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Sourcing Uncertainties: The Case of Outsourcing and Global Sourcing

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Abstract

This article investigates uncertainties in global sourcing and outsourcing. The empirical research design is a multiple-case study that captures the uncertainties that companies face when sourcing low-cost countries (LCC) and when outsourcing to supplier markets that are in close proximity, but are non-developed. This article finds that, regardless of whether companies source to LCC or outsource to nearby suppliers, they face the problem of suppliers not having experience with the operations they run.Under such circumstances, operational uncertainties come into focus, particularly in the absence of a well-functioning supplier market. For practitioners, it is important to consider that a company must mitigate or manage uncertainties when it does not have a given supplier partner. The present study has found that mixed strategies, in which parallel production is continued in-house whilst also outsourcing, are a particularly effective way of managing multiples of uncertainties.

Keywords

outsourcing, low-cost country sourcing, purchasing, supplier management, uncertainty, mitigation, case study

1. Introduction

Many companies that have initialised sourcing or outsourcing programmes have not analysed the consequences of the uncertainties to which they are subjected (Rehme et al., 2013). For instance, experiences from various industries indicate that many outsourcing decisions have been based on a crude “core competence” or balance-sheet analysis (Lonsdale & Cox, 1997; Lonsdale, 1999; McIvor, 2008; Dabhilkar et al., 2009). The outcome of outsourcing and low-cost country (LCC) sourcing strategies, in terms of performance improvements, has also been increasingly questioned and is one of the issues that can be linked to the increased uncertainty (Gilley & Rasheed, 2000; Doig et al., 2001; Dabhilkar & Bengtsson, 2008; Cagliano et al., 2012; Horn et al., 2013).

Regardless of the mixed outcome, firms have comprehensively applied outsourcing and LCC sourcing over the last three decades in the IT, automotive and high-tech industries, among others (Willcocks & Lacity, 1998; Lonsdale & Cox, 1997; Kern et al., 2002; McIvor et al., 2010; Chicksand et al., 2012;

Cagliano et al., 2012; Najafi et al., 2013). As a result of firms applying "me too" outsourcing strategies, new sub-sectors with new types of suppliers have been developed (Harland et al., 2005). However, not all contexts have a long history of sourcing with existing developed supplier markets (cf. Rehme et al., 2013). For instance, the supplier market may malfunction before it has developed properly. Instead of requiring a few dominant suppliers in the market (something common to several industries), this scenario relates to difficulty finding suppliers with developed production systems and experience (Walker et al., 2005; Brege, Brehmer, & Rehme, 2008; Brege et al., 2012; Rehme et al., 2013). If there are no available firms and the driving force for outsourcing or sourcing is strong enough, the company must develop suppliers by transferring in-house skills to the existing supplier base. However, the literature has not extensively addressed the uncertainties that may arise or how to mitigate or manage uncertainty in the absence of a developed supplier market (Cagliano et al., 2012; Rehme et al., 2013).

The present study addresses this issue by investigating uncertainty in LCC sourcing and outsourcing to supplier markets that are in close proximity, but are non-developed (defined as those markets in which there are difficulties finding suppliers with developed production systems and experience of the components being considered for outsourcing or LCC sourcing (cf. Rehme et al, 2013). Our study draws on the work of Rehme et al. (2013) and focuses specifically on uncertainty in terms of type, origin and mitigation or management. The core of the article is based on a series of case studies that capture the uncertainties faced by companies when outsourcing in a non-developed supplier market in close proximity compared with those companies are confronted with when conducting global sourcing from emerging low-cost countries.

The article makes a distinct contribution to the more general field of purchasing and supply management. Through a series of cases studies, we illustrate how firms mitigate or manage uncertainty when outsourcing and sourcing in non-developed and emerging supplier markets. The extant outsourcing research has tended to address uncertainty in terms of opportunism risks caused by a situation of one or a few dominating suppliers (Walker, 1988; Hollcomb & Hitt, 2007; McIvor, 2008). The present article helps increase the understanding of operational aspects of LCC sourcing and outsourcing situations vis-à-vis the strategic level, which generally handles uncertainties based on opportunistic behaviour. This area has been identified in the literature as an area for future research (Momme & Hvolby, 2002; Marshall et al., 2007; Boulaksil & Fransoo, 2010; Rehme et al., 2013). Finally, our article contributes to the literature by identifying examples of how firms can mitigate uncertainty in outsourcing and LCC sourcing situations.

The next section reviews the literature in the area of uncertainty. We then explain our research methodology, followed by six case descriptions. The paper ends by offering some conclusions, including implications for theory, recommendations for practitioners and suggestions for future research.

