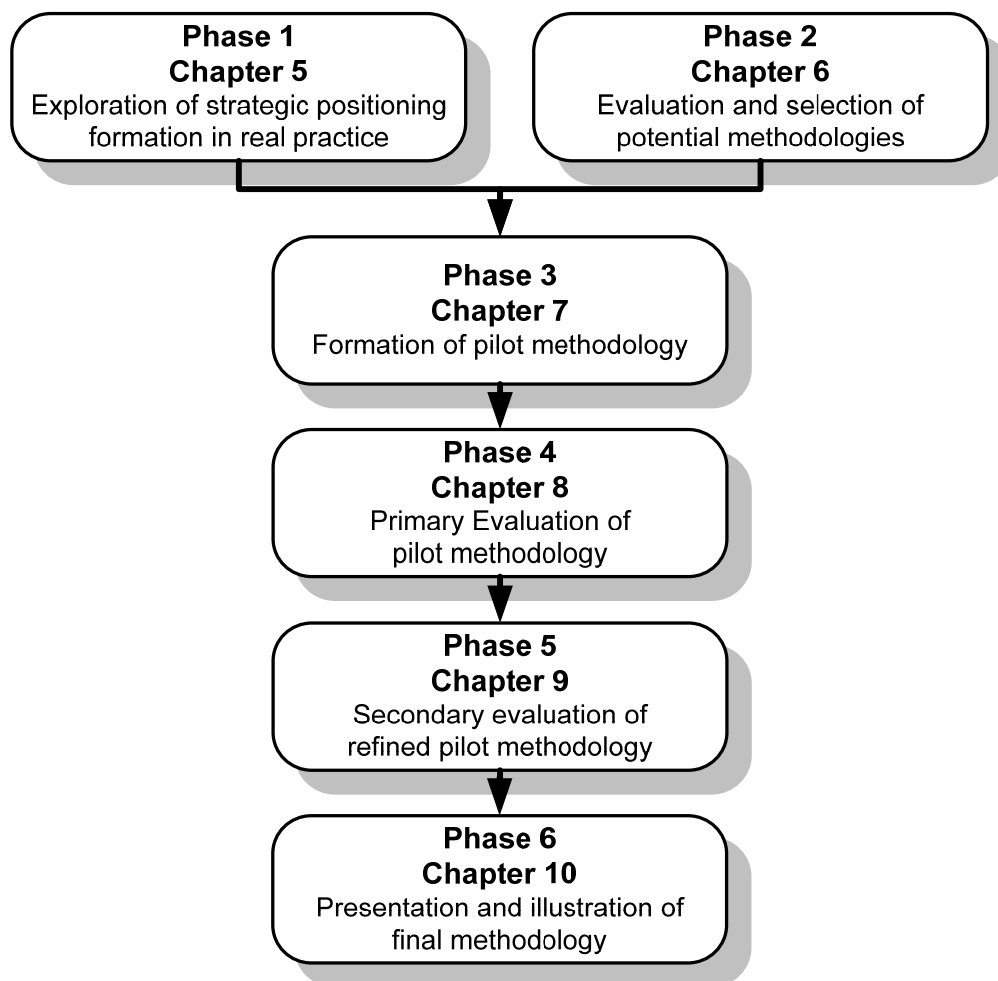


Figure 11.1 Research programme

The results demonstrated that the final SPGC methodology brings real practices together with academic theory to provide an integrated and holistic approach for strategic positioning within global supply chains.

11.2.2 Secondary research contributions

In the process of executing the research programme a number of advances have been made that are themselves important contributions to knowledge. This section highlights these.

Insights of strategic positioning experiences

This research provides a description of some insights of strategic positioning experiences and a decision process for strategic positioning within global supply chains from the four manufacturing companies in Sections 5.5 and 5.6. This contribution has resulted from Phase 1 of the research, exploration of strategic positioning in practice. Multiple case studies were chosen as a research method to explore strategic positioning process from leading manufacturing companies. The data collection methods included primary and secondary sources. The insights and the decision process from the case studies contribute to the knowledge of structuring the strategic positioning process from real practices. This contribution should allow more participants to understand the rationale behind a strategic positioning process from leading companies. As a result, more people should gain knowledge and be confident of designing a new supply chain position.

Terminology of concepts impacting on strategic positioning

Section 3.2 provides the evolution and state-of-the-art concepts impacting on strategic positioning as well as the basis that leads to the development of the SPGC methodology. Their origins, definitions, and relationships with strategic positioning and formal methods in qualitative and quantitative approach of these concepts were given. This may now be of further assistance to other researchers who are also considering a structured classification of concepts in organisational boundary design.

Foundation knowledge in the area of strategic decision

This research has provided knowledge in strategic decision making from literature in Sections 5.2.1 and 5.2.2. Chapter 5 has presented the terminology and characteristics of strategic decision, different schools of thoughts concerning strategic decision, and strategic decision processes proposed by

various researchers. This gives the fundamental of an understanding in strategic decision.

Requirements of a methodology for strategic positioning within global supply chains

This research provides the requirements of a methodology for strategic positioning within global supply chains in Section 6.2.3. These requirements were used to assess the capabilities of existing methodologies (Section 6.4) and develop the required elements for the content of the pilot methodology (Section 7.3.1). The requirements were developed and termed the 'requirement set', and consists of a set of criteria that are perceived to be what practising managers desire of a strategic positioning process and what have been discussed in literature. This requirement set provides an important foundation for future work addressing criteria for a decision process for strategic positioning within global supply chains.

Factors for designing actions and factors for selecting configuration options

This research provides factors for designing actions (FACTS criteria) and factors for selecting configuration, developed in Section 7.3.2. An important part of SPGC methodology is to provide a guideline for users as to what factors should be considered. These factors were developed from extensive literature search and the results from the exploratory case studies. The factors provide comprehensive criteria for strategic positioning within global supply chains decision.

11.3 Limitations of the research

Although this research has achieved the provision of a strategic positioning within global supply chains methodology, there are a number of limitations that need presenting. Therefore, this section discusses the limitations found within the research programme as well as observations of the research.

11.3.1 Limitations of the research programme

The research activities have followed the stages of exploring strategic positioning forming in practice, assessing capabilities of existing methodologies, selecting the potential methodologies, developing a methodology, testing, refining and re-testing its general applicability by case study. The exploring and testing structures are seen as key features of the research upon which future

work can build. The type of research however is subject to two issues that need to be highlighted.

First, the number of exploratory case studies is one of the key concerns. The research conducted four cases from manufacturing companies. This is not a representative sample, but it allows insight into the process and strategies of leading companies in their industries. To expand insights beyond this limited exploratory study, a survey could be conducted covering more industrial sectors. On the other hand, in-depth analysis of the strategic position might reveal further details relating to its specific business. A longitudinal study could be carried out to collect information at more points in time in the same organisations. However, these methods would be time consuming for the whole research. The four exploratory case studies have been conducted with sufficient rigour to minimise this limitation.

Second, the limitation is the limited number of methodology evaluations and application cases conducted within the time frame. The researcher would have preferred to have conducted a greater number of evaluations and case studies; however, this was not possible within the timescale of the project. Industrial testing proved time consuming, from finding companies, contacting them and allowing ongoing engagement with the companies during the research process. Fortunately, the case applications have been sufficiently thorough to evaluate and refine the methodology. The resulting SPGC methodology has justified the methodology to be feasible, usable and useful.

11.3.2 Limitations of research findings

This section identifies prominent concerns that have arisen about the findings gained from execution of the research programme.

First, during the use of the SPGC methodology which would give a detailed evaluation, the results from the testing may have been influenced by some bias in interpretation. There could have been bias due to the researcher's familiarity with the structure and the content of the methodology. Additionally, there is some danger that the research may achieve success of applications by means of the process consultancy skills that the research has developed during the testing. To overcome this limitation, the research has appointed different facilitators to conduct the wider application, with the research acting as an observer.

Second, there were gaps in the results obtained from the case studies in wider testing, as not all open questions in questionnaires were answered by the process users. The ideal situation would be to test the full cycle of the SPGC methodology and then monitor the strengths and/or weaknesses of the methodology after the implementation of the results. However, this was not feasible due to time constraints. This research design however helped to realise

the research aim to a greater extent, proving that the methodology could be used independently of the researcher who developed the method, and that the results may not necessarily be influenced the facilitators' skills.

Third, the three criteria of feasibility, usability and usefulness from Platts (1993), Adesola (2002), Bourne et al. (2002), Tan et al., (2004), Viseras (2004), Tan and Platts (2005), and Lim (2007) were adopted in this research to assess the applications of the methodology. The research findings may be limited from three main criteria which could be improved to cover other perspectives. However, the intention of this research was not subjected to improve the three criteria. It would rather focus on SPGC methodology improvement. As these criteria have shown their reputation for development of process research in several works, this weakness could be lessened.

Last, the type of cases selected was based on general industry across sectors. It was meant to serve general industries in the manufacturing sector. It was not based on a specific industry so detailed conclusions about any one particular industry could not be made. However, the involvement of several sectors has shown useful learning and provided several aspects from applications.

This section has highlighted some of the limitations of the current research as related to the research programme and research findings. The next section contemplates possible future research work.

11.4 Directions for future research

As discussed in the previous section, this section identifies the direction that future work should take to support the progress of research in this area.

First, the assessment of SPGC methodology from case study applications formed a major part of the research. However it is suggested that the methodology should be further evaluated with more case studies. This would extend the generalisation and build more reputation in validity to the case research. Further evaluation will provide a better understanding of the methodology and may lead to further refinement.

Second, during the selection of companies for the primary and secondary evaluation, this research covered different sectors in the manufacturing industry. This was not based on different elements in supply chain. Applying different elements of supply chain could make the methodology more general to users who are from different nodes in the supply chain. Further work could focus on the methodology application in different elements of supply chain such as raw material manufacturers, OEM manufactures, and final manufactures. On the other hand, the supply chain characteristics may differ from industry to industry and therefore strategic positioning issues may be also different from

industry to industry. As a result, future work could also focus on sector specific industry, for example oil, chemical, pharmaceutical, aerospace, and automotive industry etc. This could explore how manufacturers position themselves strategically within specific sectors so as to get an understanding of sector-specific characteristics, success factors, pitfalls, limitations of strategic positioning of each sector.

Third, the delivery mechanism selected was paper-based workbook. Even though the paper-based workbook has shown its success in applications, users recommended alternative mediums either a CD-Rom based or web-based format for quick navigation and communication purposed. It is seen as user-friendly and paper free. The development of an automated application would serve as a knowledge repository database to store the workbook methodology, the tools, previous decisions together with guidelines on project management and assessment. Such an application may serve as a self-learning tool for the project team.

Fourth, from conducting the industry case studies in the formation and evaluation of the methodology, it was realised that performance measurement is an important area that can help company to measure the effectiveness of their strategic positioning decisions. The SPGC methodology has provided performance measurement to ensure it is tracking along an appropriate path as it moves from company's current state to a future state. These measurements are fundamental for future development of a comprehensive performance measurement system or framework for measuring the effectiveness of the positioning decision. Future work could look at multi-dimensional based on a set of cross-functional measures with emphasis on non-financial, external and future performance measures.

Fifth, this research has defined strategic positioning within global supply chains as a part of the business strategy. Since it is taking place at business level, the SPGC methodology provides the link to corporate strategy, competitive strategy, external/internal environment and resources of the company. Future work could extend the link to other functional strategies such as technology management, supplier selection strategy, manufacturing strategy, and purchasing strategy. The linkage would help assign specific frameworks and requirements for each strategy level. It also helps a company with a clear direction to achieve its business aims.

Sixth, when conducting case studies, it was observed that the company culture affected the formation of strategic positioning within global supply chains. Company culture may manifest itself in the organic processes existent within the company, the collective/individual decision makers, the management style, the company dynamics and the company's activities. Therefore future work could look at the company factors for effective formation and implementation of strategic positioning within global supply chains.

Seventh, future research could continue to establish to what extent the applicability and success of the methodology are dependent on factors such as: the size of the company, the industry sector, the organisation structure, the prior existence of practices, and facilitation. Future work hence forward should look at the influence of other factors on the success of the methodology.

Final, as part of the development of the SPGC methodology, further work could be carried out to provide a guide for identifying risks of using and not following the methodology, and what could undermine its effectiveness and efficiency. The risks for each stage in the methodology could also be explored.

11.5 Concluding remarks

The concluding chapter has given account of the primary and secondary research findings and contributions against the research aim and objectives. The limitations of the research have been identified and led to the recommendations for future work. This research has made a novel and significant contribution to the body of knowledge in deciding the organisational boundary within global supply chains. It is hoped that the deliverable of this research will make a similar contribution in practice.

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APPENDICES

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**APPENDIX A: PRESENTATION OF THE PILOT METHODOLOGY
TO THE CASE STUDY COMPANIES**

Strategic Positioning within Global Supply Chains

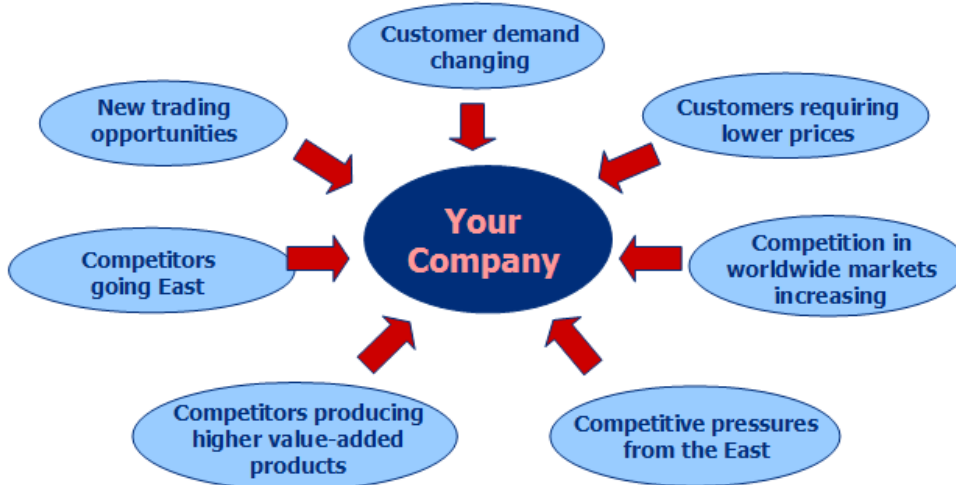


**Review and decide your position
in supply chains**

Agenda

- Challenges facing manufacturers
 - Strategic positioning process
 - What I would like to do
-

Are you facing these challenges?



Are you considering taking some of these actions?

- Expanding your manufacturing operations into emerging markets
- Relocating production operations to lower cost countries
- Sourcing products from the East or other lower cost countries
- Acquiring manufacturing operations to integrate with existing operations

Common mistakes made when deciding actions

- lacking of clarity of project in the early stage
 - making a decision without a thorough business analysis
 - placing an emphasis on financial analysis but ignoring non-cost factors such as business risks
 - failing to align the decision with company strategy and future trend
 - ignoring the impacts of the entire supply chain
-

Consequences of Poor Decisions

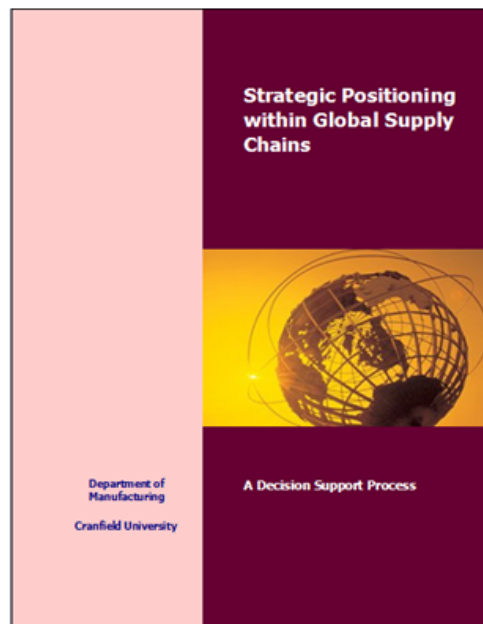
Research suggests that 25% of offshoring projects fail

(Source: The Manufacturing Foundation, 2006)

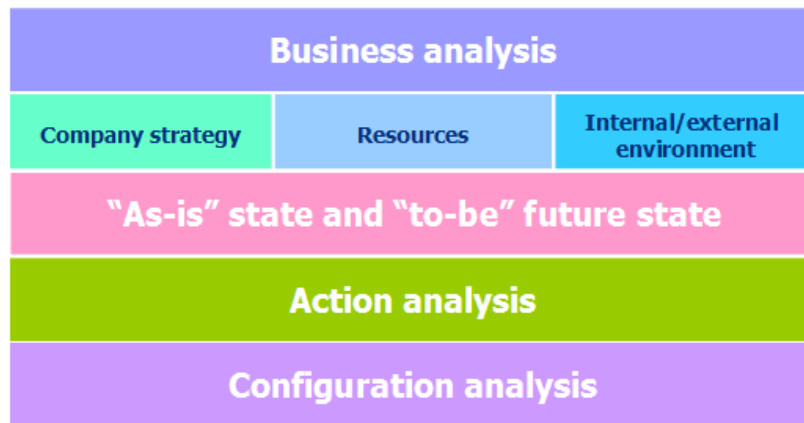
- Loss of strategic flexibility and control
 - Increased dependability on suppliers
 - High quality problems and slow response time
 - Loss of intellectual property right
 - Erosion of core competences
 - Low return on investment
 - Reduced sales
-

What is strategic positioning?

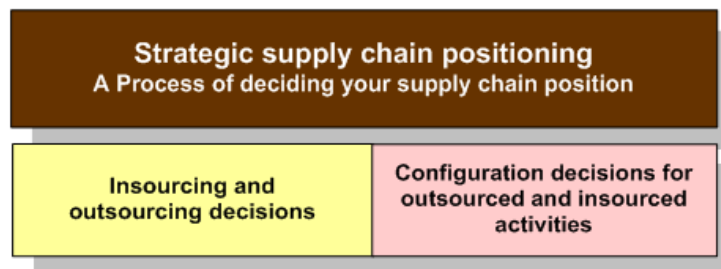
It is about taking an integrated and holistic approach to find a competitive position within global supply chains.



Overview of strategic positioning decision process



What does this workbook offer?



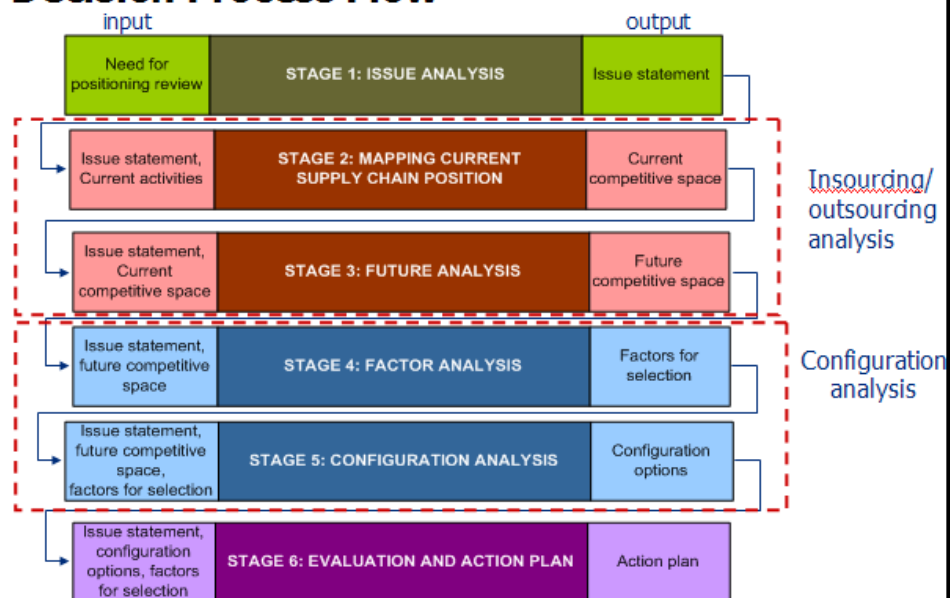
Strategic supply chain positioning is a process of

- analysing the current situation and business needs;
- choosing ownership status and developing appropriate actions for significant activities;
- deciding the most suitable configuration for those activities;
- and developing plan for implementation.

Decision Process Features

- Step-by-step approach to decision making based on self-diagnosis
- Worksheet design
- Simple, logical flow
- Provided relevant tools

Decision Process Flow



Benefits to the company

- Understand your business and supply chains holistically
 - Review your current strategy and identify future strategy systematically
 - Take this opportunity to gather employee together
 - Help you confirm with
 - Insourcing/outsourcing decisions
 - Offshoring, relocation decisions
 - Produce effective implementation plan
-

What I would like to do

Test the application of the decision process, by:

- Working with your company to review your position
 - Collecting actual company data and employee opinions
 - Following the process to form the required decision
 - Gaining feedback from the company on how well the decision process worked.
-

Thank you

any questions?

**APPENDIX B: QUESTIONNAIRES FOR EVALUATION OF THE
REFINED PILOT METHODOLOGY**

Questionnaire during the Methodology Application – Usability Questionnaire

Strategic Positioning within Global Supply Chains Methodology

This questionnaire is designed to capture your opinions and suggestions on the usability of each stage for methodology improvement.

Please feel free to add your comments anywhere within the questionnaire or at the end of questionnaire.

Thank you for taking your time to complete this questionnaire. Your reply is valuable for methodology improvement. Thank you very much for your cooperation.

USABILITY QUESTIONNAIRE (How easily could the methodology be followed? Is this stage workable?)

Ease of Use (user friendliness)

1. Did you find this stage of the methodology easy to follow?

Yes No

2. Did you find this stage explain objectives and steps clearly?

Yes No

3. Did you stall at this stage?

Yes No

4. Why did you stall?

5. Was this stage necessary in achieving the aim of the project?

Yes No

6. Could it have been skipped?

Yes No

7. Was anything in the stage unnecessary or redundant? If yes, please state

Yes No

8. Which of the worksheets used in this stage did you find difficult to use and follow? Why?

Time (time committed to the stage)

9. Did this stage consume too much time?

Yes No

If yes, which part -----

Understanding (did this stage provide clear direction?)

10. Were you confused at any point during the execution of this stage and why?

Yes No

11. Were any terms unfamiliar or unacceptable to you and why?

Yes No

12. Did you encounter any problems following this stage?

Yes No

13. Did you feel that some of the steps in this stage could have been done earlier, or merged? Please state which.

Yes No

Modifications:

14. What do you think are the changes necessary in this stage?

Other comments

Post-Assessment Questionnaire

Strategic Positioning Methodology

The purpose of this post assessment questionnaire is to seek to establish improvements of the methodology. The questionnaire is made up of three parts.

Part 1: Feasibility – could the methodology be followed?

Part 2: Usability – how easily could the methodology be followed?

Part 3: Usefulness – did the methodology provide useful results that met expectation?

Please feel free to add your comments anywhere within the questionnaire or at the end of questionnaire.

Thank you for taking your time to complete this questionnaire. Your reply is valuable for methodology improvement. Thank you very much for your cooperation.

FEASIBILITY: Could the methodology be followed?

The purpose of this part is to discover if the methodology could be followed. Please tick the answers which correspond to your opinion. Please add comments as necessary.

1. Completeness: Was the methodology followed in its entirety?

No/Not at all Partly Don't know Mostly Yes

If the methodology lacks in completeness, please indicate where you feel there are omissions or where additional stages should be added.

2. Consistency: Did you feel that the sequence of the stages was consistent?

No/Not at all Partly Don't know Quite Yes

Comments: -----

3. Applicability: Did you find the methodology can be applied satisfactorily?

No/Not at all Partly Don't know Mostly Yes

Comments: -----

4. Contingency: If the project encountered problems, did the methodology provide an alternative solution?

No/Not at all Partly Don't know Mostly Yes

Comments: -----

USABILITY: How easily could the methodology be followed?

The purpose of this part is to discover how you structured and followed the methodology. Please tick the answer(s) which correspond to your opinion. Please add comments as necessary.

5. Time: How long did the methodology application take? Elapsed time.

Calendar months -----

Man-day efforts -----

6. Time: How well did the timing of the methodology and stages to the project fit into your other duties?

No/Not at all Not very well Don't know Quite well Very well

7. Ease of use: Did you find the tools and techniques at each stage reasonably easy to follow and explain?

No/Not at all Not very easy Don't know Quite easy Very easy

Comments: -----

8. Understanding: Were the aims and actions of the methodology clear at each stage?
No/Not at all Partly clear Don't know Quite clear Very clear

Comments: -----

9. Understanding: Did the examples provided in the methodology help you to use the methodology?
No/Not at all Of little use Don't know Useful Very useful

Comments: -----

10. Flexibility: Did the methodology provide you flexibility in the use?
No/Not at all Partly Don't know Quite Yes

Comments: -----

11. Modification: Please state what you would consider to be the major strengths and weaknesses of the methodology.

Comments: -----

12. Modification: What changes would you make if you were to repeat the overall methodology?

Comments: -----

13. Modification: Which of the stages would you like to modify or combine?

Comments: -----

14. Modification: What else in the methodology structure would you like the stages to define?

Comments: -----

USEFULNESS: Did the methodology provide useful results that met expectation?