2. Literature Review

Uncertainty can be defined as the inability to predict an individual's actions as a result of (a) limited competence, trustworthiness or reliability of human agents (otherwise known as the principal agent problem); (b) market changes; or (c) a buyer's future requirements (Shelanski & Klein, 1995). When complex contractual circumstances involve innovation or the formation of new ventures, transactions are likely to include a high degree of uncertainty (Lonsdale, 2005). For instance, uncertainty can include lock-in risk when outsourcing, at which point a shift of power can occur in favour of the supplier (Lonsdale & Cox, 1997; Lonsdale, 2001; Cox et al., 2003). Therefore, in order to mitigate the potential for opportunism, a greater number of safeguards must be written into the contract (Williamson, 1985, 1991). However, when uncertainty increases, it also becomes more difficult to write contracts, which means that producing a component in-house can become more attractive (Williamson, 1985). Before discussing uncertainty in more detail, it is necessary to make a distinction between uncertainty and risk. The first to do this was Knight (1921), who wrote:

"... It will appear that a measurable uncertainty, or 'risk' proper, as we shall use the term, is so far different from an unmeasurable one that it is not in effect an uncertainty at all. We ... accordingly restrict the term 'uncertainty' to cases of the non-quantative type."

2.1 Uncertainty and Risk

According to Knight (1921), risk involves contractual situations in which many known alternative scenarios could potentially emerge during the life of the contract (Brousseau & Glachant, 2002). The important distinction here is that it is possible to avoid post-contractual re-negotiation, as variances can be stipulated in the contract. Therefore, it is possible to sign "flexible" contracts or "framework agreements", which provide for a range of alternative scenarios. For instance, the exact quantity of products required over the life of the contract may not be known, and a potential disturbance may relate to changing input costs. In this case, a contract can include "escalator" clauses, which establish a link between contract prices and input cost indices. Although the exact nature of a possible disturbance cannot be predicted in circumstances of risk, it is possible to anticipate the range of variations and build this into the contract. However, uncertainty causes problems for relationships. Knight (1921) defined uncertainty as occurring in contractual situations that involve unimaginable scenarios that could emerge over the life of the contract. Therefore, uncertainty means there is an incomplete contract at the start of the relationship. According to Lonsdale (2005), uncertainty is significant because the inability to sign complete contracts makes it difficult for buyers to obtain value for money.

2.2 Origins of Uncertainty

There are several different origins and types of uncertainty. From the perspective of transaction cost economics, uncertainty is often viewed as one of the main counter-arguments when deciding whether to move from in-house governance to an external party (Williamson, 1985). Transaction cost analysis (TCA) considers the firm as having a governance structure rather than a production function (Williamson, 1979, 1985). TCA emphasises minimising both production and transaction costs by

deciding on an appropriate governance structure that either handles the activity within the firm or by market function (Williamson, 1979, p. 245, 1985, 2008). Transaction costs arise when there is a need to allocate resources to organise transactions between parties (Johanson & Mattsson, 1987). Williamson (1991, 2008) defined three ways in which transactions can be organised: market, hierarchy (that is, handling the activity within the firm), or hybrid. The hybrid form is a bilateral mode between hierarchy and market that is characterised by various forms of strategic alliance agreements between buyer and seller (Williamson, 1991).

From a transaction cost perspective, Williamson (1985) divided uncertainty into two types: one is state-contingent and the other is related to behavioural uncertainty. The latter is based on assumptions of bounded rationality and opportunism and, according to the literature, may be linked to some of the main problems associated with outsourcing and sourcing (cf. Walker, 1998). Bounded rationality limits the opportunity to write complete contracts; that is, contracts that fully explain transactions given all future possibilities. Opportunism implies self-interest and guile and it can be difficult to know who can be trusted (Williamson, 1985). Opportunism and bounded rationality give rise to information impactedness, which Williamson (1975, p. 31) referred to as information that is asymmetrically distributed between parties coupled with a high cost of enabling information symmetry. Williamson also stated that information impactedness becomes particularly relevant in the context of a small-numbers bargain. Similarly, Lonsdale (2001) argued that information asymmetry increases the risk of opportunism (for example, from an outsourcing perspective, the supplier often becomes more knowledgeable about outsourcing than the buyer). Williamson linked bounded rationality with uncertainty/complexity and opportunism with small-number exchange. Thus, information impactedness arises from uncertainty and opportunism.

Under conditions of bounded rationality and opportunism, asset specificity and uncertainty come into play. Asset specificity causes one or both parties to become locked to the other. For instance, if a buyer makes a significant transaction-specific investment, it can only re-enter the market if it is willing to write that investment off at a significant loss. This can result in the buyer staying with a suboptimal supplier because the risk (financial, operational and perceived) of moving to an alternative supplier is too great. This becomes particularly problematic if the transaction is characterised by uncertainty. Thus, in-house governance is preferable when asset specificity is high, and low asset specificity implies that the relevant transactions should be handled by a market (that is, outsourcing) or hybrid forms (such as temporary strategic alliances) (Williamson, 1991).

Firms often have difficulty estimating total costs because of their inadequate costing systems (McIvor, 2000). All costs associated with buying, using, and maintaining an item, rather than just its purchase price, should be considered when evaluating that item (Ellram & Maltz, 1995). The measurement problem is linked, to some degree, to basic assumptions about human nature and what is referred to above as behavioural uncertainty. Without bounded rationality, there will be no measurement problem, since unbounded rationality implies that the measurement costs are zero (Williamson, 1985). If there is

no opportunism, there will be no measurement problems, since neither party attempts to exploit private information to the disadvantage of the other (*ibid*.).