The purpose of this part is to discover how useful of the methodology was. Please tick answer(s) which corresponds to your opinion.

15. Success: Please rate the success of the overall process of the strategic positioning methodology.

Most unsuccessful (waste of time) Not successful (not worth doing)

Successful (worth doing) Very successful

Don't know

If the process was successful, please indicate in which areas you feel the process has contributed.

16. Efficiency: Did the methodology consume excessive resources of time and people?

No/Not at all Partly Average Quite Very

17. Practicality: Did the methodology provide practical process?

No/Not at all Partly Average Quite Very

18. Benefit: Are there any lessons learnt from the methodology application?

No/Not at all Partly Average Quite Very

19. Which of the methodology stages and steps were most useful and why? Please provide examples.

20. Which of the methodology stages and steps were least useful and why? Please provide examples.

21. Satisfaction: Did the results meet your expectation?

No/Not at all Partly Average Quite Very

22. Satisfaction: Would you use the methodology again in your organisation and why?

Yes

No

**APPENDIX C: CASE STUDY APPLICATIONS OF PILOT
METHODOLOGY**

1. CASE 5: AMP-CO – APPLICATION OF THE PILOT METHODOLOGY

Amp-co is a British company which designs and manufactures music amplifiers. It first started as a small shop in the early 1960s. Throughout the 1960s the company has grown in popularity and powered the most influential and original guitar players. The success of the company is linked with the quality of amplifier especially suitable for the guitar music. The brand is renowned for high quality amplifiers in the music industry and is held in high regard by musicians in the rock style. It has a customer base comprising 83 countries with their greatest market share of 40% in the USA. The company's brand value has been built on heritage and quality of its amplifiers and gives a marketing competitive advantage.

Amp-co has its main production in the UK and maintains a level of outsourcing for lower end product ranges to China, India and Korea (the Korea supplier has offshored to Vietnam). The UK plant has a floor space of 70,000 square feet and a workforce of 186. The UK facility and its production layout are divided into five smaller functional areas, namely Engineering, Electronics, Wood Mill, Covering and Final Assembly. One of the major characteristics of the electronics industry is the high degree of automation but Amp-co manages to keep a greater percentage of its operations manual and in-house. This production in the UK is characterised by high labour cost and the demand for high quality products and therefore there is pressure to maintain the brand image.

Despite its long success, Amp-co is also facing intense competition from its competitors like many other companies in the world. It is looking for a global supply chain positioning improvement initiative and confirmation of its current strategy.

Stage 1: Issue analysis

The need for the review of competitive position of the company was proactive.

Section 1.1 Identify clear business area for review

In this section, Amp-co has identified the production of valve amplifiers especially the JVM range to be the area for competitive position review. Amp-co targets a specific sector of the market for amplification systems and is predominantly focused on the high end of the market. It is reliant on its original amplifier designs and associated valve technology, which currently gives Amp-

co competitive advantage. This advantage is however gradually eroded by lower cost imports and the development of capable alternative technologies. There was no obvious desire of Amp-co to deviate from this sector of the market at this point of time, however there is clear drive to maintain manufacturing within the UK. The 'Made in UK' mark is synonymous with the Amp-co brand identify. Currently, the business strategies focus on improving operations in UK plant, reducing cost and balancing marketing. Consequently, the company identified its over-riding challenge as to:

- Keep production of UK facility. The market is pushing Amp-co to outsource their production out of the UK. Though they compete in terms of cost of the components, they can not compete with them in terms of cost of labour.
- Reduce costs. This issue is related with the previous one since it will allow Amp-co to keep manufacturing their products in UK.
- Maintain brand reputation. The business of the company is strongly based in its brand value.
- Succeed on the market place with new products.

Section 1.2 Analyse SWOT

The results of the SWOT analysis of Amp-co were as follows:

<p>Strengths</p> <ul style="list-style-type: none"> ▪ Relationship with supplier ▪ Relationship with distributor ▪ New product development ▪ Quality of products ▪ Brand reputation 	<p>Weaknesses</p> <ul style="list-style-type: none"> ▪ Material handling ▪ Order receipt ▪ Inventory management ▪ Information flow management
<p>Opportunities</p> <ul style="list-style-type: none"> ▪ New markets ▪ Penetrating existing markets 	<p>Threats</p> <ul style="list-style-type: none"> ▪ Competitors ▪ Competition from low cost economies

Section 1.3 Review competitive strategies

The operation director was asked to assess the 30 statements in relation to the company's current and desired competitive strategy. The results of the assessment were as follows:

Current competitive strategy: From the assessment, Amp-co's current competitive strategy was assessed to be Product Leadership. Amp-co seeks to provide the best product on the amplifiers markets. They provide customers with some specific and unique sound amplifiers. Meanwhile, in order to enhance the position they have in the market, they also offer some best total solutions to be customer intimacy by providing maintenances and services, and deliver some best total cost to be operational excellence by producing some low price amplifiers.

Desired competitive strategy: From the assessment, the desired competitive strategy was also assessed as Product Leadership. In the future Amp-co would also focus on the best total cost and provides the total solutions to its customers. As Amp-co is the leader in the market in terms of Product Leadership, they were interested to explore the other two areas, either the Customer Intimacy or the Operational Excellence. Amp-co has very loyal customers, thus a Customer Intimacy strategy will allow the company to reinforce the relation with the customer. Offering them new services would give the company the choice to develop this strategic area. On the other hand, Amp-co has the opportunity to keep developing and improving its Operational Excellence strategy. As it was mentioned before, Amp-co has some production facilities in "low labour cost countries" that gives the company the opportunity to carry out an Operational Excellence strategy.

Section 1.4 Analyse competitive gaps

The summary of competitive gaps showed that in the area of product leadership the company currently matched and exceeded with the customer requirement and competitor performance. However, in operation excellence and customer intimacy, the company lagged behind the competitors in product price and service customisation.

Section 1.5 Check alignment between competitive gaps and strategy

Section 1.3 has established that both the current and desired strategies of the company were Product Leadership. Hence, the current competitive gap between the company and competitors performance was critical and improvement were needed in the areas of Operational Excellence and Customer Intimacy. Operational excellence is on more priority because the cost is an importance issue for company's operations.

Section 1.6 Generate issue statement for review

From the above analysis, the issue statement was defined to maintain production of valve amplifiers in UK by reducing costs, enhancing quality conformance and reinforcing the brand value.

Stage 2: Activity landscape

Once the initial activity map was drawn, as shown in Figure 1, the core competences were identified as brand value and quality. From the identified core competences, the company defined further on core activities which are activities directly related to core competencies. The core activities were defined as sales, customer relations, product support, research and design and final assembly.

Stage 3: Future analysis

Section 3.1 Identify significant activities

At this section, the significant activities were identified and they included wood mill, electronic works, hand wiring, final assembly, valve stage and engineering. These activities are the activities that have potential for significant impact towards improving the issue scoped in Stage 1 – if their ownership or state were to be changed.

Section 3.2 Assess changes for significant activities

The assessment of advantages and disadvantages for keeping the significant activities in-house or doing them externally were carried out in this section. The advantages of keeping the significant activities internal were perceived as flexibility for production, enhancing brand image and complementing marketing techniques as a part of factory tour for building a good image. However, the labour cost in the UK is fairly high and therefore doing all production activities in-house leads to high cost of production. The company has opportunities to carry out all production activities externally to keep the cost down and maintain only finishing section in the company in order to keep the image of made in UK. To outsource all production activities except finishing section would also give benefits to the company by enabling to focus heavily on research and development and marketing.

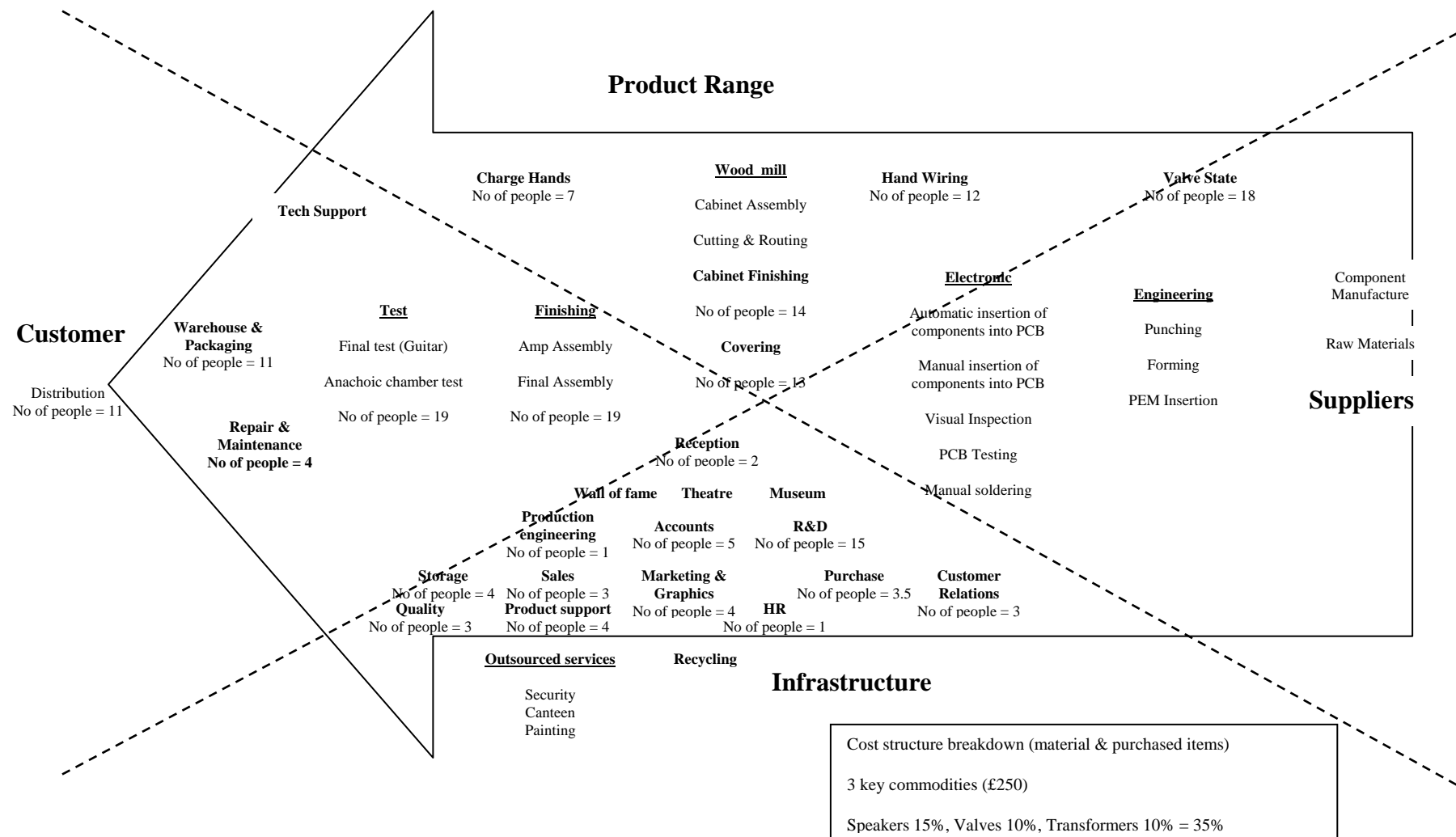


Figure 1: Amp-co's activity landscape

Section 3.3 Propose actions for significant activities

After the assessment, the company clearly understood the advantages and disadvantages on both sides; doing in-house or carrying out externally. In order to retain the brand image of products from the UK, the company decided to outsource lower end products to low cost economies while kept the production of high-end products in the UK plant. These all significant activities are necessary to be kept in house for flexibility of the high-end products. The main desired competitive strategy is product leadership and the second priority is operation excellence. The company wanted to balance the in-house activities and the outsourced activities by keeping research & development, sale, production of high-end products and procurement in-house. However, in order to reduce costs in the UK plant, company decided to improve the methods of the production. Strategic initiatives programme from team discussion included:

- Improving the information flow in the supply chain especially with the distributors
- Optimising the finishing area
- Revising performance measurement
- Enhancing brand image
- Improving theatre experience, factory tours, corporate links, reception area and hall of fame

From stage 1 to stage 3, the results came out to confirm the current company strategies – outsourcing lower end product ranges to low cost economy countries and keeping JVM product range in the UK plant. This provided the company had more confidence on their decisions and was able to see the link of its decision to the company strategy and the business analysis. As the decision has been made to outsource to Korea, China and India, the next part company will assess whether the current configuration is the most suitable for Amp-co.

Stage 4: Configuration analysis

In this stage, the company used the current configuration to review whether it is the most appropriate configuration for the company. Currently, the company has the configuration for the production activities as follows:

- JVM product range – UK plant
- Acoustic product range (cheap amplifier) – Chinese subcontractor

- MG 220V, MB – Indian subcontractor
- MG 110V, MB – Korean subcontractor but produce in Vietnam

From the issue statement and the desired competitive strategy, the company defined the criteria for considering the most appropriate configuration according to the issue statement as follows:

- Cost
- Quality
- Brand reputation

The company used these three criteria to consider whether the current configuration is providing the best cost, quality and brand reputation to the company. The results came out with the positive outcomes as they are using the top two sub-contractors in the world to produce their amplifiers.

Stage 5: Evaluation

At this stage, the company studied more in-depth on their current configuration. They selected factors for performance, financial and geographic analysis and business risks as shown in the table below.

Categories	Factors
Performance analysis	Performance objectives from competitive strategies: delivery lead time, quality of product, product cost, customer service level, flexibility, delivery reliability, market orientation, after sale support, customisation, flexibility, agility, features of product, manufacturing capability, efficiency Supply chain: supply chain flexibility (response time, production flexibility), supply chain agility, supply chain reliability, supply chain responsiveness
Financial analysis	Product cost
Geographic analysis	Infrastructure, reputation of the suppliers
Business risks	The transfer of knowledge, currency risk

Stage 6: Selection and action plan

The company did an analysis to evaluate their current configuration by using the identified factors. Comparing on the cost issue, these three subcontractors can provide the best cost to the company. They can also provide all performances reaching the expected standard of the company. Because the company is using three suppliers, each supplier is trying to improve their operations in order to maintain their contract agreement. In the business, it is easy to switch suppliers. Amp-co has a very good brand reputation which leads the suppliers want to work with so as to get good references to their factories. The relationship with these three sub-contractors is going well with sharing manufacturing practices, knowledge and know-how. As a result, there are less business risks from doing business with these three suppliers. The suppliers and the company visit each other time to time for knowledge transferring. As the current configuration was the most appropriate configuration from the analysis, the company established an action plan according to the strategic initiatives derived from Stage 3.

Amp-co found the benefits of using the structured methodology to help them confirm its decisions. Previously, the company always made decisions in an unstructured manner. Having the systematic methodology, they had more confidence in its direction. Performance measurement will be used to monitor the efficiency of their competitive strategy.

2. CASE 6: ELEC-CO – APPLICATION OF THE PILOT METHODOLOGY

Elec-co was founded in 1974. It is a world leader in the design, production and marketing of electronic drives for the control of electric motors. It has the main manufacturing site in the UK and the subcontractor site in China. The company's strategy is to concentrate on delivering drives and servo products that enhance the productivity of its customers' machines and processes. From simple stand alone drives to complex multidrive applications, the company's strategy is focussed on delivering solutions at the process or machine level that make a difference to its customers. The company has established drive and applications centres around the world to distribute its products and add value by building its drive products into custom designed systems. The drive centres also provide the company with feedback and market.

The significant change for the company happened in 1995 when the company merged with a big American company group making Elec-co become a major player in the USA servo market. The company benefits from this merger with a huge pool of knowledge in all aspects of product and process. Moreover, the

American group provides very strong financial stability and effective management processes. Elec-co's strategic direction is mainly in line with the American of which it is part.

The company produces in three manufacturing sites: the main production site and research and development team is in the UK; the US site produces products for niche market; the Chinese subcontractor produces small products. The company expanded its infrastructure by moving to subcontractor in low cost labour country. The drivers to put the company to outsource to China were cost reduction and the need for more capacity. By putting products to China, its strategy is to manufacture a large product close to customer and gradually remove small products to low cost manufacturing location to continue manufacturing large products in the UK. The company started the subcontractor to try to produce small products in parallel in the UK in order to compare the results. It was found out with very high quality of subcontractor. Has been working with the subcontractor for five years, the company satisfies its subcontractor which is capable in manufacturing its products in particular requirements. The company also has learnt know how and manufacturing techniques from its subcontractor.

Stage 1: Issue analysis

The need for the review of competitive position of the company was proactive.

Section 1.1 Identify clear business area for review

In this section, Elec-co has identified the five product families for the purpose of review of competitive position. The company produces these product families at Newton in Mid Wales and subcontracts some of productions to a subcontractor in Guangzhou, China. The company has facility of drive centres in 54 locations across 35 countries.

- Product – Electronic drives for the control of electric motors
- 5 product families are under consideration - SP high performance drive, SK general purpose drive, CGP general purpose drive, ES elevator solutions drive, BA building automation drive
- Components for drives - Power stage and controller volume
- Competitors – ABB, Siemens, Rockwell, Schneider, Danfoss, Yaskawa/Omron, Mitsubishi
- Markets – Americas, Europe/Middle East/Africa (EMEA) and Asia

The company's business strategies concentrate on delivering drives and servo products that enhance the productivity of customers machines and processes and focus on delivering solutions at the process or machine level that make a difference to customers. The over-riding challenge for Elec-co was to reduce inventory cost, reduce lead time and increase on time delivery.

Section 1.2 Analyse SWOT

The results of the SWOT analysis of Elec-co were as follows:

<p>Strengths</p> <ul style="list-style-type: none"> ▪ Knowledge and technology from Emerson group ▪ High performance product sales in EMEA market ▪ Product quality ▪ Drive centre network which provides engineering support to customers 	<p>Weaknesses</p> <ul style="list-style-type: none"> ▪ High inventories from varieties of product mix ▪ Supply chain and complex channel logistics to satisfy global customers ▪ Medium-sized company ▪ Poor delivery performance ▪ IT system
<p>Opportunities</p> <ul style="list-style-type: none"> ▪ Reducing cost through global manufacturing outsourcing ▪ Growing market for the product elevator solutions drive (ES) ▪ New market for building automation drive (BA) ▪ Growing market in Asia ▪ Gaining market share in America 	<p>Threats</p> <ul style="list-style-type: none"> ▪ Low demand growth in Europe ▪ Competitors ▪ Changing of product technology

Section 1.3 Review competitive strategies

The project members were asked to assess the 30 statements in relation to the company's current and desired competitive strategy. The results of the assessment were as follows:

Current competitive strategy: From the assessment, Elec-co's current competitive strategy was assessed to be Customer Intimacy. The company tried to deliver customised solutions to unique customer needs.

Desired competitive strategy: From the assessment, the desired competitive strategy was also assessed as Customer Intimacy. In the future Elec-co wants to focus on Operation Excellent to provide the best total cost and delivery on time to its customers.

Section 1.4 Analyse competitive gaps

The summary of competitive gaps showed that in the area of customer intimacy the company currently matched with the customer requirement and competitor performance, and exceeded in the area of after sales support. However, the company lagged behind its competitors in product availability, product price and time to market which the company perceived as critical and threatening the success of the desired competitive strategy.

Section 1.5 Check alignment between competitive gaps and strategy

Section 1.3 has established that the current and desired strategies of the company were Customer Intimacy. Each performance gaps from the results of Section 1.4 were discussed as follows.

- Product customisation. Even though Elec-co is behind competitors and customer requirements, the gap is not critical because Elec-co positions their products for catalogue product.
- Product availability. This gap is critical and threatens to the success of the desired competitive strategy and the operations of the company.
- Product price/cost. Elec-co positions their product price in middle range so that the gap is not critical. However, the team considered on the operations cost such as inventory cost, which could be improved or reduced, as a result, the product price/cost is more competitive.
- Time to market: The gap is critical. There are two CT has good R&D team but it has limitation on resource constraints. Hence, the team wants to focus time to market on operation side.

The company discussed and agreed that currently the company is doing well in the area of customer intimacy but the company is facing problems on operations, impacting directly to the desired strategy. The company wanted to work on critical gaps in the area of operational excellence.

Section 1.6 Generate issue statement for review

From the above analysis, the issue statement was defined to improve operations and configuration of manufacturing network in order to reduce costs, increase delivery reliability and support varieties of product mix.

Stage 2: Activity landscape

Once the initial activity map was drawn, as shown in Figure 2, the core competences were identified as research and design on drive technology, services from drive centres and production of drive and the ability to produce new drive products. From the identified core competences, the company defined further on core activities which are activities directly related to core competencies. The core activities were defined as drive manufacturing, engineering, research and development, sales, product management, technical support, repair centre and system build.

Stage 3: Future analysis

Section 3.1 Identify significant activities

At this section, the significant activities were identified and they included despatch, drive manufacturing, production planning, sales and activities in drive centres. These activities are the activities that have potential for significant impact towards improving the issue scoped in Stage 1 – if their ownership or state were to be changed.

Section 3.2 Assess changes for significant activities

The assessment of advantages and disadvantages for keeping the significant activities in-house or doing them externally were carried out in this section. The advantages of keeping the significant activities (SMT, CNT, sub-assembly and despatch) in-house are mainly on flexibility for production, high quality control, strategic location which is near to Europe, Middle East and Africa markets. However, the labour cost in the UK is high and the Chinese supplier can product the same quality as the UK plant with lower costs. Knowledge transfer for production to sub-contractor is also an issue because it is a time consuming process, taking time up to 10 months. For the rest significant activities; production planning, drive manufacturing, sales and drive centres, the company perceived them as critical activity to the success of the company and must keep them in-house.

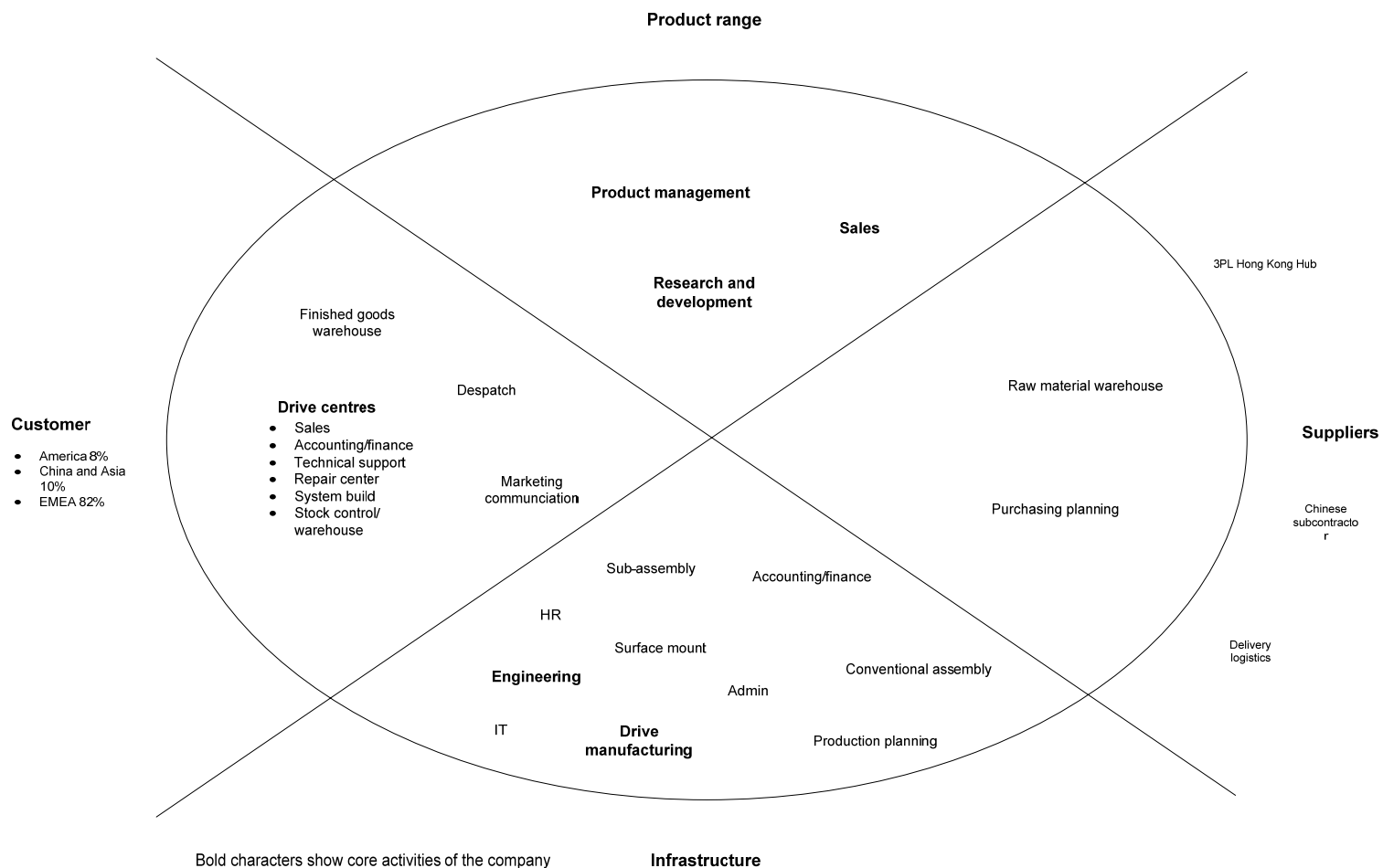


Figure 2: Elec-co's activity landscape

Section 3.3 Propose actions for significant activities

After the assessment for change to the significant activities, in this section, the company propose actions to be taken for the significant activities.