2.3 Types of Uncertainty

Walker (1988) identified the two following types of uncertainty:

1) Volume uncertainty raises costs when external contracting is used, and includes uncertainty about the estimation of volume or fluctuations. High volume uncertainty will lead a company to make a component rather than buy it.

2) Technological uncertainty raises costs when using internal governance and includes a probability of future technological developments or changes in the specification of a component.

Walker stated that volume uncertainty has been shown to raise transaction costs, while costs incurred due to technological uncertainty may be greater if production is in-house than if it has been outsourced. The opportunity for the buyer to shift the technological risks to suppliers depends on whether he or she has alternative suppliers to turn to and whether switching costs are low. Walker (1988) also mentioned three types of strategic risks related to supplier relationships: appropriation, technology diffusion, and end-product degradation risk. Appropriation is the risk that a supplier may take advantage of the customer's dependence in order to increase his or her share of the resulting customer revenues. Diffusion is the danger that innovative products or process technology will be imitated. Product degradation is the risk that important product attributes will be distorted or impaired in distribution, marketing or technical service operations.

All of these types of uncertainties are linked to the fact that the customer is becoming dependent on his or her supplier. According to Ouchi (1980), the absence of competition in situations with small-numbers bargaining will lead to each party opportunistically claiming higher costs or supplying poor quality. In order to sustain such a relationship, each party must incur the considerable expense of auditing the costs or performance of the other. Williamson (1975) also indicated that, due to bounded rationality, it is too expensive, or even impossible, for general management to evaluate everything going on at the operating level and adjust compensation accordingly.

2.4 Management of Uncertainties

There are several ways to mitigate or manage uncertainty. As mentioned above, uncertainty means that an incomplete contract is signed prior to its commencement, with the gaps filled in during the contract period. Post-contractual re-negotiation then becomes inevitable. However, negotiations about filling gaps can be difficult under conditions of opportunism. If one party has become locked in with no credible threat of exit, the re-negotiation of the contract is likely to be more problematic. The risk is that one party will try and hold the other up in order to earn quasi-rents (Lonsdale, 2005).

Re-negotiation will not necessarily be a serious problem unless there is a power imbalance between the two parties or opportunism is prevalent in the relationship. If the stronger party chooses to act opportunistically and take advantage of its power resources, it will be able to earn rents from the transaction (Shelanski & Klien, 1995). According to Ellram and Edis (1996), firms can also consider

partnering when the market fluctuates between moderate and high uncertainty.

Partnering is seen as an attempt to pre-empt opportunistic behaviour by highlighting the mutual advantages of working together in a long-term and on-going relationship (cf. Williamson, 1985). In accordance with this, there are a number of ways in which partnering such as joint ventures can help mitigate or manage uncertainty. Firstly, the inherent closeness of a partnership can support the quick (and complete) flow of necessary information between organisations and fill information gaps. Secondly, the trust developed in the relationship can ensure that negotiations over filling the information gaps occur without exploitation. When there is evidence of a relatively high degree of uncertainty, it is often suggested that partnering (or indeed hierarchy) is more appropriate as a governance structure than relying on market exchanges (Williamson, 1975, 1985). This is because it is not possible to effectively manage these relationships through classical or flexible (including "framework agreement") contracts (Macneil, 1974). Therefore, moving to a closer relationship that involves sharing information, joint goals and the like will reduce the probability that either buyer or supplier will act opportunistically. Partnerships are also formed to create stability in response to environmental uncertainty, which is generated by resource scarcity and a lack of full knowledge of environmental fluctuations, the availability of suitable exchange partners and the rates of exchange. This uncertainty drives organisations to form long-term collaborative relationships in order to improve the stability, predictability, and dependability of their exchange relationships (Oliver, 1990).

2.5 A Framework for Analysing Uncertainty in Outsourcing and LCC Sourcing

Based on this literature review, we can isolate different types of uncertainties with some key origins. The literature more or less converges by considering uncertainty at a strategic level based on opportunistic behaviour, largely because buyers often end up in locked-in situations. A number of previous studies have addressed how to manage uncertainty, with a focus on contractual forms and relationship-building dimensions to avoid opportunism and competitive threats in the actual outsourcing or sourcing agreement. Using this view, the present article addresses uncertainty in terms of the origin, type and mitigation or management of uncertainty (see Figure 1).

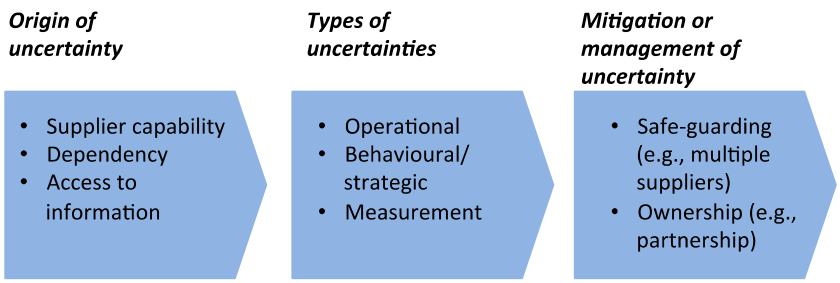

Figure 1. A Conceptual Model for Analysing Uncertainty Based on Type, Origin and Management with Examples of Key Considerations

3. Method

The empirical design of this article comprises three case studies of global sourcing from low-cost countries and three case studies of outsourcing to a non-developed supplier market in close proximity (see Table 1). The study draws on data collected through 28 interviews with management personnel involved in the sourcing and outsourcing decision making (see Table 1).