Significant activities	Proposed actions
SMT, CNT, sub-assembly, despatch, drive manufacturing	<p>These activities were decided to remain in the UK however the company clearly defined that the production in the UK plant will serve the European, Middle East and African markets because total cost of the production in the UK is cheaper than those including delivery cost from the Chinese subcontractor. The production of the Chinese subcontractor will serve the Asian and American markets.</p> <p>The performances of the current Chinese subcontractor meet the expectation of the company and therefore the company decided not to change the subcontractor but rather doing more cooperation with this subcontractor.</p>
Production planning	<p>This activity needs to be strengthen as it is very important to other activities such as production schedule, on-time delivery and inventory management. Currently coordination between sales and production planning is poor as well as the efficiency of current production planning method is pretty low. These areas need to be improved.</p>
Drive centres	<p>The visibility of drive centres to check inventory in the Chinese subcontractor is very low because the inventory in China and Hong Kong hub is updated manually, once in a day. As a result, each drive centre does not know the real time inventory and this causes the problem of delivery promise to customers. Therefore, the visibility in the supply chain needs to be improved.</p>

Stage 4: Configuration analysis

In stage 3, the company proposed the actions to improve its significant activities regarding to the issue statement. The results confirmed the current competitive space for the future competitive space. At this stage, the company analysed the configuration of its internal significant activities. The company brainstormed and

listed potential configuration options. From the issue statement, the criteria were defined as delivery reliability, cost and flexibility. The options were narrowed the options down by using the identified criteria into two options.

- The first option, the current configuration option, is to deliver products from the UK plant to each drive centres in Europe, Middle East and Africa. Each drive centre controls its inventory and use information and Kanban system to place and receive an order. The products from the Chinese subcontractor are delivered to drive centres in China and the third party logistics hub in Hong Kong. The Hong Kong hub distributes product to Asian and American drive centres.
- The second option is to encourage direct shipment from the UK plant to customers in Europe. This direct shipment can be applied only for the customers in Europe as there is no tax among EU countries while maintain the same system for the rest of drive centres.

Stage 5: Evaluation

At this stage, the company studied more in-depth on the two options. They selected factors for performance, financial and geographic analysis and business risks as shown in the table below.

Categories	Factors
Performance analysis	Performance objectives from competitive strategies: delivery lead time, product cost, customer service level, flexibility, delivery reliability, market orientation, service customisation, flexibility Supply chain: supply chain flexibility, supply chain agility, supply chain reliability, supply chain responsiveness
Financial analysis	Product cost, inventory cost
Geographic analysis	Infrastructure, law/regulation, integration with customers
Business risks	Currency risk

Stage 6: Selection and action plan

The second configuration option was studied in-detail to compare the benefits and risks to the current configuration option. From the study, the company found that with the new configuration, the inventory cost will be reduced massively. The total cost of the new option is less than the current system around 4%. Moreover, the company will be able to apply postponement technique more effectively for the European customers. This will reduce inventory cost in each drive centre and in the UK plant. However, on-time delivery could be reduced if production planning and the flow of the supply chain can not support this new system. The company realised that it is necessary to start with pilot project before applying to all European customers.

The action plan was generated to minimise risks and maximise benefits of the selected configuration. Nevertheless, this action plan will be further developed by the quality manager and submit to the general manager to approve.

Future action
<ul style="list-style-type: none"> ▪ Encourage drive centres to do direct shipment by paying logistics fee for them
<ul style="list-style-type: none"> ▪ Improve information system to provide real time information among the UK plant, the Chinese subcontractor, the third party logistics hub in Hong Kong and drive centres
<ul style="list-style-type: none"> ▪ Improve coordination between sales and production planning
<ul style="list-style-type: none"> ▪ Optimise new level of safety stock and sock in Kanban system
<ul style="list-style-type: none"> ▪ Update the production schedule on daily basis
<ul style="list-style-type: none"> ▪ Change the focus of drive centres from product delivery to customer service
<ul style="list-style-type: none"> ▪ Use performance measurements to monitor the change closely

**APPENDIX D: CASE STUDY APPLICATIONS OF REFINED PILOT
METHODOLOGY**

1. CASE 7: STEEL-CO – APPLICATION OF THE REFINED PILOT METHODOLOGY

Steel-co is a subsidiary company of a German group which is the world's largest manufacturer, processor and distributor of special long steel products. The group was established in 1919. The group enters the market under a unified brand name as an independent, worldwide operative and competent supplier of high quality long steel products. The group belongs to the worldwide leaders in important market segments. It encompasses the production, processing and distribution of special steels. The group has more than 11,000 employees and Steel-co, located in UK, has 50 employees. Steel-co is a leading supplier of tool steels and speciality steel forgings used for general engineering application, oilfield equipment and continuous casting plants roll. The requirements that these steels must meet are as individual as the many different application areas in which they are used. In order to be able to fulfil them reliably, it takes both decades of experience and state-of-the-art production lines. The products are supplied to companies within the group and to worldwide customers.

Stage 1: Issue analysis

The need for the review of competitive position of the company was proactive.

Section 1.1 Identify clear business area for review

In this section, Steel-co has identified the UK tool steel division including supply of oilfield components and continuous casting plant rollers for the purpose of review of competitive position. The company has a vision to create a world class processing and distribution environment for the supply of tool steel. The company has to perform its operation to meet the standards of the corporate. The company business strategies are to focus on niche markets, gain more market share in UK, and diversify products in related markets. To achieve the business strategies, the operations strategy has been planned three year in advance. The over-riding challenge for Steel-co was to develop sales of tool steel, to do maintenance for production equipment, to improve plant layout more efficiency and to improve operator experience.

Section 1.2 Analyse SWOT

The results of the SWOT analysis of Steel-co were as follows:

<p>Strengths</p> <ul style="list-style-type: none"> ▪ Support from companies in the group ▪ Product quality ▪ Brand recognition ▪ Knowledge resources 	<p>Weaknesses</p> <ul style="list-style-type: none"> ▪ Utilising buildings and plant maintenance ▪ Inventory costs and low stock turn over ▪ Replacing skilled machinists
<p>Opportunities</p> <ul style="list-style-type: none"> ▪ Penetrating existing UK tool steel market ▪ New market on hot work die steel in France and Europe ▪ Exchange rate changes 	<p>Threats</p> <ul style="list-style-type: none"> ▪ Cheaper foreign competition ▪ Availability of skilled labour ▪ Repositioning within group ▪ Exchange rate changes

Section 1.3 Review competitive strategies

The project members were asked to assess the 30 statements in relation to the company's current and desired competitive strategy. The results of the assessment were as follows:

Current competitive strategy: From the assessment, Steel-co's current competitive strategy was assessed to be Customer Intimacy.

Desired competitive strategy: From the assessment, the desired competitive strategy was also assessed as Customer Intimacy. The company focuses on delivering what specific customers want, cultivating relationships. The company tries to specialise in satisfying unique needs, through a close relationship with and intimate knowledge of the customer.

Section 1.4 Analyse competitive gaps

The summary of competitive gaps showed that in the area of customer intimacy the company currently exceeded customer requirements in all criteria and exceeded its competitors in service customisation. The company also exceeded customer requirements on product attributes. Mostly, the company matched its

competitors and did not lag behind its competitors or customer requirements in any criteria.

Section 1.5 Check alignment between competitive gaps and strategy

Section 1.3 has established that the current and desired strategies of the company were Customer Intimacy. Even though the company rated itself above or in the same level with its competitors and customer requirements, the company aimed to further exceed competition in service customisation, product customisation, after sales support and product availability.

Section 1.6 Generate issue statement for review

From the above analysis, the issue statement was defined to evaluate manufacturing and distribution in the UK: either investing in existing plant, or relocate the alternative premises or outsource machining operations within the group.

Stage 2: Mapping current supply chain position

Section 2.1 Identify supply chain position

At this section, the company identified its supply chain position as follows.

Location	UK	Europe	Asia	North America
Raw material suppliers	5%	42%	3%	50%
Internal functions	Steel stock, sawing, heat treatment, machining			
Outsourcing suppliers	Heat treatment, machining	Machining		
Customers	85%	12%	3%	3%

Section 2.2 Identify activity position

The company created its activity position as shown in Figure 3.

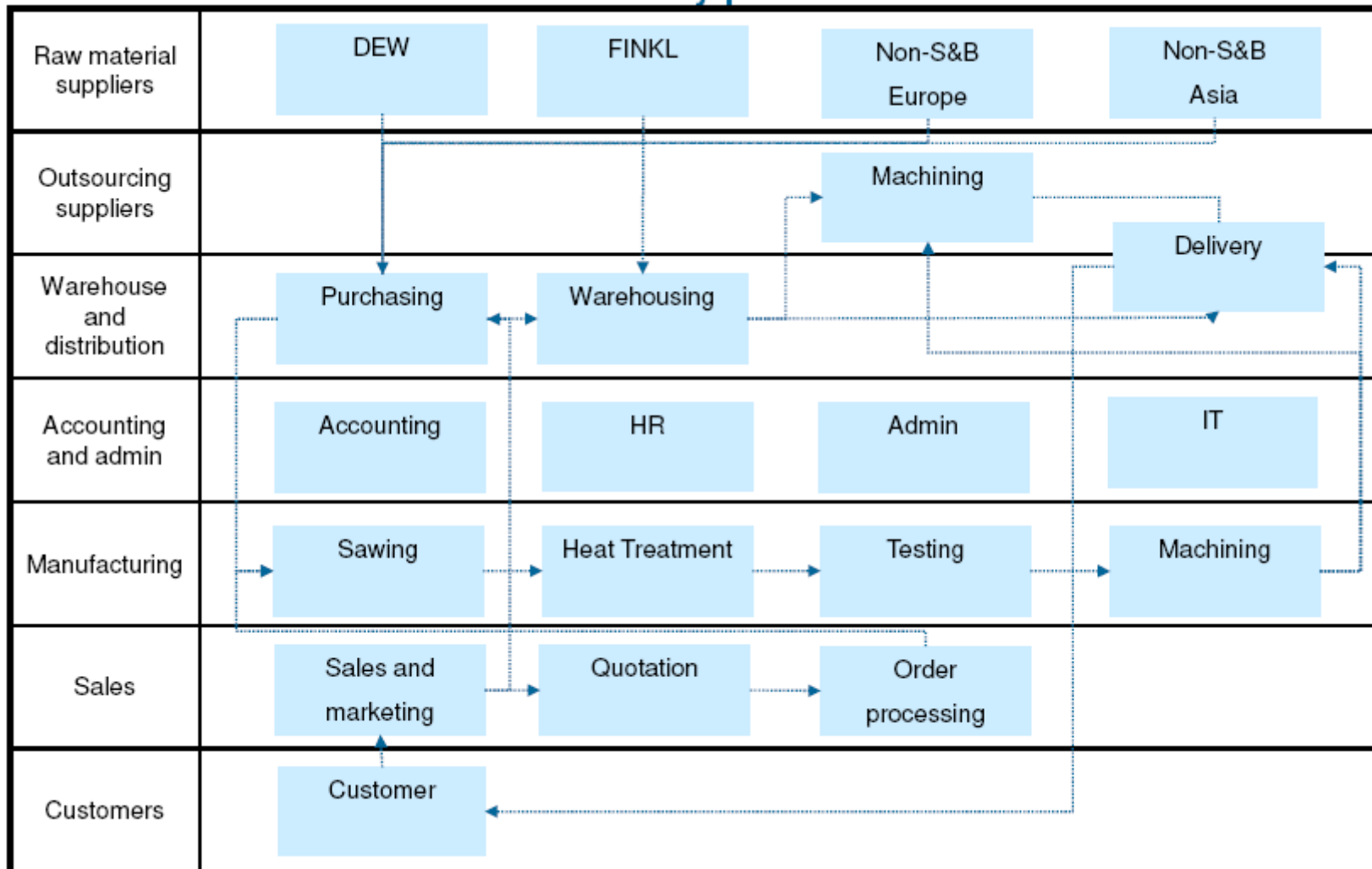


Figure 3: Steel-co's activity map

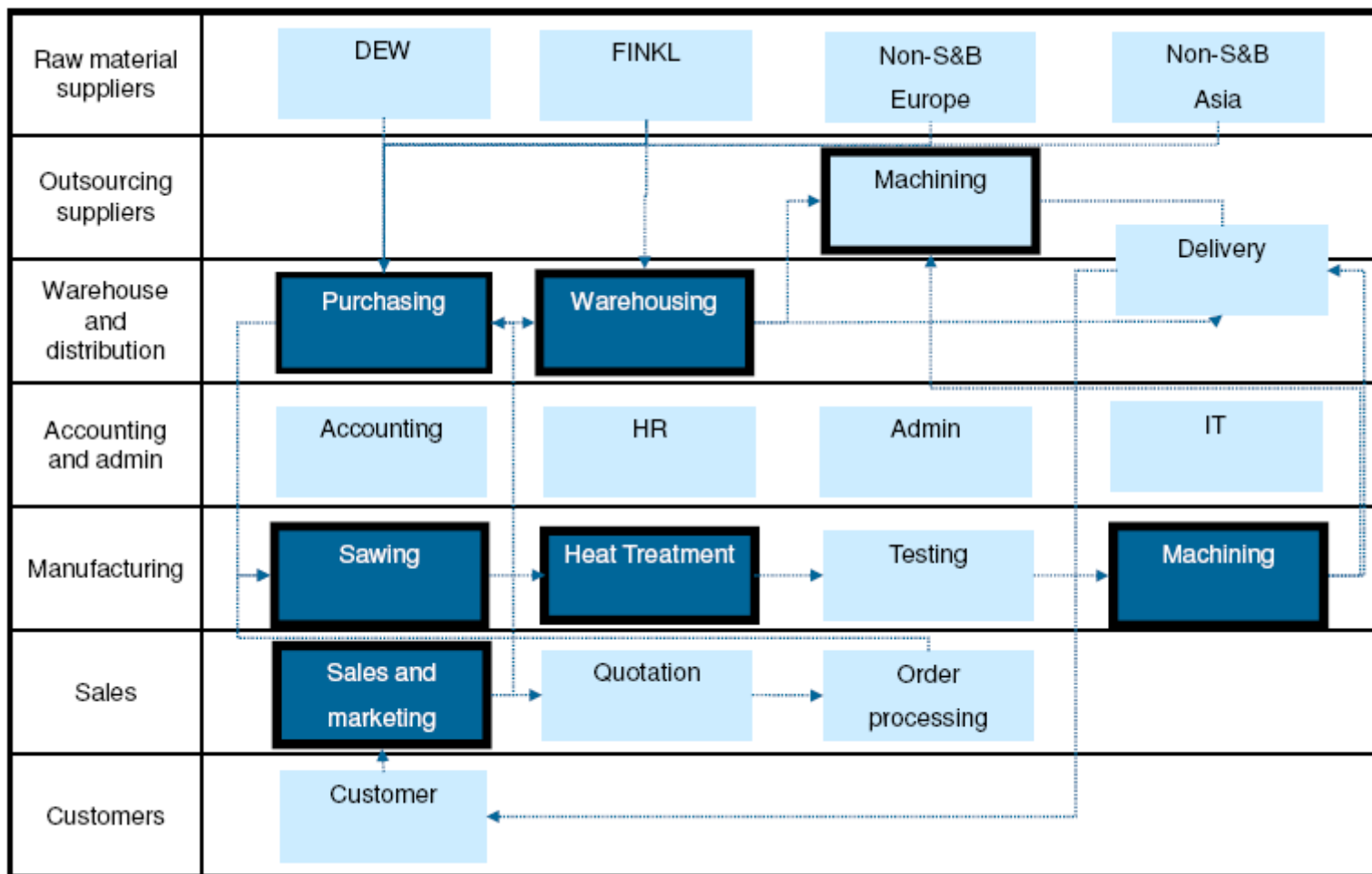


Figure 4: Steel-co's significant activity map

Note: A dark blue block represents a core activity. A black frame block represents a significant activity.

Section 2.3 Identify core competences

Core competences of the company were defined as research and development, technical support and complete manufacturing from melting steel to finished product. After defining its core competences, the company discussed on the link of its core competences to its current and desired competitive strategy.

Section 2.4 Identify core activity position

In this section, the company was tasked to identify its core activity. From the results of the previous section, the company was able to identify its core activities easier. Its core activities include purchasing, warehousing, sawing, heat treatment, machining, sales and marketing.

Stage 3: Future analysis

Section 3.1 Identify significant activities

At this section, the significant activities were identified and they included machining, purchasing, warehousing, sawing, heat treatment, machining, sales and marketing, as shown in Figure 4. These activities are the activities that have potential for significant impact towards improving the issue scoped in Stage 1 – if their ownership or state were to be changed.

Section 3.2 Assess changes for significant activities

The assessment of advantages and disadvantages for keeping the significant activities in-house or doing them externally were carried out in this section as shown in Table 1.

Section 3.3 Propose actions for significant activities

At this section, the project members brainstormed and proposed the actions to be carried out for the related significant activities to achieve the issue statement, the desired strategy and to minimise the competitive gaps. A summary of the actions proposed to be taken is shown in Table 2.

Table 1: Internal/external assessment

	Significant activities	Advantages for keeping in-house	Disadvantages for keeping in-house	Advantages for doing externally	Disadvantages for doing externally
	Heat treatment	Flexibility	Age and size of equipment	-	Cost and availability
Core activities	Sales and marketing	Key activity which drive business	-	-	Lack of product realisation knowledge
	Purchasing	Integral part of process planning	-	-	-
	Warehousing	Essence of the business	Cost of inventory	-	-
	Sawing	Flexibility and cost	-	-	Transport problems
	Machining	Flexibility in scheduling	Costs for machine retrofitting and skills shortage	Massive resource at German plant	Transport costs and response time

Table 2: Action analysis

Significant activities	Proposed actions
Sales and marketing	Need to evaluate sales team to exploit market opportunities, with operations co-ordinated from UK Tool Steel Headquarter
Purchasing	Develop relationships with group, co-ordinated from UK Tool Steel Headquarter
Warehousing	Retain at least 3000 msq for warehouse operation at either existing or new site. Significant investment in buildings/maintenance required 2009/2010
Sawing	Continue as an integral part of UK operations, investment in new saw required 2009/2010

Significant activities	Proposed actions
Heat treatment	Continue as an integral part of UK operations, investment in new equipment/maintenance required 2009/2010
Machining	Retain at least 1000 msq for machine shop operation at either existing or new site. Significant investment in new equipment/maintenance required 2009/2010. Possibility to outsource this activity to a company within the group in Germany

Stage 4: Configuration analysis

In stage 3, the company proposed the actions to improve its significant activities regarding to the issue statement. The results confirmed the current competitive space for the future competitive space. At this stage, the company analysed the configuration of its internal significant activities. The company brainstormed and listed potential configuration into three options.

- Invest capital expenditure on buildings and machinery - retaining full UK manufacturing capability
- Relocate (leasehold) with investment in machinery – outsourcing within group part of machining requirement
- Merge with other companies in the group – abandoning 70% of machining capability

The screening factors were determined from the issue statement as brand reputation, quality, costs and service response. By using these criteria to screen the options, the first and second options were continue to study in-depth in the next stage.

Stage 5: Evaluation

At this stage, the company studied more in-depth in the two options. They selected factors for performance, financial and geographic analysis and business risks as shown in Table 3.

Table 3: Determining factors for evaluation factors

Categories	Factors
Performance analysis	Product/service customisation and availability, manufacturing capability, product price, supply chain flexibility
Financial analysis	Cost of implementation, product cost, profitability
Geographic analysis	Infrastructure, law/regulation, integration with customers
Business risks	Operational inefficiency/irreversibility, currency risks, lack of control

Stage 6: Selection and action plan

The performance, financial, geographic analysis and business risks of the two options were studied. From the analysis, the first option was selected as the first option had less investment and provided better logistics performance. Moreover, the second option had more business risks; increasing cost of material, irreversible from the high investment, lack of control in outsourced machining activities and lateral transfer of knowledge between business units. To carry out the results from the methodology, the project members summarised the proposed actions and established a draft plan and an action plan, as exhibited in Table 4.

Table 4: Action plan

Activity	By whom	Time
Sales forecast 2009-2012 and 2008/2009 budget	General manager	June 2008
3 year operations strategy	Managing director	July 2008
Detailed investment plan for 2009/2010	Operations manager	August 2008
Rough-cut investment plan for 2011/2012	Operations manager	November 2008

2. CASE 8: GARMENT-CO – APPLICATION OF THE REFINED PILOT METHODOLOGY

Garment-co is a local Thai company, found in 1971. The company is in the garment manufacturing business, producing casual apparel and sport wear products. It has production capacity at 120,000 – 150,000 clothes per month. The 99% of customers are in Europe and 1% is within domestic. Currently, the company is facing a tough challenge from lower cost countries such as China and Vietnam. The company is looking for strategic positioning initiatives to improve its competitive position.

Stage 1: Issue analysis

The need for the review of competitive position of the company was reactive.

Section 1.1 Identify clear business area for review

In this section, Garment-co has identified the whole company business as the business area for review. The business strategies focus on quality of the products and customer satisfaction as the company manufactures according to customer orders in customers' brand names. The over-riding challenge for Garment-co was to reduce costs in order to compete with other companies in lower cost countries such as China and Vietnam.

Section 1.2 Analyse SWOT

The results of the SWOT analysis of Garment- co were as follows:

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Thirty three years reputation in make-to-order for garment industry ▪ Financial stability ▪ Skilled labour ▪ Continuous improvement 	<ul style="list-style-type: none"> ▪ High waste ▪ Few trading collaborations ▪ Inefficient capacity ▪ High customer's bargaining power

Opportunities	Threats
<ul style="list-style-type: none"> ▪ Improving current operations ▪ Adding more value to customers 	<ul style="list-style-type: none"> ▪ Cheaper products from lower cost countries ▪ Competitors getting better labour skills, operation methods and cheaper raw materials

Section 1.3 Review competitive strategies

The project members were asked to assess the 30 statements in relation to the company's current and desired competitive strategy. The results of the assessment were as follows:

Current competitive strategy: From the assessment, Garment-co's current competitive strategy was assessed to be Customer Intimacy. The company currently offers high product and service customisation to the customers. The company has small numbers of customers but they place order in high quantity.

Desired competitive strategy: In the future the company would like to focus on best quality product and providing the best total cost and delivery on time. Clearly the desired competitive strategy of the company was assessed to be Operational Excellence, supported closely by Customer Intimacy.

Section 1.4 Analyse competitive gaps

The summary of competitive gaps showed that in the area of operational excellence the company has critical gaps on product availability and product price. In product leadership, the company has critical gaps on time to market and new production rate.

Section 1.5 Check alignment between competitive gaps and strategy

Section 1.3 has established that the current strategy was Customer Intimacy and the desired strategy was Operational Excellence. The company has critical gaps in the area of operational excellence. Thus, the company agreed to improve the gaps of operational excellence which is its desired competitive strategy.

Section 1.6 Generate issue statement for review

From the above analysis, the issue statement was defined to reduce costs, improve quality and increase delivery on time.

Stage 2: Mapping current supply chain position

At this section, the company identified its supply chain position as follows.

Location	Thailand	Aboard
Raw material suppliers	80%	20%
Internal functions	Warehousing, admin and IT, manufacturing, sales and merchandising, marketing and commercial, technical and maintenance	
Outsourcing suppliers	Logistics, temporary sub-contractor	
Customers	1%	99%

Section 2.2 Identify activity position

The company created its activity position as shown in Figure 5.

Section 2.3 Identify core competences

Core competences of the company were defined as sales and marketing and company image. After defining its core competences, the company discussed on the link of its core competences to its current and desired competitive strategy. The project members realised that these core competences do not last long term as their competitors can also reach the same stage of the core competences.