In line with a case study methodology, the cases have been chosen for their potential to be interesting from both theoretical and empirical perspectives (Bengtsson et al., 1997; Yin, 2003; Voss, 2002). Accordingly, we chose our cases for their potential ability to offer observations that could add to the theoretical discussion presented in this article. We chose to focus on Scandinavian companies engaged in LCC sourcing or outsourcing of semi-manufactured goods from local markets and Asia, specifically China and India.

There are variations in terms of company size, sectors, and the stages of outsourcing/LCC sourcing that the case companies have reached. With the assistance of discussions with industry experts, we selected companies with varying characteristics because this made it easier to capture different views of uncertainty and increased the generalisability of the results (Yin, 2003). The interview guide was sent to the respondents before the actual interviews. The interviews were recorded and subsequently transcribed into longer case descriptions. The descriptions were sent to the case companies, which helped us increase the construct validity (Ellram, 1996; Yin, 2003; Voss, 2002). The respondents supplied additional information and, in some cases, identified a few minor corrections to the case descriptions, which further improved the data validation (Yin, 2003). Within-case, cross-case analysis, as well as comparison with literature, started at the same time as the data collection (Eisenhardt, 1989; Voss, 2002; Yin, 2003).

Table 1. Overview of Case Companies Studied and Data Collected

Case	Situation	Interviewees
Case A	Outsourcing to a non-developed supplier market in close proximity	Group director, CEO, production manager and project manager
Case B	Outsourcing to a non-developed supplier market in close proximity	CEO and purchasing director
Case C	Outsourcing to a non-developed supplier market in close proximity	Group director
Case D	Global sourcing from low-cost countries	Purchasing manager
Case E	Global sourcing from low-cost countries	Purchasing director, vice president of purchasing, logistics manager
Case F	Global sourcing from low-cost countries	Purchasing manager

4. Case Studies

This section presents six case descriptions that illustrate outsourcing to a supplier market that is in close proximity, but is non-developed (Cases A-C) and LCC sourcing (Cases D-F).

4.1 Case A

This company, which is one of Europe's largest producers of wooden windows, entered an agreement with an international forestry product company to outsource window blanks (a wood component used for manufacturing window frames). The supplier made a greenfield investment and built a new plant to manufacture these components that was directly integrated with the current production of sawn wood. As part of this investment, the supplier installed new production technology that included finger-jointing, which helped to lower both labour and raw material costs. The outsourcing company guaranteed certain volumes and supported the supplier in its development (for example, quality standards, production process flow and developing different operational functions). Even though the company selected a large outsourcing partner with scale and financial stability, the outsourcing of the blanks encountered several initial problems, due to the supplier's lack of experience in handling this type of component manufacturing. The company also experienced insufficient communication from the supplier when it was experiencing production stops, troubles or delays in the manufacturing. The group director described this issue as follows:

"The quality varies too much. The sawmills have historically not shown the capability or understanding to deliver high quality with little variation. If you cannot manage that you should not try to make industrial components." (Group director)

Such quality issues forced the company to initiate costly additional in-house activities to repair the blanks, which often become so expensive that they rendered the cost reduction of the outsourcing redundant. As supply uncertainty continued, the company decided to change its outsourcing strategy to instead increase in-house capacity. This was done primarily to ensure reliability in supplies, as the blanks are the first input to window production, and high supply reliability of components with sufficient quality is critical in order to avoid production interruptions As the CEO of the company said:

"Blanks are a key product for us. They are one of the most critical products [in our production] and we need to secure [the flow of this component] to be able to continue to grow. We soon realised that we needed to keep the knowledge in-house and secure some volumes in order to not end up being too dependent on one source." (CEO)

Thus, the company again became a large producer of the wood component. This parallel production (partly in-house production and partly outsourced) offered high flexibility regarding volumes and also avoided costly investments in capacity expansion. This protected the group from becoming overly dependent on one supplier.

4.2 Case B

The company is a leading international manufacturer in the wood parquet flooring industry and exports to over 40 countries. The company has historically handled all of its activities in-house, including its own upstream manufacturing. As a result, it has experienced high costs and capital intensity and has aimed to find a better way of following market development; this resulted in a larger outsourcing strategy for the mid- and bottom-layer (M/B-components) of the wood parquet floor.

When rolling out the outsourcing strategy, the company had difficulty finding developed suppliers. This situation was different to that in most other industries, which often outsource to established specialist suppliers that may be larger than the outsourcing company. The company's CEO described the difficulty as follows:

"The problem is that there is no supplier structure [compared to the car and high tech/IT industries]. These strong [developed] suppliers do not exist… joinery factories work with much more expensive products so they are not on the cards… then there are sawmills that often lack everything… The best [sawmills] have a saw or planing machines… The first thing they cannot manage is the drying process." (CEO)

As a result of not finding developed suppliers, the company revised its strategy to instead focus on outsourcing volumes of non-standard components produced from less efficient production lines. This decision was linked to the various efficiency levels of the five production plants that manufacture the M/B-components: three lines in one larger plant (one very rational and the other two had the potential for streamlining) and two less rational lines at the other two production sites. The CEO stated that the company can outsource non-standard components for a slightly higher cost than using its most efficient line because it still saves money compared to in-house production (for example, by outsourcing components manufactured during a night shift at one of the less efficient plants). In this way, the company could outsource this production while keeping most of the standard and cost-efficient M/B-component manufacturing in-house, thereby avoiding making new investments in non-core activities. As the purchasing director explained:

"The thought is that we should build up a part [i.e., a supplier] to complement [our current production]." (Purchasing director)

4.3 Case C

This company is one of the largest wooden door manufacturers in Europe and the leading supplier of internal and external door solutions in the Nordic region, Germany, and Austria; these areas represent about 90 percent of the company's sales. Areas that are central for the company are control over process costs and becoming more "lean". Since becoming a supplier to IKEA, the company has maintained a strong focus on cost. This main driving force for the company's outsourcing is related to the difficulty of making large profits. Therefore, the company focuses very closely on expenses and whether its own production units are profitable. Process excellence becomes a clear driver for outsourcing to benchmark internal cost effectiveness with the effectiveness of external suppliers. This point show how much each component costs, both in-house and externally. The group director described the strategy as follows:

"We must always be able to see how much this component costs in-house and what it costs externally… One rule of thumb is that we consider outsourcing when the price of a supplier is lower than the internal cost price plus 25 percent." (Group director)

The company bases its outsourcing decisions on whether it has firm control of its total internal costs. If

it finds that an external supplier can handle an internal activity at a lower cost and the process development seems difficult, the company will consider buying rather than making. However, the opposite also applies: if the company initialises the outsourcing of components to a supplier that later fails to offer competitive prices or increases prices, the company will consider in-sourcing the activity. This situation suggests that the need for efficiency and productivity development is being increasingly pushed onto suppliers. However, because a secure supply line is critical for the company, it is sometimes better, when outsourcing, to guarantee security and sufficient production scale to handle deliveries of components to several production centres, especially when the company is working towards building its doors on similar modules. This means that even though cost efficiency is a central focus, the company does not always select the cheapest supplier. In line with increasing the outsourcing of components, the company works to reduce its supplier base to the main supplier. A typical demand is that the supplier must have the scale to deliver to several plants, but it also works hard to reduce the number of components and suppliers.

The group director argued that some local suppliers can handle wood component manufacturing, although they usually need help to develop their competencies. To cope with these issues, the company has created special teams that help suppliers with operation-related problems. In addition, the teams can help with starting up new technology and logistical issues. The teams facilitate the start-up and integration of the outsourced components with the company's production, and maintain competence in wood component manufacturing within the firm.

4.4 Case D

The company is part of a large multinational company and is a second-tier supplier of components for the automotive and industrial products sector. There is a strong corporate directive to rationalise purchasing and source from LCCs as a means of introducing competition into the existing supply base. Customers have also pressured the company into sourcing from LCCs as part of the continual improvement of cost competitiveness.

Consequently, the company has initiated an LCC sourcing programme for simple components, primarily those with no design changes and standard specifications. Sourced from Asia, these are generally metal products that are later moulded into rubber parts. The metal parts constitute a large part of the output of the company's final product—sometimes up to 70-80 percent of the total end product. There is not much sourcing from Eastern Europe, with a greater focus on India, Taiwan and China. Divisions of the parent (especially the automotive group) are active in India and Taiwan and they help to source from these countries.

The purchasing department is convinced that sourcing from LCCs offers savings. The purchasing target aims for a total cost reduction of at least 30 percent, although there is also an awareness that the lack of closeness to suppliers can be a problem when it comes to research and development, where close coordination is necessary.

One challenge in handling global sourcing involves material specification. Because of material

standard differences across various countries, foreign suppliers may produce products that do not conform to the necessary standards. Technical development and manufacturing lead time are very similar to those of suppliers in Europe. Compared to geographically close suppliers, more time is lost in setting up transportation than in developing components. There are also challenges due to the cultural differences between the companies' business practices. Another problem area is time delivery reliability, and the accuracy of information handling needs significant improvement. Supplier evaluation has become a key risk management area for the company.

The handle supplier uncertainties, the product selection is made internally, but supplier selection and logistics coordination with suppliers occurs through other corporate divisions present in the LCCs themselves. While LCC sourcing is sometimes performed by agents, the company has plans to set up an international purchasing office. The company claims that it requires large amounts of stock when sourcing from Asia and demand planning does not happen in collaboration with the customer.

4.5 Case E

The company is a global market leader in on-road load handling solutions, with a complete product offering for loading and delivering goods. Its product range covers 80 percent of professional needs for mobile load handling. The company has salespeople and representative offices in 25 countries, and has over 100 distribution partners around the world. Its market is particularly strong in countries that have high labour costs.