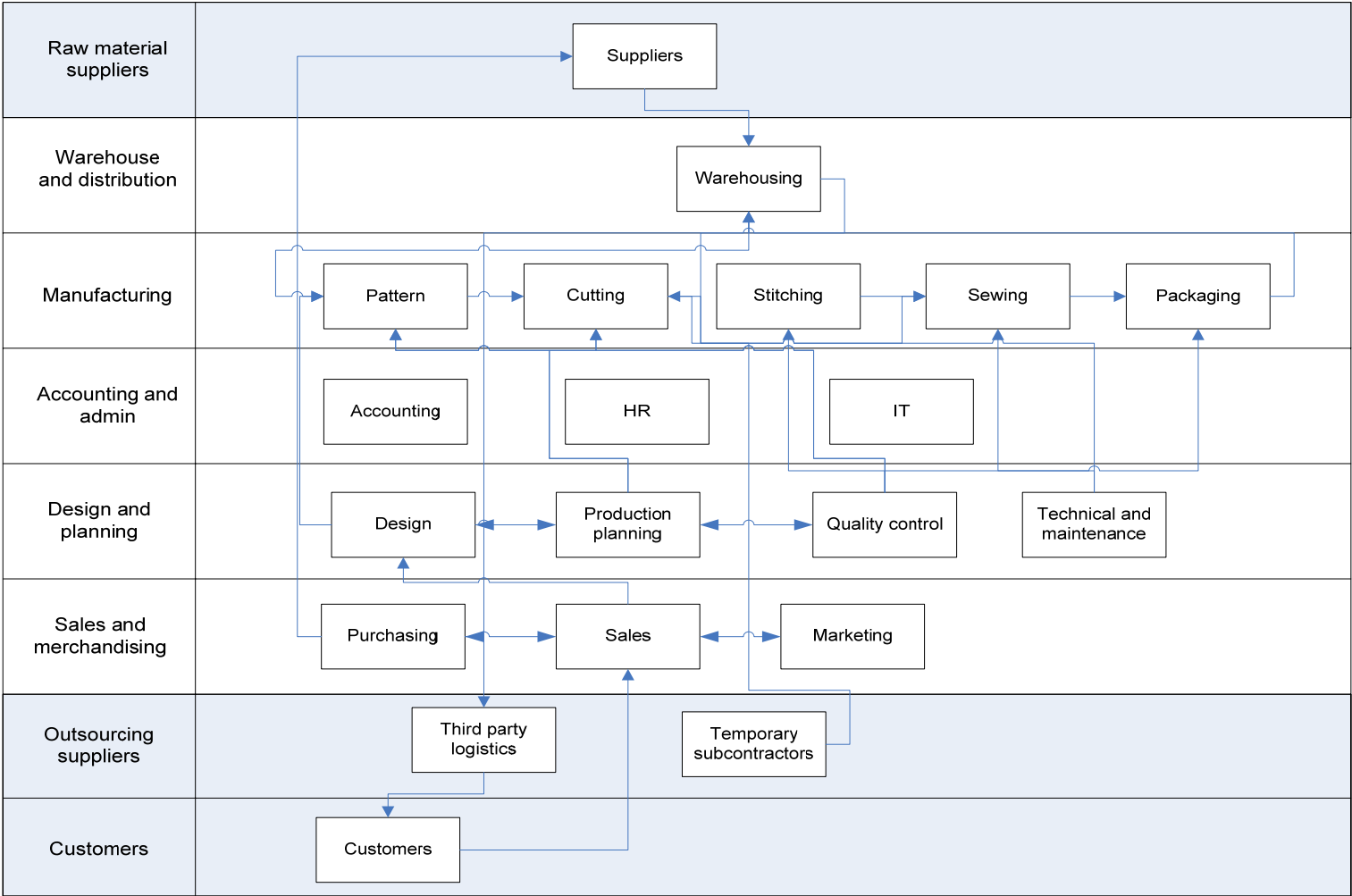


Figure 5: Garment-co’s activity landscape

Section 2.4 Identify core activity position

In this section, the company was tasked to identify its core activity. From the results of the previous section, the company was able to identify its core activities easier. Its core activities include sales, marketing, pattern and quality control.

Stage 3: Future analysis

At this section, the significant activities were identified and they included warehousing, production planning, purchasing, design, physical flows in manufacturing marketing and sales. These activities are the activities that have potential for significant impact towards improving the issue scoped in Stage 1 – if their ownership or state were to be changed.

After identifying the significant activities, the assessment of advantages and disadvantages for keeping the significant activities in-house or doing them externally were carried out. The project members brainstormed and proposed the actions to be carried out for the related significant activities to achieve the issue statement, the desired strategy and to minimise the competitive gaps. A summary of the actions proposed to be taken is shown in Table 5.

Table 5: Significant activities and proposed actions

Significant activities	Proposed actions	Initiatives
Warehousing	Keep and strengthen	Apply real time stock and get rid of old stock
Production planning	Keep and strengthen	Coordinate with sales team for sales and operation planning
Purchasing	Keep and strengthen	Study the history of purchasing and analyse factors of wastes in purchasing, improve supplier relationship, share information between the company and suppliers
Physical flows in manufacturing	Strengthen	Reduce waste in the process, change forms, improve visibility of physical movements in the production

Significant activities	Proposed actions	Initiatives
Sales	Strengthen	Analyse customer satisfaction, customer trend and work on collaboration with customers
Marketing	Strengthen	Enhance company image
Design	Grow	Change the procedure method and encourage new designs

Stage 4: Configuration analysis

In stage 3, the company proposed the actions to be taken for its significant activities regarding to the issue statement. The results confirmed the current competitive space for the future competitive space. At this stage, the company analysed the configuration of its internal significant activities. The company brainstormed and listed potential configuration. The screening factors were determined from the issue statement as cost and quality. By using these criteria to screen the options, the configuration options were narrowed down into two choices. The first choice is to confirm the current configuration – maintain the production plant in Thailand. The second choice is to downsize the production plan in Thailand and offshore production to Vietnam. These two options were studied and discussed among the team members in detail.

Stage 5: Evaluation

At this stage, the company studied more in-depth in the two options. They selected factors for performance, financial and geographic analysis and business risks as shown in Table 6.

Table 6: Determining factors for evaluation factors

Categories	Factors
Performance analysis	Deliver lead time, product cost, quality of product, customer service level, delivery reliability, manufacturing capability, supply chain flexibility, supply chain reliability and responsiveness

Categories	Factors
Financial analysis	Net present value, cost of implementation, IRR, payback period
Geographic analysis	Infrastructure, law/regulation, integration with customers, labour characteristics, suppliers, transportation mode, economic factor, government and political factor
Business risks	Employee morale, irreversible, transferring knowledge to the new location, customer perception

Stage 6: Selection and action plan

At this stage, the project members discussed on the options and the decision was made to confirm the current configuration as the most appropriate option. However, in order to achieve the aim of project on the issue statement, actions and initiatives need to be implemented to the production plant in Thailand. The opportunity for offshoring should be reviewed every six months. Consequently, the project members summarised the results in order to allocate future actions, and assign responsibilities and timescales for the company to further validate and develop a business case, as shown in Table 7.

Table 7: Action plan

Activity	Propose actions	By whom	Time
Warehousing	Keep and strengthen	Production manager	4 months
Production planning	Keep and strengthen	Pre- production manger	3 months
Purchasing	Keep and strengthen	Sales merchandising manager	3 months
Physical flows in manufacturing	Strengthen	Production manger	4 months
Sales	Strengthen	Sales merchandising manager	3 months
Marketing	Strengthen	Sales merchandising manager	4 months
Design	Grow	Quality manager	6 months
Opportunities to offshore	-	Managing director	6 months

3. CASE 9: TOOL-CO – APPLICATION OF THE REFINED PILOT METHODOLOGY

Tool-co, located in Singapore, was found in 1973. The company was bought by a Japanese machine tools manufacturer in 1992. Tool-co designs, manufactures and markets Computer Numerical Control (CNC) machining centres regionally. The company currently is recognised by the international machine tool industry for its product and service quality, and advanced technology. It has placed strong commitment to research and development to enable the company to become a leading regional machine tools builder. It offers many types of products and services including major overhauling and retrofitting on all types of milling machines, factory automation and robotics. The main customer markets targeted are automobile parts machining, die/mould machining (plastic injection) and aerospace components.

Stage 1: Issue analysis

The need for the review of competitive position of the company was proactive.

Section 1.1 Identify clear business area for review

In this section, Tool-co has identified the milling machine business area for the purpose of review of competitive position. Tool-co designs, manufactures and markets Computer Numerical Control (CNC) machining centres regionally. The main competitors in the milling market are Japanese counterparts, German companies, Taiwanese and Korean machine tools companies. The company's business strategy is to become the leader in machine tool by introducing, designing and building new technologies and value-added intelligent machines to stay competitive in the market and maintain the orders from customers. Therefore, the over-riding challenge for Tool-co was to become the regional leader in machine tool and to increase the production output, and shorten the lead-time and delivery time to customers. They also wanted to sustain the customer orders, stay competitive in the market, introduce new technologies, strengthen R&D to design and build value-added intelligent machines.

Section 1.2 Analyse SWOT

The results of the SWOT analysis of Tool-co were as follows:

<p>Strengths</p> <ul style="list-style-type: none"> ▪ Strong brand ▪ Strong capability in production ▪ Good production location 	<p>Weaknesses</p> <ul style="list-style-type: none"> ▪ Not strong in R&D ▪ High production cost ▪ Low production volume
<p>Opportunities</p> <ul style="list-style-type: none"> ▪ Strengthen R&D ▪ Move production offshore to lower cost country 	<p>Threats</p> <ul style="list-style-type: none"> ▪ Most competitors have manufacturing plants in lower cost countries than Singapore and so are able to produce lower cost machines ▪ Newer models of machines introduced into the market

Section 1.3 Review competitive strategies

The project members were asked to assess the 30 statements in relation to the company's current and desired competitive strategy. The results of the assessment were as follows:

Current competitive strategy: From the assessment, Tool-co's current competitive strategy was assessed to be Operational Excellence. The company currently offers the best quality product at the best total cost to customers. To do so, it has standardised and efficient operating procedures, quick delivery, dependable services and low cost product and service support.

Desired competitive strategy: From the assessment, the desired competitive strategy was assessed to be Product Leadership. In the future, the company plans to focus on invention, commercialisation and market exploitation, by frequently reviewing its product portfolio. They plan to focus on product technology, reduce R&D cycle time and time to market, so that they can be the provider of leading products to be offered at a premium prices.

Section 1.4 Analyse competitive gaps

The summary of competitive gaps showed that in the area of operational excellence the company currently matched with the customer requirement, but lagged the competitor performance in product availability. In terms of product leadership, the company lagged behind the competitors in product attributes, time to market and especially in new product introduction rate.

Section 1.5 Check alignment between competitive gaps and strategy

Section 1.3 has established that the current and desired strategies of the company were Operational Excellence and Product Leadership respectively. Hence, the current competitive gaps between the company and competitors performance were critical and improvement were needed in the areas of operational excellence and product leadership.

Section 1.6 Generate issue statement for review

From the above analysis, the issue statement was defined to become the regional leader in machine tool and to increase production output, and shorten the lead-time and delivery time to customers.

Stage 2: Mapping current supply chain position

Section 2.1 Identify supply chain position

At this section, the company identified its supply chain position as follows.

Location	Singapore	China	India	Japan
External	Suppliers	Suppliers	Suppliers	Suppliers
Internal functions	Finance, R&D, planning and purchasing, machining, production, turkey applications, customer services, sales	Casting, machining, and production	Machining and production	

Section 2.2 Identify activity position

The company created its activity position as shown in Figure 6.

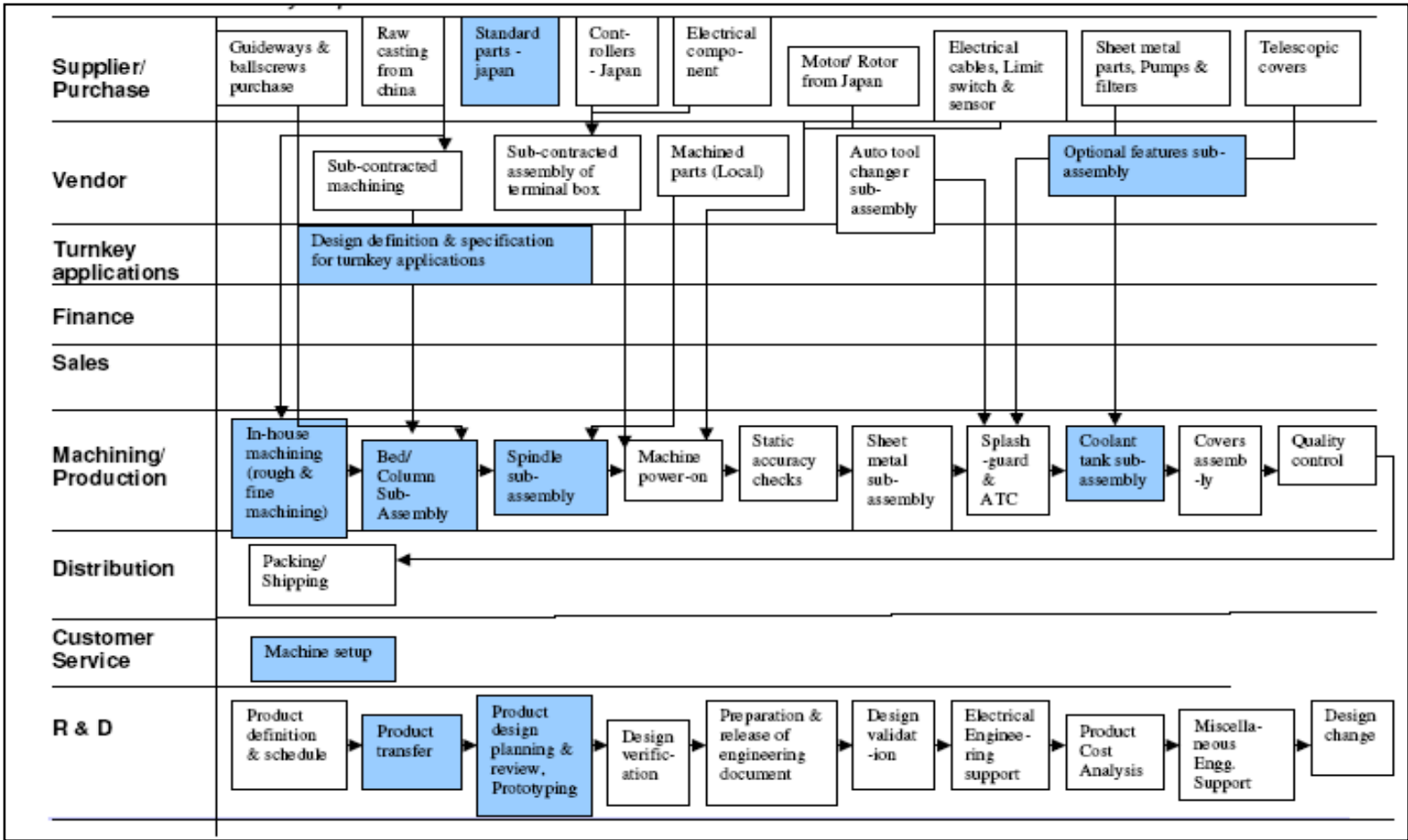


Figure 6: Tool-co's activity position

Section 2.3 Identify core competences

Core competences of the company were defined as managerial know how, resources, cutting edge technology, brand name and image. After defining its core competences, the company discussed on the link of its core competences to its current and desired competitive strategy.

Section 2.4 Identify core activity position

In this section, the company was tasked to identify its core activity. From the results of the previous section, the company was able to identify its core activities easier. Its core activities include research and development, production (assembly), marketing and sales, and turn key solutions.

Stage 3: Future analysis

At this section, the significant activities were identified and they included rough/fine machining of raw castings, optional features sub-assembly, final sub-assemblies for spindle sub-assembly, product transfer, design & prototyping, standard parts purchase, design definition & specification, customer service, new product development and market diversification, as shown in shaded block in Figure 5. These activities are the activities that have potential for significant impact towards improving the issue scoped in Stage 1 – if their ownership or state were to be changed.

After identifying the significant activities, the assessment of advantages and disadvantages for keeping the significant activities in-house or doing them externally were carried out. The project members brainstormed and proposed the actions to be carried out for the related significant activities to achieve the issue statement, the desired strategy and to minimise the competitive gaps. A summary of the actions proposed to be taken is shown in Table 8, and the future competitive space is shown in Figure 7.

Table 8: Significant activities and proposed actions

Significant activities	Proposed actions
In-house machining	Outsource
Optional features sub assembly	Keep and grow outside
Bed/column sub-assembly	Outsource
Spindle sub-assembly	Outsource
Coolant tank sub-assembly	Outsource
Product transfer	Bring in-house
Design & prototyping	Keep & grow
Standard parts supply	Bring in-house
Design definition & specialisation	Keep & grow
New product development	Keep & grow
Market diversification	Bring in-house

Stage 4: Configuration analysis

In stage 3, the company proposed the actions to improve its significant activities regarding to the issue statement. The results included outsourcing the current internal activities. In this stage, the project members were tasked to analyse to find configuration options for those activities.

Current configuration

- Company location – Singapore
- Headquarter in Japan – supply motor, cont-rollers
- Chinese outsourcing suppliers – casting, machining, and production
- Indian outsourcing suppliers – machining and production
- Local vendors – electrical cables, sheet metal fabrication
- New outsourced activities (results from stage 3) – In-house machining (rough and fine machining), bed/column sub-assembly, spindle sub-assembly, coolant tank sub-assembly

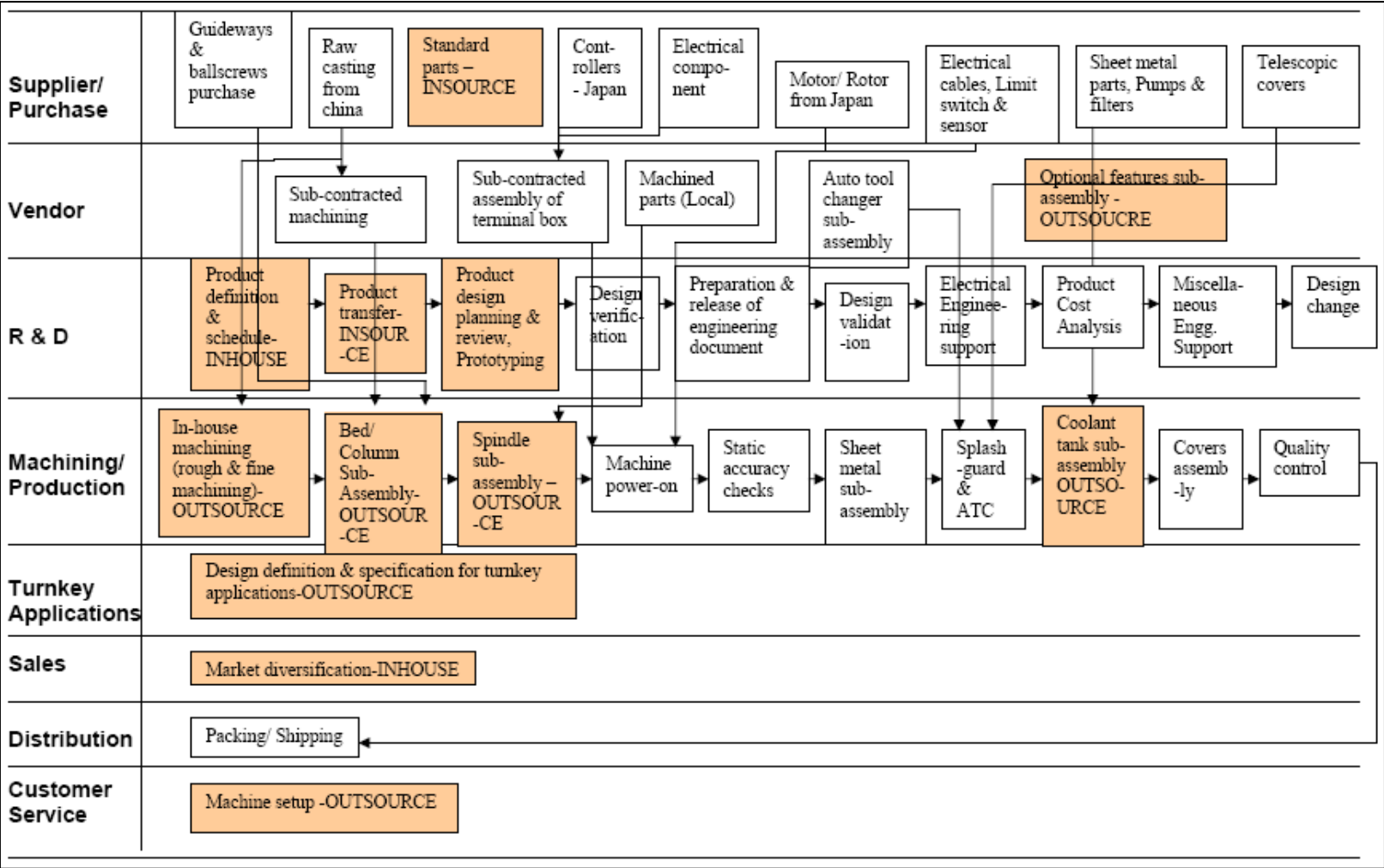


Figure 7: Future competitive space

The screening factors were determined from the issue statement as time to market, new product introduction rate, and supporting capacity increment. By using these criteria, the company defined the configuration option for further detailed study as follows:

Current configuration

- Company location – Singapore
- Headquarter – Japan – supply motor, cont-rollers
- Chinese outsourcing suppliers - casting, machining, and production
- Indian outsourcing suppliers – machining and production
- Local vendors – electrical cables, sheet metal fabrication

New outsourced activities (results from stage 3)

- In-house machining (rough and fine machining) – China
- bed/column sub-assembly – China
- spindle sub-assembly – local supplier
- coolant tank sub-assembly – local supplier

Stage 5: Evaluation

At this stage, the company studied more in-depth on the new outsourced activities. They selected factors for performance, financial and geographic analysis and business risks as shown in Table 9.

Table 9: Determining factors for evaluation factors

Categories	Factors
Performance analysis	Product price (total cost), quality conformance, time to market, new product introduction rate, supply chain flexibility, supply chain reliability, supply chain responsiveness
Financial analysis	Cost
Geographic analysis	Integration with the company, infrastructure
Business risks	Service quality, lack of control, supply disruption

Stage 6: Selection and action plan

In this stage, the project members discussed on the option of the main production plant in Singapore and the four activities outsourced to China and local vendor. In terms of investment analysis, the project members commented that the company will be able to cut cost down and focus on more research & development in order to achieve the aim of product leadership. Even though Singapore is a country where has higher labour costs than many other countries in Asia, the company still realised the benefits of having the main plant in Singapore. Singapore is well-connected globally from its strategic position. The country is also politically stable and safe living environment. Workforce characteristics are able to speak numerous languages. The opportunity for Singapore plant is still strong. The company currently outsources machining to China subcontractor. Experience from working with China subcontractor can be used for two new activities that will be outsourced to China. This option would produce the least business risks to the company. The action was generated in this stage, as exhibited in Table 10.

Table 10: Action plan

Significant activities	Future actions	Responsibilities	Time scales
In-house machining	Outsource to Chinese subcontractor	Production department and purchasing department	6 months
Optional features sub assembly	Keep and grow outside	Chinese supplier	6 months
Bed/column sub-assembly	Outsource to Chinese subcontractor	Production department and purchasing department	6 months
Spindle sub-assembly	Outsource to local vendor	Production department and purchasing department	6 months
Coolant tank sub-assembly	Outsource to local vendor	Production department and purchasing department	6 months
Product transfer	Bring in-house	R&D department	6 months
Design & prototyping	Keep & grow	R&D department	6 months
Standard parts supply	Bring in-house	Supplier	6 months

Significant activities	Future actions	Responsibilities	Time scales
Design definition & specialisation	Keep & grow	Turnkey application department	6 months
New product development	Keep & grow	R&D department	6 months
Market diversification	Bring in-house	Market department	6 months

4. CASE 10: TYRE-CO – APPLICATION OF THE REFINED PILOT METHODOLOGY

Tyre-co, established in the 1930s, is a Singapore-based global distributor and retailer of tyres, wheels and car accessories. The company has a manufacturing facility in Thailand producing custom designed aluminium alloy wheels primarily for the aftermarket sectors. The plant has a capacity to produce 480,000 wheels annually with both the first and second production lines producing 40,000 wheels per month. Eighty percent of the wheels is targeted to be exported to the markets of South East Asia, Asia Pacific, America and Europe while the rest are distributed in Thailand.