While the primary motive for purchasing globally is cost reduction, this is not only a question of price; it also involves standardisation to reduce variability in demand. LCC sourcing is used as a way to introduce competition into the existing supply base. Customers have also pressured the company into sourcing from LCCs as part of the continual improvement of cost competitiveness. Most of the sourced components are commodity products, such as cylinders (which represent a major part of the sourcing programme). The fact that there are few developed global suppliers for cylinders has led the company to scan markets in Eastern Europe, China and India.

The challenging nature of finding quality suppliers, combined with the very high job turnover of purchasing agents, may cause difficulties for an LCC purchasing strategy. Another challenge is the difference in establishing technical perspectives between countries (establishing technical and other requirements takes a lot of time), which slows the decision-making process. Communication with suppliers can also become a challenge when sourcing from LCC. Therefore, a number of different aspects are considered when global sourcing is analysed. At a corporate level, discussions concern whether components should be produced in-house (considering points such as financial issues, position in the value chain, etc.) and whether production should be global. Global sourcing is conducted in two steps. The first step is to build up suppliers for Asian production, while the second step is to use Asian suppliers to supply European factories. It also takes time to set up a new system, but when everything is running smoothly the perception at the company is that there should be no additional problems with supplies from China, for example.

In the case of new products, there is a high risk of failure when sourcing from low-cost countries, which means that sourcing is generally done in close proximity. The failure of one project for a specific line can cause the programme to stop for approximately two years. The company is continually looking for new suppliers, while also trying to keep the number of suppliers in low-cost regions as small as possible. This strategy is intended to result in higher volumes, and it makes it easier to follow and monitor suppliers. However, a change in suppliers is a significant adjustment and requires a lot of change management (although this is no different from a change of suppliers locally or within Europe). According to the company, the key is to change suppliers but not geographical regions. European suppliers are retained, which means there is a back door if something dramatic disturbs deliveries from Asia.

4.6 Case F

The company is a first-tier OEM manufacturer. Within its industry, the company has been a pioneer in sourcing from LCC. It has long-established procedures for managing sourcing and logistics activities and has been successful at LCC sourcing activities. The company is convinced of the potential cost reduction in LCC sourcing for its corporate global operations, and is also motivated by the market presence perspective.

Sourcing has gradually focused towards India, where the company has established an international purchasing office that has a clear understanding of the purchasing and logistics requirements of its various global facilities through cross-functional and cross-locational efforts in decision-making.

The first phase of sourcing starts with simple, time-insensitive, low-volume, constant-demand and less-complex products, and later moves on to high-volume, constant-demand products. These initial stages allow the company to understand supplier quality level and simultaneously set up logistics capabilities for sustainable LCC sourcing. The company avoids bulk low-value, non-stackable products, even if they have a substantially lower unit cost, and it also avoids low-volume products because of increased logistics coordination costs. During the sourcing process, the company comes to understand the technical capability of the suppliers and the feasibility of the purchase. It shares detailed volume plans with its suppliers and simultaneously with third-party logistics (TPL) providers. Once the technical capability of a supplier has been proven and established, the TPL company coordinates the demand planning information and material from the supplier to the company's individual global factories. Challenges include reduced flexibility to demand fluctuations, cultural problems, inland transportation infrastructure, handling, special packaging requirements and warehousing space requirements. There is high internal resistance to sourcing from LCCs since the company is a tier 1 supplier, and the logistics capabilities are perceived to be difficult to judge internally.

The company does not experience a great deal of difference between its suppliers in Europe and its selected suppliers in India. Despite some initial problems resulting from having new people and systems, fewer issues arose after one or two successful cycles. For instance, one supplier supplies eight different plants, and some of the potential problems are related to the very-low-volume parts. The

purchasing manager described the situation as follows:

"When you start, many issues come up, but once there is a flow in the products there are not many issues with logistics and quality." (Purchasing manager)

The company does not consider that there is a large risk of an increase in price, since there are a limited number of suppliers to cater for the demand. Prices are maintained at the same level because suppliers know that they cannot really hedge more with the OEM; however, it will be more of a capacity issue. The requirements are clear, and as long as the suppliers are cheap and capable of providing what is required in terms of quality, safety and environment issues, they will get the business. If a cheaper supplier appears in Europe, the entire sourcing process will take a new turn. According to the company, however, low cost is no longer the only issue, now that some of the LCC suppliers are world-class (having won Deming Awards and/or QS, TS or ISO standards). Some of the company's suppliers sell to customers around the world, which consistently rate the company as their best suppliers. A new challenge, however, is the fact that India has few such world-class suppliers, although these are slowly developing. Consequently, the company has focused on finding and building supplier quality capability. However, large suppliers are busy and in demand from many companies, including large firms such as Ford, GM and Toyota. Supplier management is also an issue. A few medium-level suppliers are useful for local production, but for the export market the company must spend a lot of time with suppliers that have not been exposed to global competition.