Stage 1: Issue analysis

The need for the review of competitive position of the company was proactive.

Section 1.1 Identify clear business area for review

In this section, Tyre-co has identified the after market aluminium alloy rim as the business area for reviewing its competitive position. Tyre-co offers high quality and large variety sports rim for aftermarket. The characteristics of this market are of high level of customisation, high product mix and low volume production environment. The market position of the company is to offer high quality wheels against market leader like BBS wheels, American Racing Wheels, Konig Wheels etc. at below the premium price. However, because of low production volume and high product variety (lack of the economies of scale), the company's wheel prices are higher than those produced by China and Taiwan wheel producers.

In general, the wheel market can be divided into 2 segments. Those that produce for OEM car makers like Toyota, Honda etc where the volume is high and product variety low and those that produce for the aftermarket. For the aftermarket wheel, a significant amount of the wheel designs are discontinued within a year. Thus, the product life-cycle is relatively short. Branding and marketing play a very important role in this aspect. As the brand is relatively new, approximately 3 years old, the company is facing a tough competition from the low-end and cheap producers and the competition to establish themselves against the big players in the market.

Rising material prices results in high cost price of the wheel. Technology advancement of the low-end producers is catching up. The need of the company is to move up the technology and design chain to compete in the high-end market. The company has also expanded their production to produce for OEM car makers.

Section 1.2 Analyse SWOT

The results of the SWOT analysis of Tyre-co were as follows:

<p>Strengths</p> <ul style="list-style-type: none"> ▪ Low production cost in Thailand ▪ Proximity to the automotive industry in Thailand ▪ Wide distribution network with the parent company's tyre business ▪ Strong marketing team ▪ Good value and quality performance ▪ Good quality and safety accreditation ▪ Links with Singapore research institute 	<p>Weaknesses</p> <ul style="list-style-type: none"> ▪ Lack of strong in-house design team ▪ Branding not strong enough ▪ Poor production control
<p>Opportunities</p> <ul style="list-style-type: none"> ▪ Market growth ▪ Proximity to the automotive industry in Thailand 	<p>Threats</p> <ul style="list-style-type: none"> ▪ Rising capability of the low-cost producer in China ▪ Rising material prices

Section 1.3 Review competitive strategies

The project members were asked to assess the 30 statements in relation to the company's current and desired competitive strategy. The results of the assessment were as follows:

Current competitive strategy: From the assessment, Tyre-co's current competitive strategy was assessed to be Product Leadership.

Desired competitive strategy: From the assessment, the desired competitive strategy was assessed to be Product Leadership. In the future, the company plans to focus on invention, commercialisation and market exploitation, by frequently reviewing its product portfolio.

Section 1.4 Analyse competitive gaps

The summary of competitive gaps showed that the company matched the customer requirement in all criteria and lagged behind its competitors in product price.

Section 1.5 Check alignment between competitive gaps and strategy

Section 1.3 has established that the current and desired strategies of the company were both Product Leadership, and Section 1.1 has established that the company has a critical issue on product cost. Hence, the company wanted to improve product cost (total cost) in order to support its desired strategy.

Section 1.6 Generate issue statement for review

From the above analysis, the issue statement was defined to reduce costs (mainly in production costs) and move up the technology and design chain to compete in the high-end market.

Stage 2: Mapping current supply chain position

Section 2.1 Identify supply chain position

At this section, the company identified its supply chain position as follows.

Location	Taiwan	Thailand	Bahrain and Australia
External	Suppliers	Suppliers	Suppliers
Internal functions		Warehousing and distribution, manufacturing, accounting and admin, research and design, sales	Machining and production
Outsourcing suppliers		Third party logistics	
Customers	Customers		

Section 2.2 Identify activity position

The company created its activity position as shown in Figure 8.

Section 2.3 Identify core competences

Core competences of the company were defined as aluminium alloy wheel and tilting gravity casting. The current casting technology is able to produce very high surface finish wheel. The quality of the wheel matches the industrial leader but below premium price. These two core competences present value products for the company's customers. After defining its core competences, the company discussed on the link of its core competences to its current and desired competitive strategy.

Section 2.4 Identify core activity position

In this section, the company was tasked to identify its core activity. From the results of the previous section, the company was able to identify its core activities easier. Its core activities include research and development, design, casting technology and engineering.

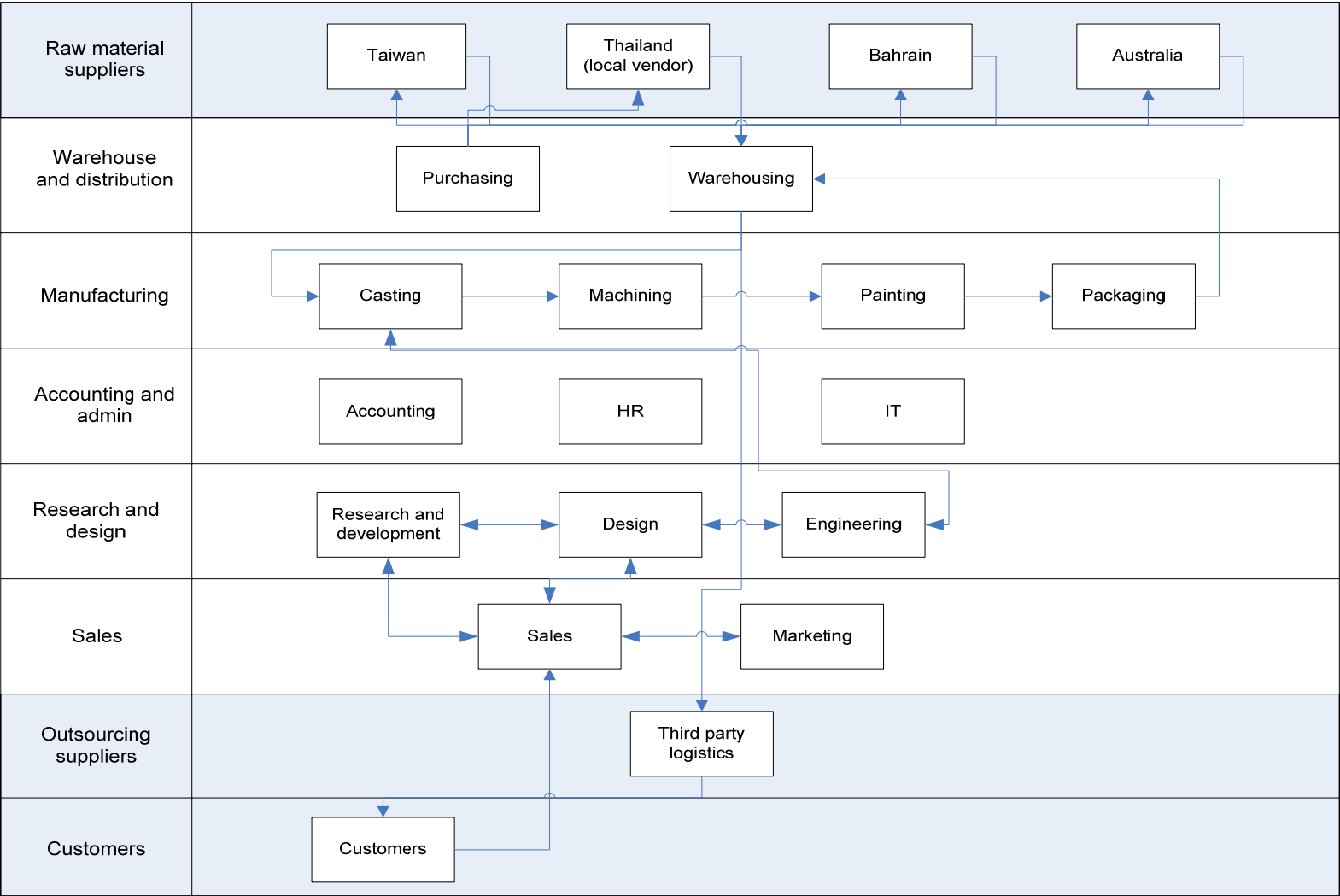


Figure 8: Tyre-co activity position

Stage 3: Future analysis

Section 3.1 Identify significant activities

At this section, the significant activities were identified and they included design, casting, marketing and distribution and machining. These activities are the activities that have potential for significant impact towards improving the issue scoped in Stage 1 – if their ownership or state were to be changed.

Section 3.2 Assess changes for significant activities

After identifying the significant activities, the assessment of advantages and disadvantages for keeping the significant activities in-house or doing them externally were carried out in this section as shown in Table 11.

Table 11: Internal/external assessment

Significant activities	Advantages for keeping in-house	Disadvantages for keeping in-house	Advantages for doing externally	Disadvantages for doing externally
Design	More responsive in design changes Integrity of design	Limited resources in employing top-notch wheel designers	More talented designers	Proprietary of design
Casting	Tight quality control Cast quality is the most important factor that affects the yield and total production cost.	Casting lost is high and thus resulted in low production returns. High product mix with low volume result in high production efficiency lost	Economies of scale and cost advantage	Longer lead time and quality issues
Marketing and distribution	Customer knowledge. Core strength of parent company.	Current sale force of the wheel business is relatively weak in comparison with the tyre business.	Expansion of contact bases	Lose the customer knowledge

Significant activities	Advantages for keeping in-house	Disadvantages for keeping in-house	Advantages for doing externally	Disadvantages for doing externally
	Leverage on the Tyre business of the parent company			
Machining	Shorter lead time for machining	Poor efficiency due to the high product mix with low volume environment	Economies of scale Cost advantage	Longer lead time
Painting	More responsive to custom colour requirement. Ability of rolling out new colours	Lack of the economies of scale	Economies of scale Cost advantage	Longer lead time

Section 3.3 Propose actions for significant activities

The project members brainstormed and proposed the actions to be carried out for the related significant activities to achieve the issue statement, the desired strategy and to minimise the competitive gaps. A summary of the actions proposed to be taken is shown in Table 12.

Table 12: Significant activities and proposed actions

Significant activities	Proposed actions
Design	Keep and grow
Casting	Keep and grow
Marketing and distribution	Strengthen
Machining	Strengthen
Painting	Strengthen

Stage 4: Configuration analysis

In stage 3, the company proposed the actions to be taken for its significant activities regarding to the issue statement. The results confirmed the current competitive space for the future competitive space. At this stage, the company analysed the configuration of its internal significant activities. The company brainstormed and listed potential configuration. The screening factors were determined from the issue statement as cost and quality. By using these criteria to screen the options, the configuration options were narrowed down into two choices. The first choice is to confirm the current configuration – maintain production plant in Thailand. The second choice is to offshore the production plant to China and set up R&D department in Singapore where the company has research collaboration with Singapore research institute. These two options were studied and discussed among the team members in details.

Stage 5: Evaluation

At this stage, the company studied more in-depth in the two options. They selected factors for performance, financial and geographic analysis and business risks as shown in Table 13.

Table 13: Determining factors for evaluation factors

Categories	Factors
Performance analysis	Product cost, quality of product, flexibility, manufacturing capability, delivery lead time, customer service level, supply chain flexibility, supply chain agility
Financial analysis	Net present value, cost of implementation, payback period
Geographic analysis	Infrastructure, law/regulation, integration with customers, labour characteristics, suppliers, transportation mode, economic factor
Business risks	Political instability, longevity of new position, employee morale, confidentiality leaks

Stage 6: Selection and action plan

At this stage, the project members discussed on the options and the decision was made to confirm the current configuration as the most appropriate option.

However, in order to achieve the aim of project on the issue statement, actions and initiatives need to be implemented to the production plant in Thailand. Consequently, the project members summarised the results in order to allocate future actions, and assign responsibilities and timescales for the company to further validate and develop a business case, as shown in Table 14.

Table 14: Action plan

Activity	Propose actions	By whom	Time
Design	Keep and grow	Operations manager	6 months
Casting	Keep and grow	Operations manger	3 months
Marketing and distribution	Strengthen	Marketing manager	6 months
Machining	Strengthen	Operations manager	4 months
Painting	Strengthen	Operations manager	3 months

**APPENDIX E: WORKBOOK METHODOLOGY FOR STRATEGIC
POSITIONING WITHIN GLOBAL SUPPLY CHAINS (SPGC)**

Strategic Positioning within Global Supply Chains



**Department of
Manufacturing**

Cranfield University

A Decision Support Process

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Introduction

This workbook methodology provides a systematic process to guide a company to decide the supply chain position for its business in order to develop and sustain a competitive advantage. The workbook offers a guideline to identify a strategic supply chain position through insourcing/outsourcing decisions and configuration decision for insourced and outsourced activities. The purpose of this methodology is to provide an integrated and holistic approach that would enable the company to develop the supply chain position tailored to the requirements of the company.

This workbook is divided into three parts. Part 1 covers the introduction of the workbook, details of the use of this workbook and expected results from the workbook. Part 2 explains the overview of the process. Part 3 gives the details of each stage which are introduced in the same format.

This workbook is a main deliverable of engineering doctorate research entitled "Strategic Positioning of Manufacturing Operations within Global Supply Chains" under the supervision of Professor Tim Baines. If you have any suggestions on content, process, or any part of the methodology, please contact to the below detail.

Watcharavee Chandraprakaikul
Department of Manufacturing
Cranfield University
Cranfield,
Bedford MK43 0AL
Email: w.chandraprakaikul@cranfield.ac.uk
Phone: 01234 750111 ext. 5641

Part 1

Introduction and Overview of the Methodology

1.1 Are you facing these challenges?

- Changing customers' demand
- Pressures to lower prices from customers
- Pressures of higher value-added products from competitors
- Increasing competitions in worldwide market
- Increasing competitive pressures from the low cost economy countries
- Gaining market share in growing markets
- Difficulties and risks to invest and trade in growing markets

1.2 From above challenges, are you considering taking some of these actions?

- Expanding manufacturing functions in response to new market growth
- Closing down existing manufacturing operations
- Relocating manufacturing functions to lower cost countries
- Outsourcing manufacturing activities to lower cost countries
- Sourcing products from lower cost countries
- Acquiring manufacturing operations to integrate with existing operations

1.3 Common mistakes made when deciding actions

Experience has shown that companies make errors when making above decisions. The most common mistakes are:

- the lack of clarity of project in the early stage
- making a decision without thorough business analysis
- ignoring the importance of core activities
- placing emphasis on financial saving instead of business risks which may cost more in the long term
- failing to align the decision with company strategy
- ignoring the impacts on the entire supply chain

1.4 Consequences of poor decisions

The consequences of common mistakes are:

- losing strategic flexibility and control
- increasing dependability on suppliers
- higher quality problems and slower response time
- eroding core activities
- losing confidentiality and intellectual property right
- reducing sales due to poor performances

1.5 What is strategic positioning?

This decision support process will help you from making poor decisions. Strategic positioning within global supply chains is a process of:

- analysing the current situation and business needs;
- choosing ownership status and developing appropriate actions for the significant activities;
- deciding the most suitable configuration for those activities; and
- developing plan for implementation.

1.6 What does the strategic positioning decision support process offer for you?

It provides a systematic process to assist managers or project teams to decide the appropriate actions for developing and sustaining the competitive advantage. The process consists of two parts (see Figure 1). The first part provides insourcing and outsourcing decisions. It focuses on defining the competitive space that a manufacturing organisation should occupy. The term **competitive space** is used to represent the key internal business activities that the company owns and controls. This part helps to identify those activities that should remain internal to the business, and those that should be carried out by external suppliers, partners and customers. The second part addresses the configuration decision for the outsourced and insourced activities. This part helps to identify the most appropriate locations for your concerned activities to your business needs.

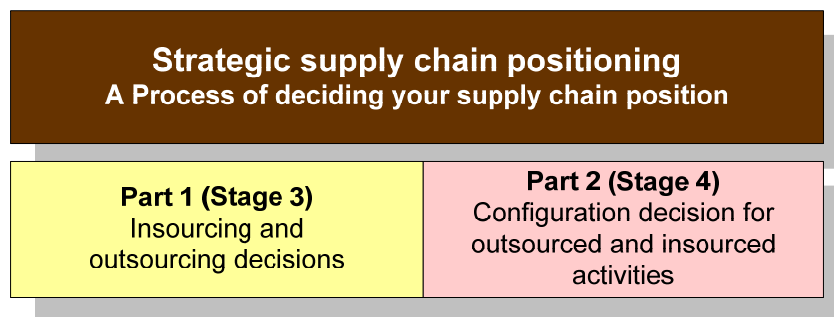


Figure 9: Strategic supply chain positioning workbook

In summary, this decision support process enables you to:

- Review your business and supply chains holistically
- Deal with
 - insourcing/outsourcing decisions
 - Offshoring, relocation decisions
- Produce an effective implementation plan which minimise or avoid risks and maximise benefits of a new position
- Shorten your time in making these decisions
- Keep a clear record of how and why you make these decisions

1.7 Who is this workbook for?

This strategic positioning decision support process is for managers or project teams in manufacturing companies. It is for those who wish to ensure that their decisions and actions are consistent with the business needs.

1.8 Why is it needed?

Such decisions have a substantial impact on a company's performance and profitability and they are relatively irreversible especially when companies invest or divest into foreign operations. With a systematic process and tools to tackle this task, company is more likely to avoid costly mistakes and makes effective decisions

1.9 Benefits of using a systematic process

It provides a systematic process to follow. Benefits of using this approach include:

1. A facilitated decision making process for sharing ideas, information, and opinions from employees
2. Reassurance that important factors are not overlooked
3. A transparent decision making process, encourages communication among project teams and staffs
4. A learning tool for inexperienced managers
5. Reduced time for making decision
6. Improved project management

Part 2

Methodology for Strategic Positioning within Global Supply Chain

2.1 Holistic approach methodology

The strategic positioning methodology provides a holistic approach for decision making. Traditionally, decisions have been formed in a fragmented fashion, with various aspects of the manufacturing supply chain being considered independently. For example, with a large organisation, it is quite feasible that various management teams may be simultaneously (but independently) debating decisions to offer new products, improve customer service, invest in new technologies, and source products from overseas. Invariably, the consequence is sub-optimum decisions and compromised overall business performance. Indeed, some decisions may actively conflict with each other.

This new practical decision making process has been developed to help companies to better choose their competitive space with their manufacturing supply chains. This methodology provides holistically all supply chains associated with manufacture. This means considering within the same analysis all inbound, outbound, and infrastructure supply chain issues across all products. This view includes:

- Supplier activities and all associated activities at the supplier interface
- Customer activities and all associated activities at the customer interface
- Product range activities – all activities which identify, develop and market the company's products or services
- Infrastructure activities – all activities which produce and support the products and services of the company

All activities, both internal and external, can be interlinked, and as such a change in one area can have an impact in another.

2.2 Road map

This section presents the road map of the methodology graphically as shown in Figure 2. The entry point to the whole process is the need for a review of competitive positioning. This can be either:

Reactive e.g. in response to corporate initiative/in response to awareness of some form of external change/in response to an internal crisis challenge

Proactive e.g. formal strategic planning meeting, with no pre-conceived over-riding problem or issues to be addressed.

On the completion of this competitive space review process, the main output is an action plan for implementation of proposed changes.

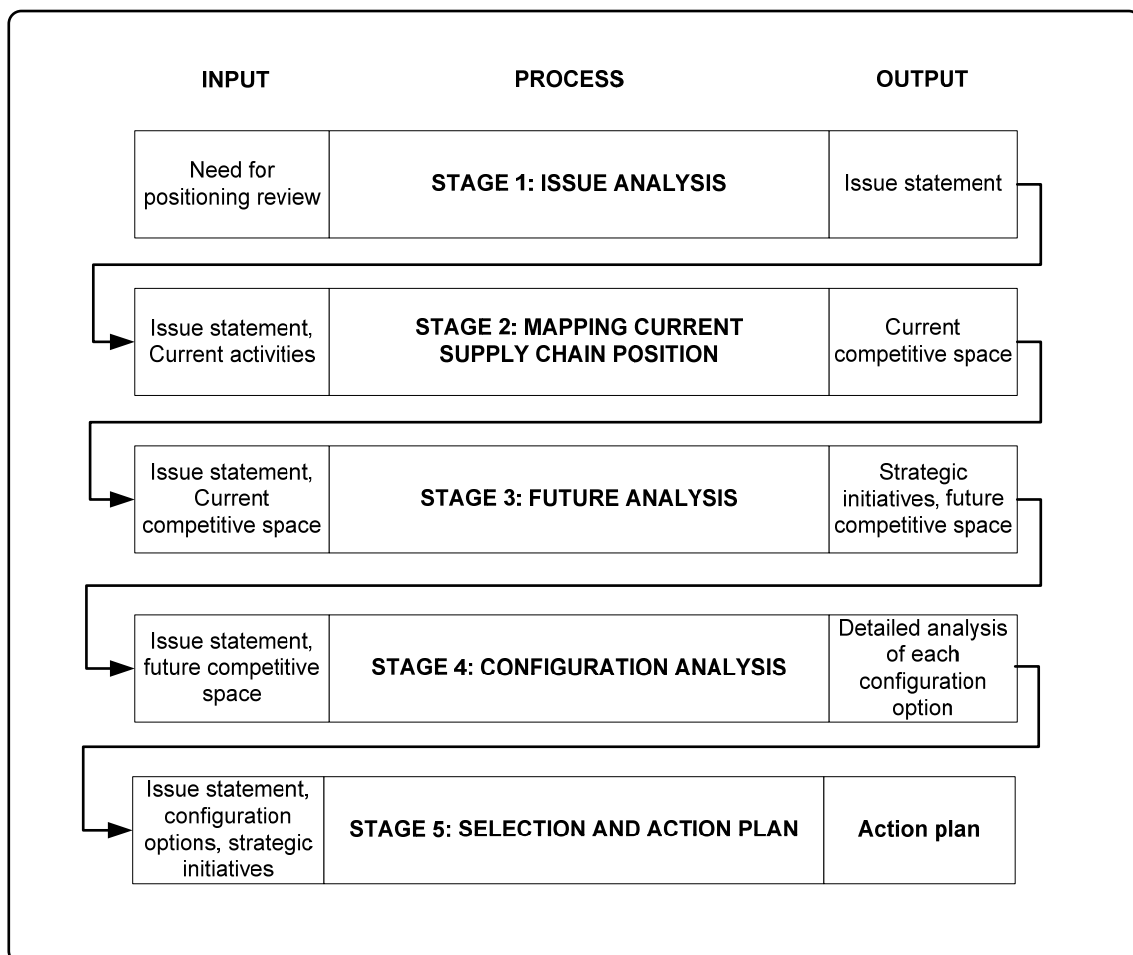


Figure 10: The methodology road map

2.2 Structure of each stage

The structure of each stage will follow the same format as shown in Figure 3.

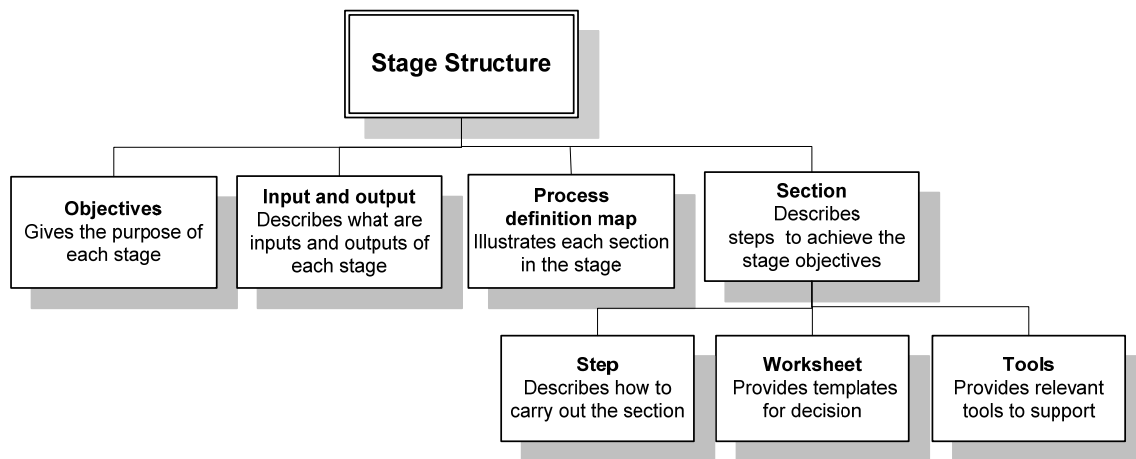


Figure 11: Stage Structure

2.4 How to use the methodology?

The methodology is a stage-by-stage approach based on self-diagnosis which is a guideline for managers or project teams to work through systematically. It takes a broad and holistic view of manufacturing supply chains within which a company operates. In order to maintain this holistic view, the recommended project team members will need to take a number of perspectives to the business. Table 1 illustrates the people who should take part.

In each stage of the methodology, techniques such as brainstorming and facilitated workshops can help project teams get a broad view from people across a company. However, in some cases, the project manager can complete worksheets alone. Others may involve discussion with key personnel in other functions.

The total time taken to complete the process will depend on a number of factors from inside and outside the company. The company should allow about two-hour session to complete each stage. Time should be allowed between stages to gather information and seek input from other people. A trip to visit sites in potential locations is strongly

recommended at the configuration analysis stage, which will increase the total lead-time of the project.

Table 15 Recommended people for a strategic positioning project

Role	Responsibilities	Typical position
Company project leader	Organise and arrange all the necessary internal resources for each meeting Ensure that all necessary work between meetings is carried out Champion recommendations made through the decision process	Can be from a senior management position
Inbound sourcing/supply chain expert(s)	Provide knowledgeable and experienced input about inbound logistics from suppliers, along with activities, opportunities and threats in supply base	e.g. supply chain director
Outbound supply chain and logistics expert(s)	Provide knowledgeable and experienced input about outbound logistics, and activities with customers and distributors, along with activities, opportunities and threats in supply base	e.g. marketing director, logistics director
Manufacturing expert(s)	Provide knowledgeable and experienced input about the relevant manufacturing activity	e.g. manufacturing director, operations director
General infrastructure expert(s)	Provide knowledgeable and experienced input about the relevant manufacturing activity	e.g. technical director
Customer/commercial activity expert(s)	Provide knowledgeable and experienced input about the relevant product range activity associated with the business areas under considerations	e.g. financial director

Part 3

The Approach

Stage 1: Issue Analysis

Input: Need for positioning review

Output: Issue statement

The overall objective for this first stage is to produce an Issue Statement that specifies which part of the company being considered and what performance changes are sought. These will be qualified by agreement of the results through the analysis of business strategy, over-riding issues, desired competitive strategy and the gap between current and desired performance.

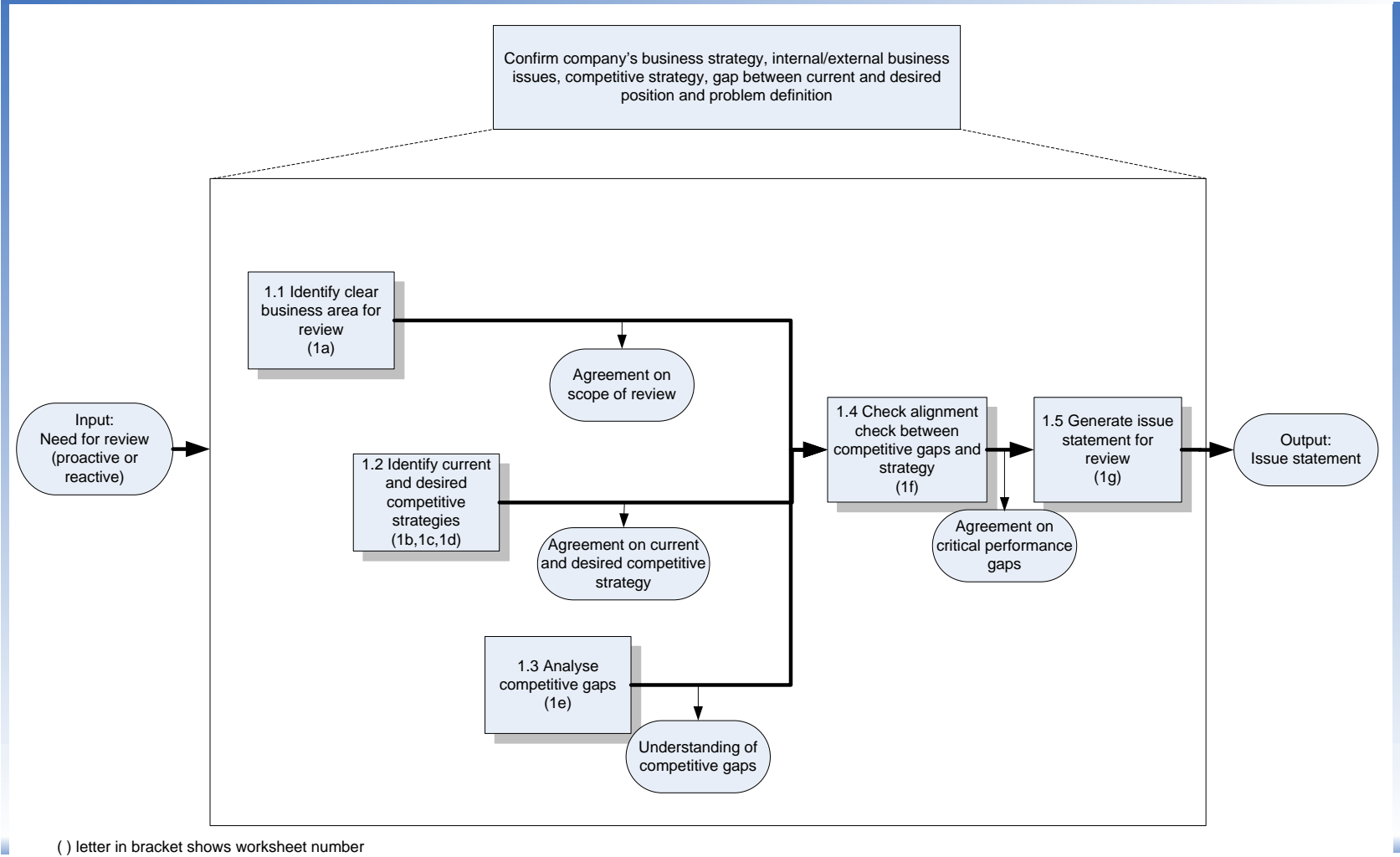
Objective

- To specify which parts of the company are under consideration
- To understand the company's competitive status
- To identify an issue statement of the project

There are five sections in stage 1:

- Section 1.1 Identify clear business area for review
- Section 1.2 Competitive strategy review
- Section 1.3 Competitive gap analysis
- Section 1.4 Alignment check between competitive gaps and strategy
- Section 1.5 Generate issue statement for the review

Process definition map for stage 1- Issue analysis





Section 1.1	Identify clear business area for review
Input	Output
<ul style="list-style-type: none"> ▪ Need for review of competitive position ▪ Experience and knowledge of the company strategy and operations 	<ul style="list-style-type: none"> ▪ Agreement on scope of review

This section provides an agreement of which part of the company will be analysed.

Steps

All members should be explained clearly about the theme of strategic positioning within global supply chains (SPGC) methodology and the goal of the project.

- a) Present the SPGC methodology shortly and clearly to the project members
- b) Present an overview of the company, products, customers, and competitors by the project leader
- c) Discuss and identify which products and customers are to be included, and which are to be excluded from the competitive positioning analysis. Once agreement is reached among team members, the scope area for review is recorded on Worksheet 1a.
- d) Review business strategies and record on Worksheet 1a.
- e) Identify the internal and external issues which have instigated the review (problems, opportunities, challenges and crisis). The issues and/or problems should also be recorded on Worksheet 1a. Even where the review is being undertaken as part of a proactive strategic planning process, the panel may want the review to reflect some over-riding issues or challenges. If so, these should be recorded on Worksheet 1a.

Worksheet 1a: Business area for review

<p>Brief but clear description of the part of the company under consideration. (Need to define industry, company, product, customer and competitors)</p>	
<p>Business strategies</p>	
<p>Over-riding issues from internal and external (problems, opportunities, challenges and crisis)</p>	



Section 1.2	Identify current and desired competitive strategies
Input	Output
<ul style="list-style-type: none"> ▪ Experience and knowledge of the company strategy and operations 	<ul style="list-style-type: none"> ▪ Agreement on current and desired competitive strategy

This section provides an identification/confirmation of the current and desired overall competitive strategy for the part of the company selected in Section 1.1. This strategy will place emphasis on either of the generic strategies of Customer Intimacy, Operations Excellence or Product Leadership.

Steps

- a) Use Worksheet 1b to find out your current competitive strategy. Assess a number of statements in Worksheet 1b in relation to your **current approach to the business** with respect to your main products and customers.
- b) Add up your score in categories C, O and P using Worksheet 1c. Mark the score in Worksheet 1d.
- c) Explain and discuss the results, and underlying reasons behind the approach
- d) Use Worksheet 1b to find out the **desired competitive strategy**. This time, assess the statements in relation to how the company should be doing business in the future with main products and customers, taking into account the ideas presented in Step b.
- e) Discuss the results of future scores, and transform scores into a desired competitive strategy. Record this strategy on the Worksheet 1d.

For the better results in this section, cross functional panel member should fill the current and future competitive strategy in Worksheet 1b individually. The aggregate score will be shown in Worksheet 1d. As a result, the scale of the score in Worksheet 1e can be flexible and up to the number of panel members.

Worksheet 1b: Competitive strategies

Completing the questionnaire provides you with an opportunity to take a step back and get a clearer perspective on your current and future competitive strategy. **Tick** the appropriate column for each statement which applies to your current approach to business with main products and customers of your organisation (Strongly agree to strongly disagree). **Cross** the appropriate column of each statement for how your company should be doing business in the future with main products and customers.

Competitive strategy	Strongly agree			Strongly disagree	
	5	4	3	2	1
1. Our services provide exactly what our customers need.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Our core processes are acquiring new clients and development of relationships with them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. We are intolerant to error, mistakes, and poor quality and provide zero defect service to our customers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. We win the market through great products and we invent, develop, and market our products fast.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. We achieve low cost position on product and service support.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Our company is recognised as a provider of best total solution, i.e. we provide better overall result for the clients than anyone else.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. We target our R & D towards development of products that are smaller/faster/lighter/cooler/cheaper and whatever constitutes better performance than those existing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Customer satisfaction is our first priority, i.e. the worst failure is not to lose money; it is to lose a customer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. We provide swift delivery and dependable service.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Our employees jobs are structured around the creation of products, not around any particular function.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. We believe in solving customers' broader problem, i.e. we attend to much broader range of client's need.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. We are passionate about measuring and monitoring to ensure rigorous quality and cost control.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Constant product innovation is encouraged and we have compensation systems that reward it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. We recognise that the company's current success and future prospects lie in its talented product design people and those who support them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Competitive strategy	Strongly agree		Strongly disagree		
	5	4	3	2	1
15. We often put ourselves at risk to further our client's success.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. We actively collect performance feedback from our customers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. We provide product reliability, durability, dependability at the lowest total cost.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. We focus on the core processes of invention, product development, and market exploitation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. We have standardised and efficient operating procedures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. We have deep customer knowledge and insights about the client's underlying processes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Being creative is most important for us & we are trend setters and pioneers in the products we create.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Our company is recognised as a provider of best total cost.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. We try to minimize our distribution and transportation costs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. We have the responsiveness and willingness to help customers and provide prompt service.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. We offer great price and quality.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Our company is recognised as a provider of leading products & we produce a continuous stream of state-of-art products and services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. We understand how changes to our service offer will benefit our customers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. We avoid variety in products and maintain a very narrow product line.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. We recognise the need to educate and lead the market regarding the use and benefits of new and innovative products.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. We believe in retiring (making obsolete) our own products before our competitors do.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Worksheet 1c: Score sheet for current and future scores

Statement	Strategy indicator	Current	Future
1.	C		
2.	C		
3.	O		
4.	P		
5.	O		
6.	C		
7.	P		
8.	C		
9.	O		
10.	P		
11.	C		
12.	O		
13.	P		
14.	P		
15.	C		
16.	C		
17.	O		
18.	P		
19.	O		
20.	C		
21.	P		
22.	O		
23.	O		
24.	C		
25.	O		
26.	P		
27.	C		
28.	O		
29.	P		
30.	P		

Add your number of Cs, Os, Ps for each column and enter in the Table below

	No. of Cs Customer Intimacy	No. of Os Operation Excellence	No. of Ps Product Leadership
Current scores			
Desired scores			

The scores of C, O, P show your competitive strategy focusing on which value discipline (Customer, Operation and Product). A minimal level of competence in all three is required, but to be a market leader requires outperforming the competition in one of the three. Each discipline requires a company to emphasise different processes, different management structures, different measures of success, and different cultures.

Customer Intimacy: Its adherents focus on delivering not what the market wants but what specific customers want. Companies do not pursue one-time transactions; they cultivate relationships. They specialise in satisfying unique needs, which often only they recognise, through a close relationship with and intimate knowledge of the customer. Example of companies includes IBM and Nordstrom.

Operation Excellence: Companies are not primarily product or service innovators, nor do they cultivate deep, one-to-one relationships with customers. Instead, operationally excellent companies provide middle-of-the-market products at the best price with the least inconvenience. The proposition to customers is simple: low price or hassle-free service, or both. Wal-Mart, Costco, Federal Express and Dell Computer epitomise this kind of company.

Product Leadership: Companies concentrate on offering products that push performance boundaries. The proposition to customers is an offer of the best product, period. Moreover product leaders don't build their positions with just one innovation; they continue to innovate year after year, product cycle after product cycle. Nike, Sony, Intel are some examples of this group.

Source: Treacy and Wiersema (1995)

Worksheet 1d: Strategy scores

CUSTOMERS			OPERATIONS			PRODUCTS	
Current	Desired		Current	Desired		Current	Desired
50			50			50	
40			40			40	
30			30			30	
20			20			20	
10			10			10	

Desired Competitive Strategy:



Section 1.3	Analyse competitive gaps
Input	Output
<ul style="list-style-type: none"> ▪ Experience and knowledge of the company strategy and operations 	<ul style="list-style-type: none"> ▪ Competitive gaps between company performance and customer requirements ▪ Competitive gaps between company performance and competitor performance

This section provides an understanding and analysis of the performance gaps between the company and customer requirements as well as competitor performance.

Steps

- a) Review which set of products and customers are being considered. Discuss briefly who are the main competitors and customers for these.
- b) Use Worksheet 1e to assess how current company performance, as measured by a number of key criteria, compares with **customer requirements**. The definitions of each key criteria are explained on the page behind the Worksheet 1e. To get the better results, the company should get this information from real customers. Talking to customers, doing customer surveys and getting customers involved in the positioning project are examples that the company could carry out to get the real customer opinions and requirements.
- c) Use the same worksheet (Worksheet 1e) to assess how current company performance, as measured by the same key criteria, compares with **competitor performance**.

Worksheet 1e: Competitive gaps

	We lag		We match*			We exceed	
	-3	-2	-1	0	1	2	3
Service customisation							
Product customisation							
After sales support							
Product availability							
Product price							
Quality conformance							
Product attributes							
Time to market							
New prod. introduction rate							

Mark gaps with customer requirements in RED
Mark gaps with competitor performance in BLUE

**0 rating may also denote that this criterion is not significant for your business*

DESCRIPTIONS OF CRITERIA

Service customisation. Some products sell because the producer is able to offer a tailored service package to customers. The customisation can cover all aspects such as pre-sales activity to understand and meet individual requirements; tailored delivery service such as frequency, volume, and packaging.

Product customisation. Some products sell because they suit an individual customer's specification. These include both one-offs, and standard products which have a standard design but which require modification for a particular application. This could also be called *design flexibility*.

After-sales support. This can include technical support, training, repairs, supply of spares. The range and quality of after-sales services may be critical both in obtaining sales, and in achieving customer loyalty.

Product availability. This means the supply of a product to a customer on or before the quoted delivery date. In the case where your customer is a consumer, this may mean on-shelf availability. Some companies may call this *delivery reliability*.

Product price. For some customers, value for money is paramount. In this case, their consideration is of the total cost of purchasing products from you. This total cost will include purchase price as well as other costs of doing business with you, such as time and convenience.

Quality conformance. This means both conformance to specification (the product performs as specified) and reliability in use (the product continues to perform for an extended period). Product reliability may be more important to a customer than other attributes such as technological or aesthetic considerations.

Product attributes. A product may sell because it has some feature that is not available from competitors (latest or unique technology perhaps), or because its performance in a particular feature is superior to its competitors. In some cases, market position is affected by the product variety on offer.

Time to market. This is concerned with how effective you are at converting ideas into products. In some markets, the firm that gets the orders is the one that gets its products and services on to the market first. This measure will be affected by your ability to manage the development or design of the processes required to get your new products from concept stage to market place.

New product introduction rate. This is about the amount of innovation taking place within the company. It can be measured by counting the number of new or enhanced products or services introduced each year.

Completed example of Worksheet 1e: Competitive gaps

	Lag			Match		Exceed	
	-3	-2	-1	0	1	2	3
Service customisation				CP	CR		
Product customisation			CP	CR			
After sales support		CR	CP				
Product availability				CR	CP		
Product price			CP	CR			
Quality conformance			CR		CP		
Product attributes			CP	CR			
Time to market				CP		CR	
New prod. introduction rate					CR	CP	

Mark gaps with customer requirements in RED
Mark gaps with competitor performance in BLUE



Section 1.4	Check alignment between competitive gaps and strategy
Input	Output
<ul style="list-style-type: none"> ▪ Business area for review ▪ Business strategies ▪ Overriding issues ▪ Current/desired competitive strategies ▪ Competitive gaps 	<ul style="list-style-type: none"> ▪ Agreed critical performance gaps

This section gives the agreement of areas where your current company performance does not match the requirements of its desired competitive strategy.

Steps

- a) Use information from previous sections to record into Worksheet 1f. Worksheet 1f provides a template for previous analysis.
- b) Discuss the results. Agree whether or not each performance gap is critical.

Worksheet 1f: Competitive gaps and future strategies

Summary of competitive gaps														
		Lag			Ma tch	Exceed			Customer intimacy	Operational excellence	Product leadership			
		-3	-2	-1	0	1	2	3						
C	Service customisation													
	Product customisation													
	After sales support													
O	Product availability													
	Product price													
	Quality conformance													
P	Product attributes													
	Time to market													
	New product introduction rate													
								40						
								30						
								20						
								10						
								Scores	Current	Desired	Current	Desired	Current	Desired

Complete example of Worksheet 1f: Competitive gaps and future strategies

Business area (from Worksheet 1a)-									Over-riding issues/problems (from Worksheet 1a)					
Flo-Line's Hydraulic Cylinder and pump section is under review. It wants to specialized more customization in pump, and high volume and more variety in cylinder. Flo-Line's sales department also helps in selling and providing solutions to local and customers in South East Asia region.									C	O	P			
									FL aims to improve	FL aim to improve				
									the performance of	efficiency of manufacturing				
									the sales department	Operation of the workshop.				
										FL wants to emphasize on				
Summary of competitive gaps									Customization.					
	Lag			Match			Exceed		Customer intimacy	Operational excellence	Product leadership			
	-3	-2	-1	0	1	2	3							
C	Service customization			CP CR					-	-	-			
	Product customization				CR	CP			-	-	-			
	After-sales support			CP CR					-	-	-			
O	Product availability	CP/CR							-	-2 (CP), -2 (CR)	-			
	Product price			CR		CP			-	-	-			
	Quality conformance			CP	CR				-	-	-			
P	Product attributes			CP	CR				-	-	-			
	Time to market		CR	CP					-	-	-2 (CR)			
	New prod. introduction rate	CPCR							-	-	-3 (CP), -3 (CR)			
AGGREGATE SCORES FOR CURRENT AND DESIRED COMPETITIVE STRATEGIES									50					
									40					
									30		30			
									20	27		24	25	23
									10					22
									Scores	Current	Desired	Current	Desired	Current



Section 1.5	Generate issue statement for the review
Input	Output
<ul style="list-style-type: none"> ▪ Business area for review ▪ Business strategies ▪ Overriding issues ▪ Current/desired competitive strategies ▪ Competitive gaps 	<ul style="list-style-type: none"> ▪ Qualified issues statement for the review

This section gives the agreement of a common definition of the issue statements for the subsequent stages of the analysis, that is aligned with:

- The part of the company under review
- Business strategies
- Internal and external issues
- The future competitive strategy
- The competitive gaps

Steps

- a) Produce Issue Statement based on previous analysis in this stage
- b) Use Worksheet 1g to record

Worksheet 1g: Issue statement for review

Business area (from Worksheet 1a)	
Over-riding issues (from worksheet 1a)	
Business strategies (worksheet 1a)	
Critical performance gaps (worksheet 1f)	
Issue statement	

Stage 2: Mapping Current Supply Chain Position

Input: Issue statement and current activities

Output: Current competitive space

This stage produces a current competitive space to show the position of the current supply chain activities of the company. The current competitive space is mapped according to the organisational processes which have the 4 interfaces to the supply chain such as suppliers, customers, and product range and infrastructure and core competences of the company.

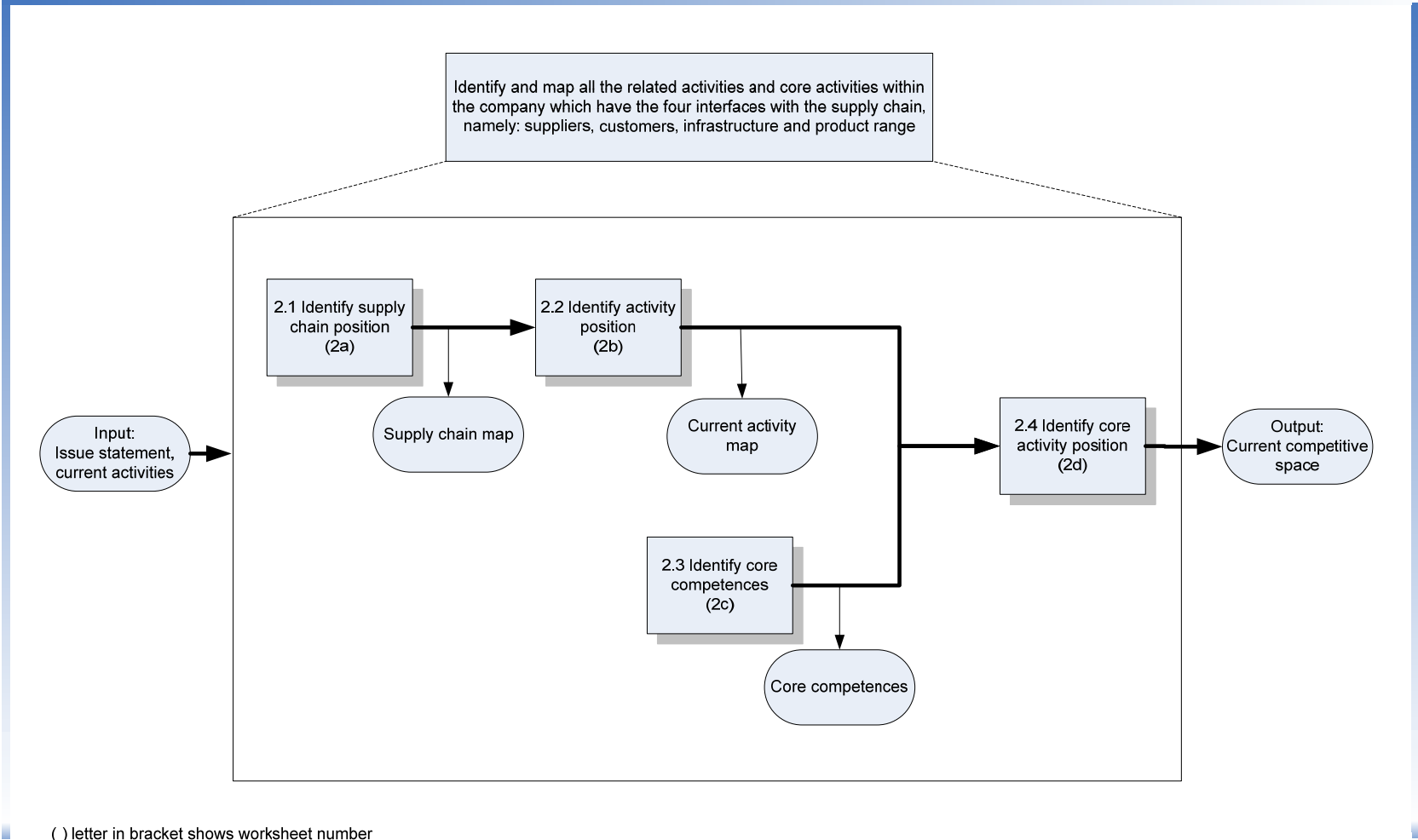
Objective

- To identify supply chain position of the company
- To identify activity position of the company
- To identify core competence
- To identify core activity position of the company

There are four sections in stage 2:

- Section 2.1 Identify supply chain position
- Section 2.2 Identify activity position
- Section 2.3 Identify core competences
- Section 2.4 Identify core competence activity position

Process definition map stage 2 – Mapping current supply chain position





Section 2.1	Identify supply chain position
Input	Output
<ul style="list-style-type: none"> ▪ Issue statement ▪ Knowledge of the company operations 	<ul style="list-style-type: none"> ▪ Supply chain map

This section provides a review of your supply chain and understanding your current status of which functions of the company do internally or carry out externally.