5. Discussion

In the cases studied, we observed three types of uncertainty: operational, behavioural and measurement. The outsourcing cases studied (Cases A-C) are particularly concerned with operational issues related to the security of supply (this may involve questions about reliability, product quality or sufficient volumes). These firms suffer from not having a developed intermediary industry for component manufacturing outsourcing that is positioned between them and the raw material suppliers. As a consequence, these case companies focus on evaluating component vulnerability and supplier capability when considering outsourcing strategies. This is important given that much of the existing outsourcing literature (Williamson, 1975, 1985) has been based on transaction cost analysis and has therefore taken a structural/strategic view of the outsourcing phenomenon rather than focusing on operational uncertainties. Not surprisingly, operational uncertainty for the global LCC cases studied can be linked to the sourcing distance (demand planning) and measurement uncertainty (such as material specification).

End-product degradation (that is, degradation of product quality) can also be linked to behavioural uncertainties, which are experience by both the outsourcing firms and the global LCC sourcing firms. Quality is critical for outsourced and sourced components and inappropriate material, and tolerances or quality can cause costly extra activities or even production interruptions. Components that are considered for outsourcing and sourcing are mostly decomposable and do not create dependency for

knowledge (cf. Fine & Whitney, 1999). This finding is in line with earlier studies that the difficulty of materialising extensive savings in LCC sourcing for highly customised products (Horn et al., 2013).

The risk of becoming dependent on the supplier may be caused by a number of factors, including limited supplier market, and may result in suppliers acting opportunistically (Williamson, 1975, 1985; Lonsdale & Cox, 1997). This applies to both the global LCC sourcing firms and the outsourcing firms, but in different ways. While only a few suppliers are available for the global LCC sourcing firms, these suppliers are directly capable of shouldering a supplier role, to varying degrees. This places the focus on supplier evaluation, and our case studies show that this might even require the sourcing company to maintain a local presence. The strategy of the LCC sourcing firms can be linked to what Najafi et al. (2013) termed a transactional approach, with a greater focus on purchasing than on supply market development.

Outsourcing firms do not necessarily have any available suppliers that can directly take over the manufacturing of the outsourced component. One key problem is a lack of suppliers that have sufficient scale in component manufacturing as well as developed capabilities. This situation creates the risk of involving small-numbers bargaining (cf. Williamson, 1985) and is enhanced by a measurement uncertainty. The relatively limited experience of the potential suppliers' in terms of managing component manufacturing complicates outsourcing and increases the uncertainty of the suppliers' price estimate. In the absence of a developed supplier market, it is difficult to access external suppliers' costs and prices in order to compare them with internal costs. This results in uncertainties, increased risks, higher costs and decreased performance. Therefore, the limited supplier market may not only run the risk of becoming dependent on the suppliers (cf. Lonsdale & Cox, 1997), but also in the need to develop the suppliers or consider alternative sourcing strategies.

Developing the suppliers means that operational uncertainties will be reduced, but dependence—and therefore behavioural uncertainties—will increase. In line with the findings of Horn et al. (2013), the global sourcing firms that we studied managed this by sourcing commodity types of materials using multiple large safety stocks or suppliers in order to reduce operational uncertainties and behavioural uncertainties/dependence. There is a basic assumption that supplier uncertainties are reduced by collaborating with a large firm that is assumed to have the competence and/or resources needed to develop products and processes. This can be related to the outsourcing firms studied, which are more reluctant to initialise full-scale outsourcing when the perceived risks cannot be managed in a controlled manner (cf. Ellram et al., 2008). These firms have used a variety of measures to handle this situation. All three firms have maintained some in-house production, which enables them to in-source if required, to retain competence and to compare in-house costs with supplier prices. We have encountered three different ways of handling supplier uncertainty in outsourcing by maintaining some in-house production.

1) The first way (*Case A*) is to maintain in-house production for security and as an external capacity regulator to manage market cyclicality. In this way, a mixed strategy is also used as a financial

incentive, which gives the firm a call option if the supplier fails and helps avoid opportunistic behaviour.

2) The second method (*Case B*) is to develop large-scale in-house production systems while also outsourcing non-standard components that do not fit the in-house production setup. In all large-scale production systems, some products will be more costly to produce in-house than others; these can be better managed in an outsourcing agreement.

3) The third approach (*Case C*) is to proactively develop the supplier base while maintaining in-house production to develop competence and measure own performance and supplier price/cost. Here, competence is transferred to suppliers in order to streamline the production process and allow goods to flow. In-house expert teams handle this development.

This can be compared with the global LCC sourcing firms (Cases D-F), which manage operational uncertainties using safety stocks, to ensure low prices and larger volumes (sourcing commodities). In addition, they also use another type of mixed strategy in which they keep domestic suppliers (for new products, for example) while also sourcing from LCC suppliers or from multiple LCC countries.

6. Conclusions

The present article has shown that not all contexts have developed supplier markets for directly managing outsourcing or sourcing. In line with authors such as Horn et al. (2013) and Najafi et al. (2013), we have addressed issues that may arise when outsourcing or conducting global LCC sourcing. We have also added to the understanding of uncertainty in terms of type, origin and mitigation or management. In particular, we have found that sourcing to emerging LCC suppliers and outsourcing to suppliers in close proximity results in similar issues. Specifically, suppliers often do not have long-term experience of the operations they run or take over. Many of the uncertainties in the studied outsourcing situations stem from the shift from a set of “knowns” in the company’s environment to a set of “unknowns” involving a new supplier setting. This article has shown examples of uncertainty in which the difficulty has occurred in terms of finding outsourcing suppliers that have both capacity and competencies. Similar issues have arisen in low-cost country sourcing situations where there is a need to plan the location of production as well as to develop supplier capacity and capabilities. Such transformation may be a consequence of a more dynamic global marketplace in which competition and customer and supplier markets are constantly changing, and may lead to new uncertainties (Horn et al., 2013). Figure 2 presents the uncertainties observed in our case.

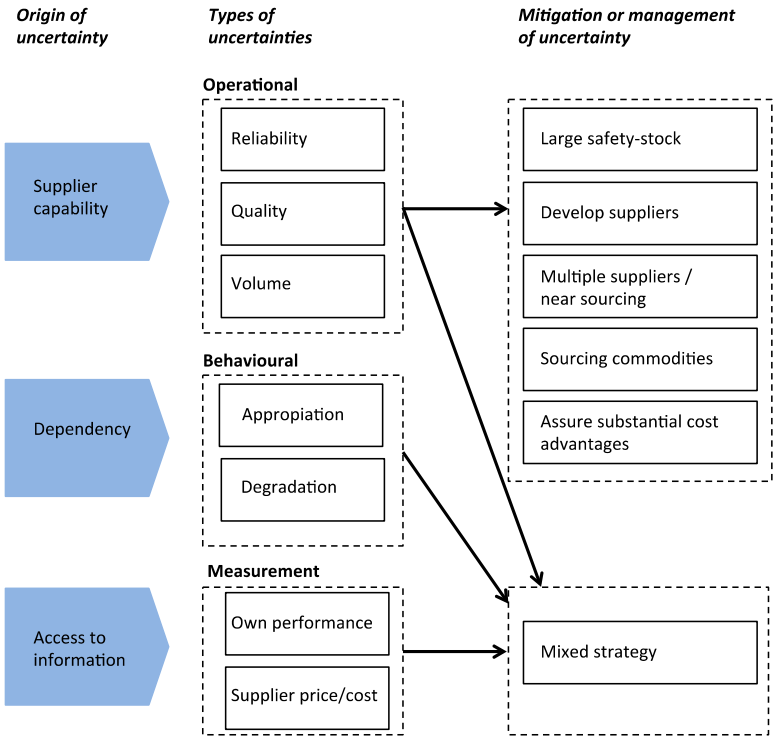

Figure 2. Management of Uncertainty in Outsourcing and LCC Sourcing Situations

As Figure 2 shows, operational uncertainties come into particular focus in outsourcing or sourcing in the absence of any well-functioning supplier market. This finding contrasts with earlier literature, which tended to handle uncertainties based on opportunistic behaviour such as uncertainty originating from dependency and access to information, largely because buyers end up in lock-in situations. Much of this literature is based on Williamson (1985) and therefore takes a structural/strategic view instead of one based on operational issues.

Operational aspects originating from uncertainty of the supplier capability are critical, but can be mitigated by a number of different mechanisms related to logistics, supplier and purchasing management. This article has shown that such mitigating mechanisms include issues such as proactive supplier evaluation, the need for larger buffers, and development of the supplier base, as well as a mixed strategy, in which parallel production is continued in-house whilst also sourcing. A mixed strategy can help firms, particularly outsourcing firms, better manage the reversibility of the decision and avoid divesting all capability to perform an activity at later stage (cf. Mols, 2010); this helps lower switching costs when there is uncertainty about supplier performance. It can also help when conducting continuous cost benchmarking. In this view, a mixed strategy can also help to cope with behavioural and measurement uncertainties, as it serves to increase contracting flexibility and improve supplier market transparency (that is, cost competiveness).

For practitioners, the present study indicates the importance of conducting a thorough analysis of the uncertainties of an outsourcing or sourcing situation, and of considering supplier capability. While

outsourcing and LCC sourcing decisions are undoubtedly complex and require thorough analysis, it appears as though this process must be even more comprehensive in non-developed or emerging supplier markets. Such markets seem to result in uncertainties regarding costs and performance, which shifts the focus to analysing the vulnerability of the component/sub-system alongside supplier market evaluation (for example, the number of suppliers and their development). It is important to consider this aspect because even a supplier that has sufficient production scale and financial possibilities may have difficulty handling certain outsourcing or sourcing due to a lack of competence and experience. This article finds that mixed strategies, in which parallel production is continued in-house whilst also outsourcing, are a way of managing multiples of uncertainties.

Future research should continue to investigate how to mitigate or manage the operational day-to-day uncertainties with the long-term strategy of a company, especially when it comes to uncertainties related to supplier selection and sourcing in non-developed and emerging supplier markets. There is also a need for more research into what alternative strategies are available. One such alternative discussed here is a mixed strategy in which parallel production is continued in-house whilst also outsourcing parts of the production.

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