Steps

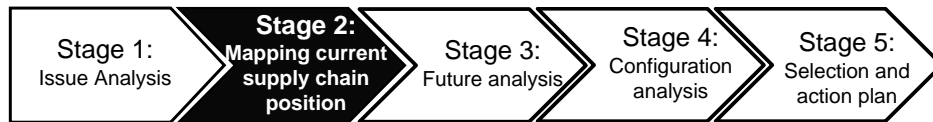
- a) Use Worksheet 2a to record functions within the company against location and supply chain elements
- b) Discuss the current supply chain position and opportunity of future change

Worksheet 2a: Supply chain position mapping

Location					
Raw material suppliers					
Internal functions					
Outsourcing suppliers					
Customers					

Complete example of Worksheet 2a: Supply chain position mapping

Location	UK	Europe	China	Asia	Others
Raw material suppliers	70%	20%	10%		
Internal functions	Warehouse, manufacturing, sales, marketing, accounting and admin				
Outsourcing suppliers	Distribution function				
Customers	15% UK	10% Netherlands, 8% Germany, 2% Italy	10% China	15% Korea, 10% Japan, 5% Taiwan	25%



Section 2.2	Identify activity position
Input	Output
<ul style="list-style-type: none"> ▪ Supply chain map ▪ Current activities 	<ul style="list-style-type: none"> ▪ Current activity map

This section narrows the supply chain level from the previous section to the activity level. This section concerns the current boundary of activity landscape within and outside of a company. The activity position reveals what goes on inside and outside the company, and shows the sequence of the work process.

Steps

- a) Use Worksheet 2a to identify current activities involved with the delivery of the business to customers.
- b) Map these activities into functions and locations in Worksheet 2b, using the swim-lane and process activity block approach, to guide the project members to visually map out all the activities in blocks. It is important that these activities are considered and identified at the appropriate level, which are neither broad nor narrow. If the activity is broad, it may have no meaning to the project. On the other hand, if it is narrow, several steps have to take action to do so.
- c) In the worksheet 2b, the company functions/departments are mapped first in the left-hand column. This is then followed by mapping the detailed process activities which are taking place within them in the right-hand side of the worksheet 2b.

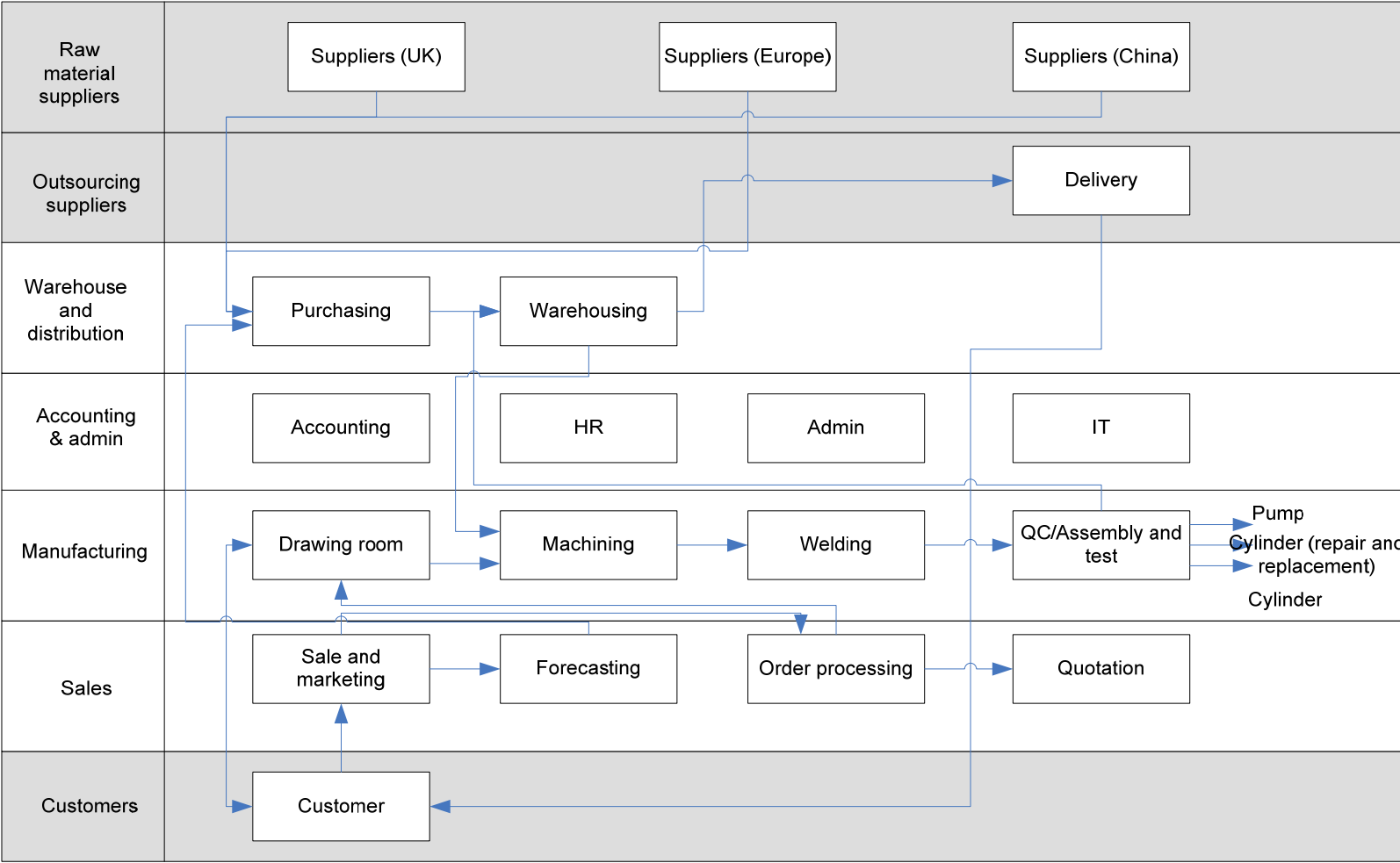
Worksheet 2b: Activity position mapping

Raw material suppliers	
Outsourcing suppliers	
Internal function	
Internal function	
Internal function	
Internal function	
Internal function	
Internal function	
Internal function	
Customers	

Tool for Worksheet 2b: Post-it technique

Post-it technique is useful for group discussion in this worksheet. The project team can ask group members or relevant people to write Post-it notes the steps that make up their function's portion of the process, and place the Post-it notes on the map. Then re-sequence the Post-it until the group is satisfied that the process is accurately mapped. Finally, add and label all inputs and outputs arrows to complete the map.

Completed example of Worksheet 2b: Activity position mapping





Section 2.3	Identify core competences
Input	Output
<ul style="list-style-type: none"> ▪ Knowledge of the company operations 	<ul style="list-style-type: none"> ▪ Core competence

This section provides an identification of core competence to prevent the threats of losing the company’s core competence. The impact of losing core activities could be significant to the competitive of your company. To check the understanding what is core competence, the definition and examples on core competences are provided on the page after Worksheet 2c.

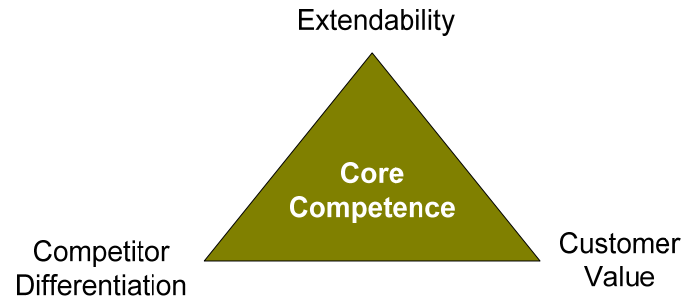
Steps

- a) Read the definition and examples of core competences
- b) Use tool for Worksheet 2c - the three tests to recognise your core competences
- c) Use Worksheet 2c to record current core competences which serve as a source of a firm’s competitive advantage over rivals
- d) Check alignment of core competence to competitive strategy (Product leadership, Operation excellence, Customer intimacy), review and discuss how your competitive strategy supports your core competences

Example of different competitive strategies supporting same core competence:

Honda has a core competence in small engines. It has leveraged that capability in many markets, from motorcycles and autos to lawnmowers. Briggs and Stratton has a core competence in small engines too but these two companies use different value disciplines for their strategies. Honda has dedicated to the value discipline of best product meanwhile Briggs and Stratton has focused on best total cost. Therefore, by understanding your competences and competitive strategy, you will be able to focus on the right operations to serve the best to your customers.

Worksheet 2c: Core competence



Core competence	Extendability	Competitor differentiation	Customer value

Current competitive strategy	
Desired competitive strategy	

What is core competence?

Knowing own core competence is important for developing and making decision. Prahalad and Hamel (1990)*, core competence creators, defined core competence as:

“Collective company capacity and learning that allow the firm to act on critical processes and activities to transform its tangible and intangible assets into competitively superior customer value. They are generated by the capabilities of a firm over its tangible and intangible assets.”

Examples of core competencies

Company	Core competency examples
Black and Decker	Small electric motor technology
Casio	Display systems technology
Domino's pizza	Cycle time and logistics management
Honda	Small motor design capability
Motorola	Portability technology
Nike	Athletic shoe R&D, post production activities
Service master	Motivational and training systems
Sony	Miniaturisation technology
3M	Adhesives/coatings technology
Toys R Us	Superior information and distribution systems
Wal-mart	Information sharing systems with providers and logistics skills
Sharps	Manufacturing in high-volume
Merck	Reliable process in the development of new drugs
Lockheed Martin	Close relationships with its defence agency customers (customer intimacy)

* Prahalad, C. K. & Hamel, G. 1990, "The core competence of the corporation", *Harvard Business Review*, vol. 68, no. 3, pp. 79-91.

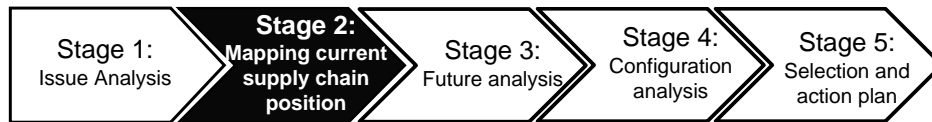
Tools for Worksheet 2c: Tools for identifying core competences

This is the definition of three tests for recognising a core competence.

- **Extendability:** a core competence is a gateway to tomorrow's markets – it must help the firms create new products, services and process improvements in the future. A core competence provides potential access to wide variety of markets.

- **Customer value:** a core competence must enable the company to provide a fundamental customer benefit and make a contribution to customer perceived value. A core competence should make a significant contribution to the perceived customer benefits of the end product.

- **Competitor differentiation:** to qualify as a core competence, a capability must be competitively unique and be substantially superior to other competitors. A core competence should be difficult for competitors to imitate and it will be difficult if it is a complex harmonization of individual technologies and production skills.



Section 2.4	Identify core activity position
Input	Output
<ul style="list-style-type: none"> ▪ Core competence ▪ Activity map 	<ul style="list-style-type: none"> ▪ Current competitive space


This section provides the current competitive space of the company which shows what activities are currently carried out internally or externally and what and where core activities are in the company. A core activity is derived by identifying what activities in the organisation create the core competences determined in the previous section. The core activity is central to the company successfully serving the needs of potential customers in each market. The activity is perceived by the customers as adding value and therefore being a major determinant of competitive advantage.

Steps

- a) Go through each identified core competences from Worksheet 2c
- b) Identify what **activities** in the company transform its tangible and intangible assets into that core competence and map into Worksheet 2d. Use different colour for the activity block to show the core activities

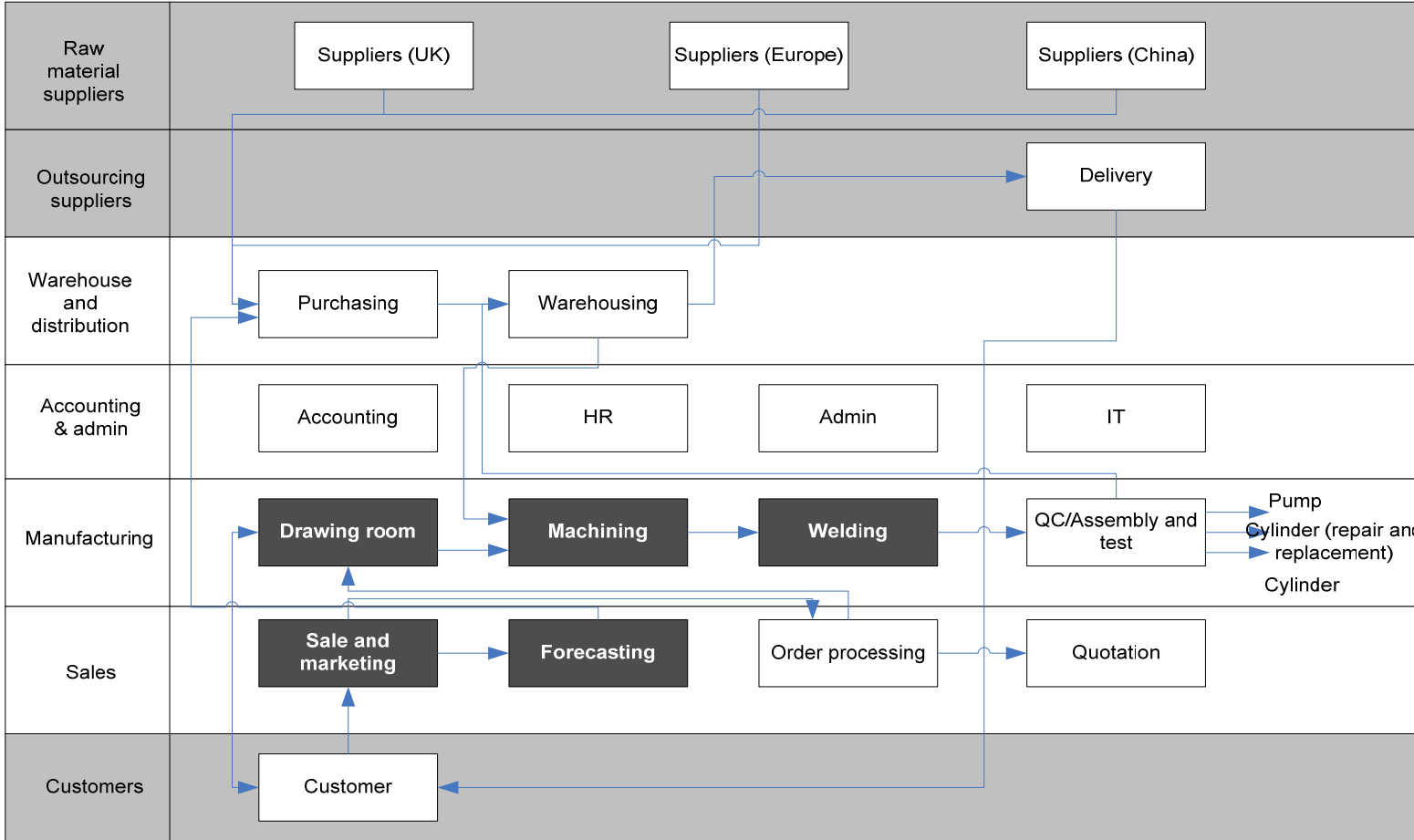
Worksheet 2d: Core activity mapping

Raw material suppliers	
Outsourcing suppliers	
Internal function	
Internal function	
Internal function	
Internal function	
Internal function	
Internal function	
Customers	

 Core activity

Completed example of Worksheet 2d: Core activity mapping

Note: The white colour area is to show the boundary of current competitive space.



Core activity

Stage 3: Future Analysis

Input: Issue statement, current competitive space

Output: Strategic initiatives, future competitive space

This stage concerns about the future analysis to provide a future competitive space and strategic initiatives for improvement according to the issue statement and the desired strategy. The activities that have significant impact towards the issue statement will be analysed to find the appropriate actions to be taken in this stage.

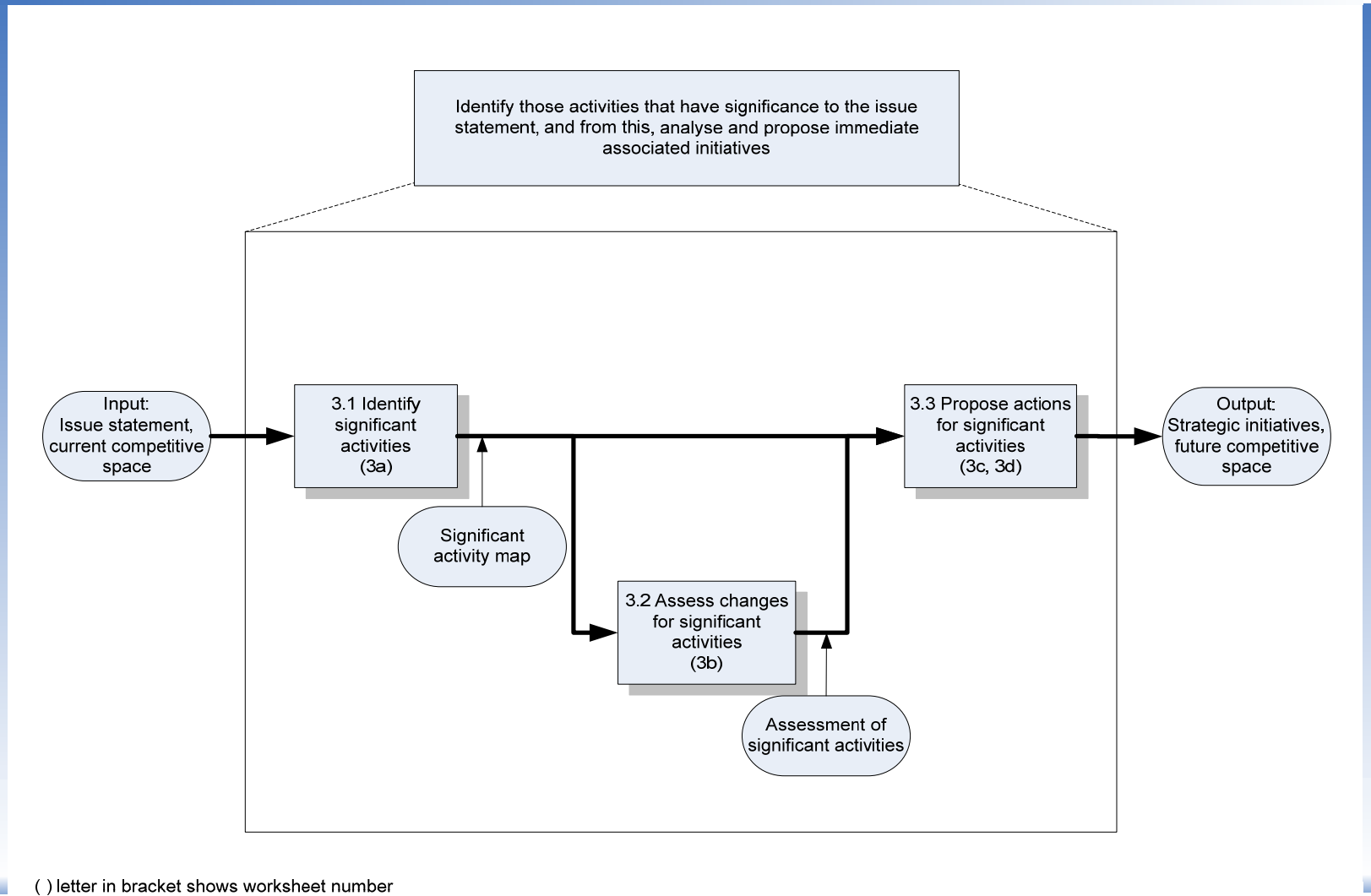
Objective

- To identify the activities which are likely to have a significant positive effect with regards to the issue statement
- To assess advantages and disadvantages of keeping significant activities internally or carrying out them externally
- To analyse the actions for the significant activities and draw a new competitive space

There are three sections in stage 3:

- Section 3.1 Identify significant activities
- Section 3.2 Assess changes of significant activities
- Section 3.3 Propose actions for significant activities

Process definition map stage 3 – Future analysis





Section 3.1	Identify significant activities
Input	Output
<ul style="list-style-type: none"> ▪ Issue statement ▪ Current competitive space 	<ul style="list-style-type: none"> ▪ Significant activity map

This section identifies the Significant Activities and maps them into the current competitive space. The significant activities are activities that have the potential to have a significant impact on positively affecting the issue statement through a change in ownership/state. This significant activity map provides you to see what activities of the company need to be changed in ownership/state according to the issue statement.

Steps

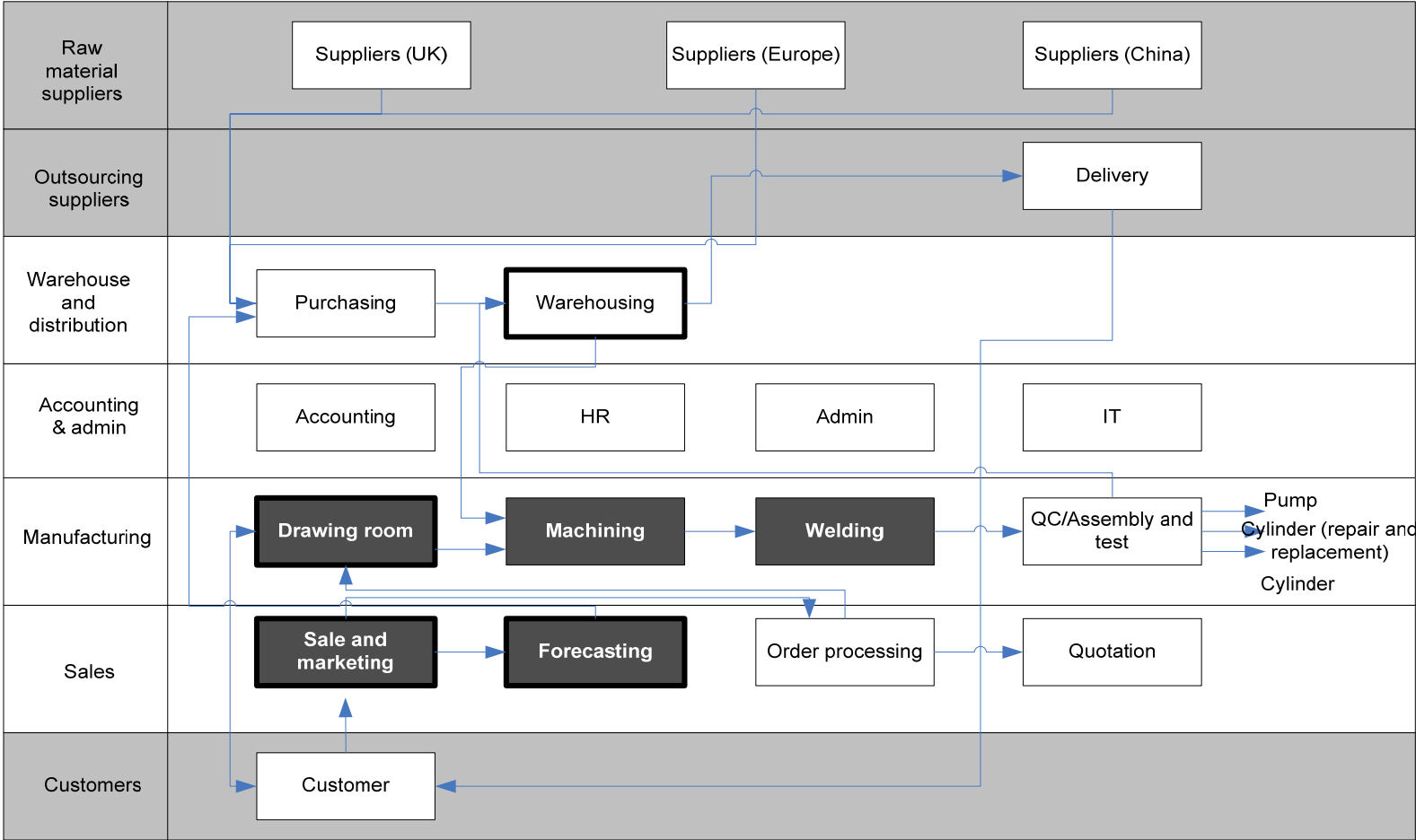
- a) Consider the completed Worksheet 2d, and the issue statement with regards to the question:
 “Which activities are likely to have a significant positive effect with regards to the issue statement – if their ownership/state were to be changed?”
 For example, change procedure, ownership or method of the activity
- b) Highlight the significant activities using different colour in the map. New activities may need to be created according to the Issue Statement. See the Worksheet 3a and the completed example of Worksheet 3a.

Worksheet 3a: Activity position

Raw material suppliers	
Outsourcing suppliers	
Internal function	
Internal function	
Internal function	
Internal function	
Internal function	
Internal function	
Internal function	
Customers	

 Core activity  Significant activity

Completed example of Worksheet 3a: Significant activity mapping
 Focusing on customer response time





Section 3.2	Assess changes for significant activities
Input	Output
<ul style="list-style-type: none"> ▪ Significant activity map 	<ul style="list-style-type: none"> ▪ Assessment of significant activities

This section assesses advantages and disadvantages of changing the ownership of the significant activities or internal/external assessment. The explanation of assessment is as follow:

- Advantages from keeping in-house
- Disadvantages from keeping in-house
- Advantages from doing externally
- Disadvantages from doing externally

Generally in this step, core activities might not be assessed because these activities should be kept in house. However, nowadays companies do not stand still and rest on their traditional competences. Instead they have to develop new competences that respond to or anticipate emerging business conditions. Therefore, if the issue statement indicates the change of current core activities or competitive strategies, the core activities have to be assessed in this section. This section helps the company aware of the changes of core activities.

Steps

- a) Use Worksheet 3b to record
- b) Take the significant activities identified from Worksheet 3a and fill in Worksheet 3b
- c) Use the assessment criteria from Tool for Worksheet 3b for assessing each significant activity in Worksheet 3b
- d) Discuss the results

Worksheet 3b: Internal/external assessment

	Significant Activities	Advantages for keeping in-house	Disadvantages for keeping in-house	Advantages for doing externally	Disadvantages for doing externally
Core activities					

Tool for Worksheet 3b: Assessment criteria

FACTS criteria are major criteria for the assessment.

<p>F = Financial Cost analysis/comparison financial stability ROI of make/buy options Cost saving/cost reduction Investment cost Total acquisition cost Opportunity for exploitation of tax incentives Changing from fixed to variable costs</p>	<p>A = Attitude/Acceptability Internal optimisation Environmental uncertainty Thrust on market positioning and new product development Risk analysis Supplier threat Management support/judgement Attitude to decision Attitude to decision making process Political/legal condition Culture fit Customer acceptance</p>
<p>C = Competency/Capability Core competence/capability analysis Focusing on business critical initiatives/key objectives/core activities Supplier market capability/quality/relationship Difficulty to imitate Dependence on suppliers</p>	<p>T = Technological fit Technological/product importance/characteristics Technological competitiveness Gaining technology/capability accessible from suppliers Support systems Product life cycle Process life cycle</p>
<p>S = Strategic fit Strategic analysis/strategic fit Competitive advantage Change in market access/conditions Performance/value improvement Flexibility Policy change Customer service improvement Limited capacity, workers Reliability Exploitation of supplier innovation and capabilities Risk spread Location of suppliers Confidentiality/intellectual property right Supply continuity</p>	



Section 3.3	Propose actions for significant activities
Input	Output
<ul style="list-style-type: none"> ▪ Assessment of significant activities ▪ Issue statement 	<ul style="list-style-type: none"> ▪ Strategic initiatives ▪ Future competitive space

This section provides an assessment of what type of action should be made on each significant activity so that a change in ownership/ state is in-line with the issue statement. These agreed actions will create your future competitive space.

Steps

- a) Consider Worksheet 3b and use Worksheet 3c provided to guide project members to record the significant activities and brainstorm to propose the actions to be taken
- b) From this worksheet, possible appropriate actions suggested include the following:
 - Keep & strengthen, grow or nurture
 - Outsource, offshore, eliminate need for
 - Leave outside & strengthen, grow outside, add/change suppliers
 - Bring in-house & make strengthen, change locations
- c) Actions proposed may be different according to the opinion of project members, and therefore facilitation is necessary to get acceptable agreement and actions
- d) If there is any change on ownership status and location of activities, create future competitive space with new core activities in Worksheet 3d
- e) Take the future competitive space to the next stage to find an appropriate configuration and take the rest of actions to develop further as a strategic initiative improvement program of the company in the action plan, stage 5

Tool for Worksheet 3c: Competitive strategy and outsourcing strategy


Treacy (2004)* proposes a framework for considering outsourcing and keeping in-house strategy according to the company's competitive strategy.

	Keep in-house	Outsource
Customer-intimate companies	Marketing, Sales, Service	R&D, Procurement, Manufacturing, Distribution
Product-leader companies	R&D, Marketing	Procurement, Manufacturing, Distribution, Sales, Service
Operational-excellence companies	Procurement, Manufacturing, Distribution	R&D, Marketing, Sales, Service

* Treacy, M. 2004, "Pegging the right outsourcing strategy", *Optimize*, pp. 45-50

Worksheet 3d: Future competitive space

Raw material suppliers	
Outsourcing suppliers	
Internal function	
Internal function	
Internal function	
Internal function	
Internal function	
Internal function	
Internal function	
Customers	

 Core activity

Stage 4: Configuration analysis

Input: Issue statement, future competitive space

Output: Detailed analysis of each configuration option

This stage focuses on a configuration analysis for the significant activities. In the previous stage, the possibilities of actions for a significant activity may include:

- Outsourcing/subcontracting
- Bringing in-house
- Offshoring, opening additional manufacturing facilities
- Relocation

These possible actions relate to choosing the right location for the significant activities which can be a major source of competitive advantage to the company. The correct decision can offer superior operating conditions and considerable economic benefits. At this stage, therefore, the configuration analysis is carried out to provide the company to make such location decisions of the significant activities in order to achieve the aim of the project.

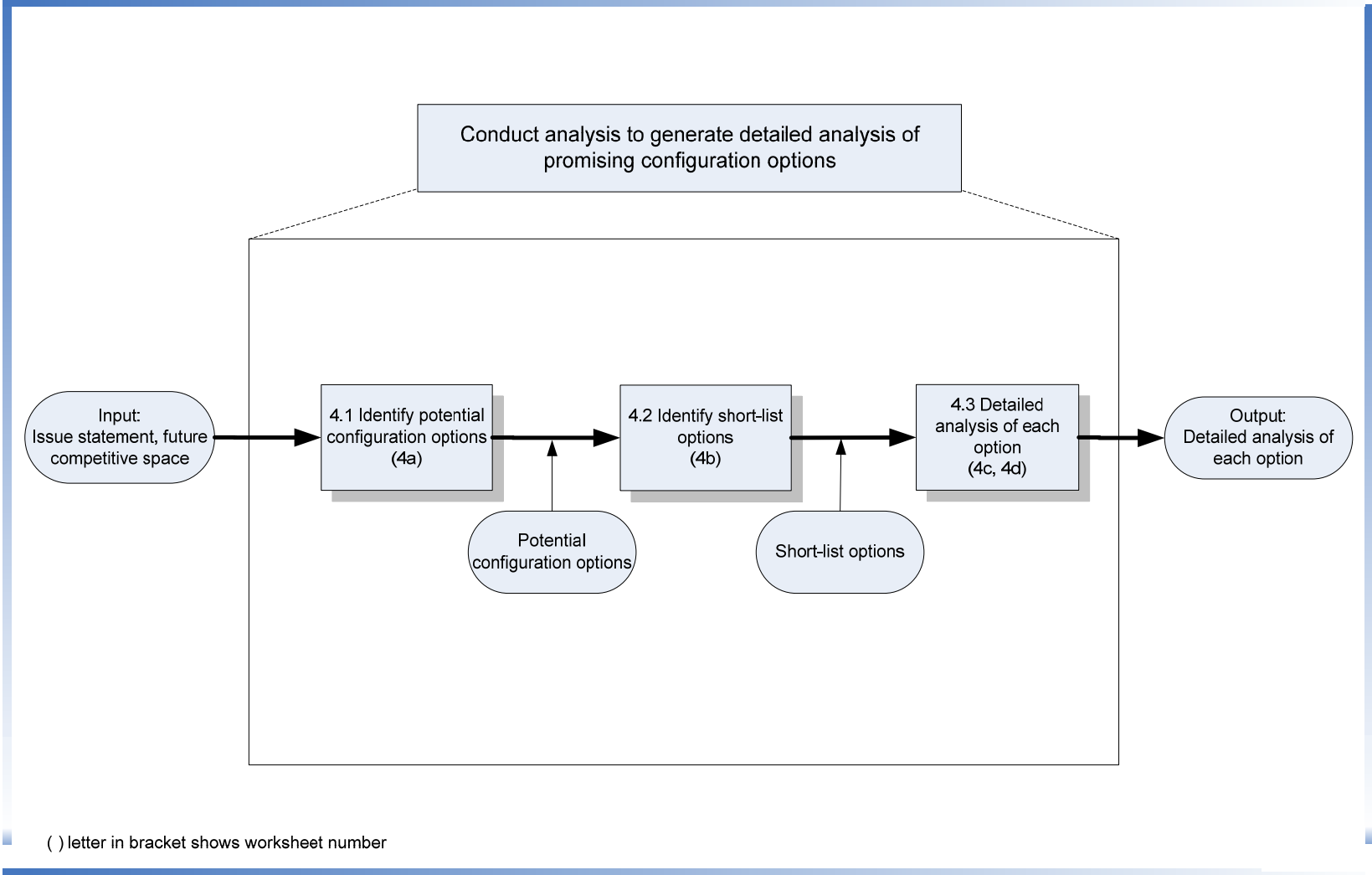
Objective

- To identify potential configuration options that are aligned to the results of action analysis
- To identify a short-list of options
- To collect detailed information of each short-list option

There are three sections in stage 4:

- Section 4.1 Identify potential configurations
- Section 4.2 Identify short-list options
- Section 4.3 Detailed analysis of each option

Process definition map stage 4 – Configuration analysis





Section 4.1	Identify potential configuration options
Input	Output
<ul style="list-style-type: none"> ▪ Future competitive space ▪ Issue statement 	<ul style="list-style-type: none"> ▪ Potential configuration options

This section intends you to list all potential configurations from project team discussion.

Steps

- a) Review issue statement from Worksheet 1g and the decided actions from Worksheet 3c before brainstorming potential configurations/locations
- b) Write down a list of potential configurations for the significant activities in Worksheet 4a

Worksheet 4a: Identify potential configuration options

Potential options
Option 1 Close production of product A in France, maintain high end product range in UK and outsource low product ranges to Chinese suppliers
Option 2
Option 3
Option 4



Section 4.2	Identify short-list configuration options
Input	Output
<ul style="list-style-type: none"> ▪ Potential configuration options ▪ Issue statement ▪ Desired competitive strategy 	<ul style="list-style-type: none"> ▪ Short-list configuration options

This section screens the potential options to a short-list of options by using issues from the issue statement and desired competitive strategy as criteria. As a result, at this section, any configuration option that do not meet the company’s key requirements will be eliminated. The analysis required will often be a matter of desk research. The data can normally be obtained from secondary sources such as journals, articles in newspapers and web sites. The output of this section is short-list configuration options which will be studied in-depth in the following section.

Steps

- a) Create a list of specific criteria from your issue statement and your desired competitive strategy and write down in Worksheet 4b
- b) Gather data about each location using the identified criteria
- c) Assess all potential location against each criteria
- d) Select the top 2 or 3 locations on the list for further detailed analysis in the next section

Worksheet 4b: Determine specific criteria

Screening criteria
From issue statement (such as cost, lead time, etc.):
From desired competitive strategy (competitive criteria):



Section 4.3	Detailed analysis of each option
Input	Output
<ul style="list-style-type: none"> ▪ Short-list configuration options 	<ul style="list-style-type: none"> ▪ Detailed analysis of each option

This section generates detailed analysis for a short list of configuration options. This section provides a comprehensive list of factors, that the company should consider for detailed analysis, including financial factors, performance factors, geographical factors and business risks. These factors of each short-listed options will be gathered and analysed at this section. Conducting site visit is necessary to gather some insightful data. Discussions with some parties such as suppliers, customers, or government are recommended to obtain ideas and feedbacks for the change.

Steps

- a) Select evaluation factors from tools for Worksheet 4c and record into Worksheet 4c
- b) Gather data about each option using the identified factors
- c) Record the detailed analysis in Worksheet 4d

Worksheet 4c: Evaluation factors

Evaluation factors
1. Financial factors
2. Performance factors
3. Geographic factors
4. Business risks

Tool for Worksheet 4c: Determining evaluation factors

Categories	Factors
1. Financial factors	Net present value, return on investment, profit margin, payback period, growth potential, cost of implementation
2. Performance factors	Performance objectives from competitive strategies: service customisation, product customisation (design flexibility), after sales support, product availability (delivery reliability), product price (total cost), quality conformance, product attributes, time to market, new product introduction rate
	Supply chain: supply chain flexibility (response time, production flexibility), supply chain reliability, supply chain responsiveness
4. Business risks	Intellectual property protection, poor service quality, lack of cultural fit, lack of control, lack of client acceptance, operational inefficiency, infrastructure instability, political instability, disaster recovery, longevity of new position, irreversibility (partly, completely), confidentiality leaks, loss of strategic flexibility, employee morale, employee turnover threatened the transfer of knowledge to the new location, currency risk, supply disruption, etc.

3. Geographical factors	
Categories	Factors
Labour characteristics	quality of labour force, availability of labour force, unemployment rate, labour unions, attitudes towards work and labour turnover, motivation of workers and work force management
Infrastructure	existence of modes of transportation, quality and reliability of modes of transportation, quality and reliability of utilities, and telecommunication systems
Quality of life	cost of living, society's attitudes towards and industry, extent of English language usage, schools and universities, crime rates, record of natural disasters, availability and quality of hospitals, hotels and banks, community environment
Competition	potential response from major competitors, number of competitors in the area, potential new competitors from the area, sales in the area for the last five years, compared with competitors
Suppliers	availability of suppliers and subcontractors, quality of suppliers and subcontractors, alternative suppliers, competition for materials from other companies
Integration with customers	proximity to market, size of market, stability of market conditions, facilitation of post-sale service, facilitation of co-design
Legal and regulatory framework	compensation law, insurance law, environmental regulations, industrial relations laws, legal system, bureaucratic red tape, requirements for setting up local operations, regulations concerning joint ventures and mergers and regulations on transfer of earnings out of country rate
Economic factor	tax structure and tax incentives, financial incentives, custom duties, tariffs, inflation, strength of currency against us dollar, business climate, country's debt, interest rates/ exchange controls and GDP/GNP growth, income per capita
Government and political factor	record of government stability, government structure, consistency of government policy, and attitude of government to inward investment

Worksheet 4d: Detailed analysis of each option

Potential options
Option 1
Financial analysis
Performance analysis
Geographic analysis
Business risks

Stage 5: Selection and Action Plan

Input: Issue statement, detailed analysis of each option, strategic initiatives
Output: Action plan

This stage is the last stage covering the selection of the most appropriate configuration option and the establishment of an action plan which determines future actions, responsibilities and timescales for the company to further validate and develop a business case for strategic initiatives derived in stage 3 and the selected configuration option in this stage. During this final stage the project team could look back at the findings from previous stages and discuss any area that is unclear. To carry on the selection of the most appropriate configuration option, scores should be allocated to each option based on:

- Financial analysis
- Performance analysis
- Geographic analysis
- Business risks.

After completing the process above, you should be able to select the most appropriate configuration option and develop an action plan for future actions. On the basis of this thorough analysis and detailed supporting research, the final recommendation can be made to the company's board of directors.

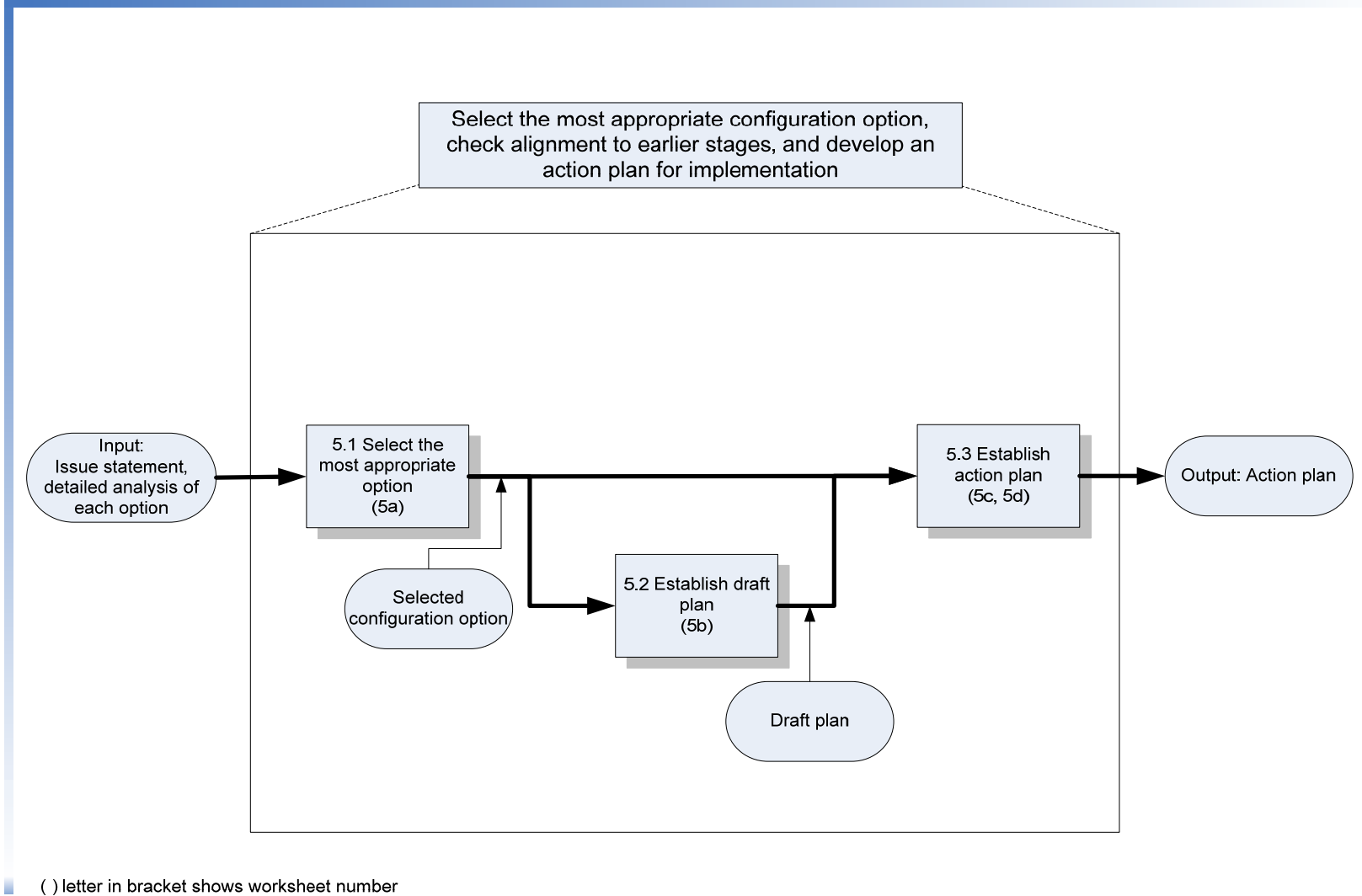
Objective

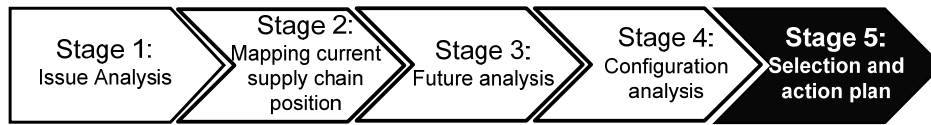
- To select the most appropriate configuration option
- To establish an action plan for future actions

There are three sections in stage 5:

- Section 5.1 Select the most appropriate configuration option
- Section 5.2 Establish draft plan
- Section 5.3 Establish action plan

Process definition map stage 5 – Selection and action plan





Section 5.1	Select the most appropriate option
Input	Output
<ul style="list-style-type: none"> ▪ Issue statement ▪ Detailed analysis of each option 	<ul style="list-style-type: none"> ▪ Selected configuration option

This section evaluates and selects the most appropriate configuration option.

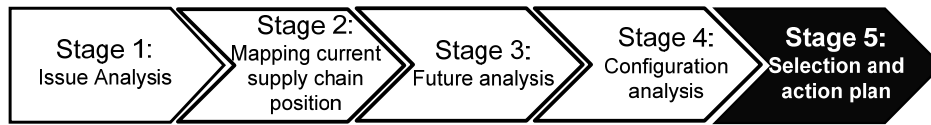
Steps

- a) List the options and benefits and risks that derive from the previous stage (Worksheet4d) and use Worksheet 5a to record
- b) Score each option according to its benefits and risks
- c) Discuss the results and select the highest scoring option

The project members may use discussion to select the configuration option instead of the scoring mechanism.

Worksheet 5a: Evaluation

Options	Benefits						Business risks		Total scores Benefits + risks
	Investment analysis		Performance analysis		Geographic analysis		Details	Score (1-10)	
	Details	Score (1-10)	Details	Score (1-10)	Details	Score (1-10)			
	• • •		• • •		• • •		• • •		
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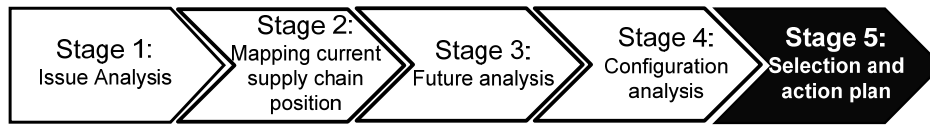


Section 5.2	Establish draft plan
Input	Output
<ul style="list-style-type: none"> ▪ Selected configuration option 	<ul style="list-style-type: none"> ▪ Draft plan

This section intends to draw a draft plan which maximises benefits and minimises risks from the selected option. With this draft plan, you will get the most benefits from the selected option.

Steps

- a) Use Worksheet 5b to record
- b) List the benefits and risks of the selected option from Worksheet 5a
- c) Decide actions for maximising benefits and minimising risks
- d) Prioritise actions to develop a draft plan



Section 5.3	Establish action plan
Input	Output
<ul style="list-style-type: none"> ▪ Selected configuration option ▪ Draft plan 	<ul style="list-style-type: none"> ▪ Action plan

This section allocates future actions and assigns responsibilities and timescales for the company to validate and develop a business case for strategic initiatives in stage 3 and the selected configuration option.

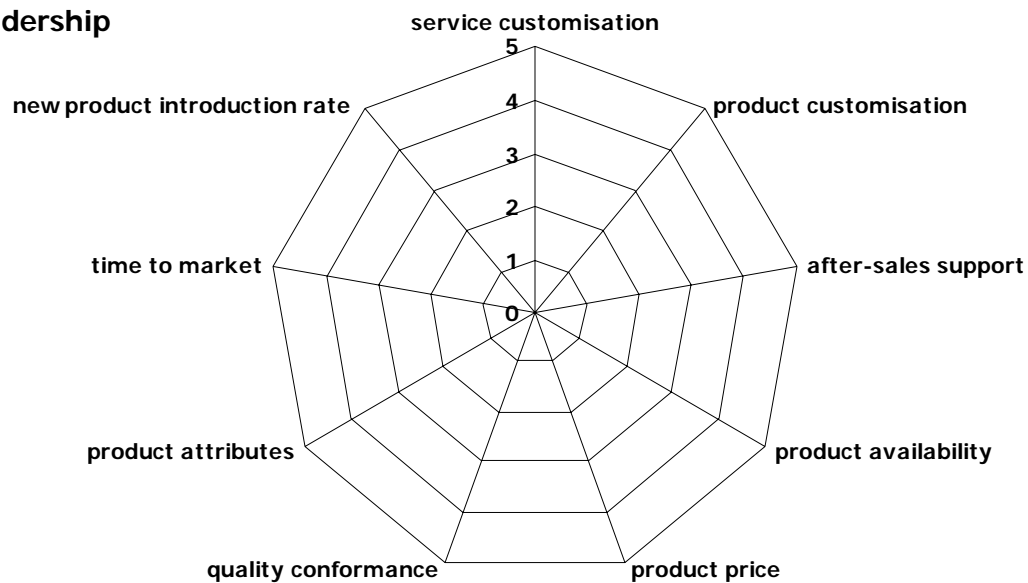
Activities

- a) Use Worksheet 5c to list necessary activities to be carried out to validate and develop a business case.
- b) Combine the draft plan from Worksheet 5b and the necessary activities to develop an action plan in Worksheet 5d. The company needs to identify persons within the organisation whom they feel needed to be informed about the proposed initiatives. These are managers likely to be impacted directly or indirectly by the proposed change. A project leader needs to be a fairly senior manager within the company who is charged with making decisions in a particular business operation within the strategic business unit. The start and end dates should be agreed by the project members. The key milestones need also to be agreed.
- c) Concern performance measurement as one activity in the action plan to monitor the directions of initiatives in order to align with the desired strategy and minimise the critical competitive gaps. Performance measurement tool is provided after Worksheet 5d.

Tool for Worksheet 5d: Performance measurement

These performance measurements should be included in the action plan (Worksheet 5d) to monitor the direction of the decisions. Plot the level of each criteria which is ranked low to high (1-5) and monitor the change after implement the initiatives.

Product leadership



Customer intimacy

Operation excellence