

Strategic Global Sourcing: towards the creation of a toolkit for informed decision making

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Abstract

This paper describes work at the Centre for Business Process Outsourcing aimed at developing a toolkit to support informed sourcing strategy-making. The toolkit rationale and background will be presented. The focus will then be on discussing three major outcomes of the research so far: the global sourcing process model, the project management checklists and the IT-enabled outsourcing module. The authors will report on the knowledge generated and the work done to develop the main concepts behind the aforementioned outcomes -as a combination of literature study and experience gathered in sourcing projects with manufacturing companies and service providers-; and to implement the concepts in the IT-enabled module –carried out in partnership with a service provider expert in supply chain optimisation-. This paper contribution lies in addressing the lack of usable theories and tools to support sourcing decision making in today's global environment.

1. Introduction

This research originated from an interest the investigators had in the interconnections between the three concepts of supply chain management, sourcing and outsourcing, and globalisation.

It is the opinion of the investigators that: outsourcing is the strategic question of origin which look at whether to make or source a process/function/service from a provider; supply chain (or the business network, to use a more general term) is the result of such strategy being put in place, and supply chain management is the set of tools and techniques that are needed to successfully implement the outsourcing strategy (Moller and Halinen, 1999; Harland et al., 2006). Globalisation ties these concepts together.

Existing knowledge in sourcing and outsourcing models and supply chain management shows that the set of theories and tools available is very fragmented, with studies focusing on areas such as make or buy decisions and supply chain implementation, e.g. suppliers selection, new product development (Kannan and Tan, 2002; Haq and Kannan, 2006, Mikkola and Skjøtt-Larsen, 2006), and supply chain operations e.g. inventory management, performance management (Baiman et al., 2001; Shepherd and Gunter, 2006; Chan et al., 2006; Zhoua et al. 2006). Few authors have attempted to develop a more holistic view of the sourcing process in the supply chain context, however the ones that have been developed (Harland et al., 2005) are limited due to their high-level conceptual nature.

Outsourcing, just one of the possible sourcing strategies, has undoubtedly become a major issue of study and one of the fastest growing industries over the past few years (Shepherd and Gunter, 2006; McIvor and Humpherys, 2000; Sislian and Satir, 2000). The same has happened for the inherently related concepts of enterprise collaboration and SCM. Several articles and books on outsourcing can now be found (e.g. Gray et al., 2005;

Quinn and Hilmer, 1994; Prahalad and Hamel, 1994; Domberger, 1998; Milgate, 2001) that provide recommendations about how to go about in an outsourcing initiative. Though:

GAP1: Most of the work is highly conceptual, does not provide practical guidelines and tools (Phelps and Fleischer, 2002), and does not actually help decision makers recognize the complexities and common pitfalls of outsourcing (DeloitteConsultingLLP, 2005).

Emerging evidence from industrial cases shows that most outsourcing initiatives fail to deliver the expected benefits (DeloitteConsultingLLP, 2005; Diamond Cluster International Survey, 2002). Data clearly indicate that most companies that have decided to outsource have done so without really understanding what outsourcing means and what it implies. Also, few authors and practitioners make the connection between the decision to outsource and how this actually affects the design and management of the subsequent supply chain. Theory development seems to be more active in the field of SCM than in that of outsourcing. Developments in SCM theory have focussed on a range of issues such as: supply chain modelling, e.g. the SCOR model (Huan et al., 2004), supply chain design (Beamon, 1998; Towill et al., 2002), and best practice approaches to SCM (Lamming, 1996). Other authors have studied more in depth specific issues related to, for example, just-in-time approach to supply chain (Schwarz and Weng, 2000), vendor managed inventory (Dong and Xu, 2002), value chain mapping (Rother and Shook, 2003) and ERP implementation (Scheer and Habermann, 2000).

The outsourcing literature, on the other hand, hardly presents any new theory. Most studies borrow theories, such as the transaction costs (Geyskens et al., 2006; Walker and Weber, 1984; Michel, 2004) and vertical integration/disintegration (Lonsdale, 1999; Ulrich and Ellison, 2005) theories, developed in other fields and mainly used to answer the “make or buy” question.

This seems to be a gap not just in literature but also in industry, evidence of which is given by the rising number of failing outsourcing relationships (see also McIvor, 2000). Several tools and techniques have been developed for the support of the various stages of supply chain design, implementation and management. SCM software tends to be limited to particular aspects of the supply chain, such as planning, manufacturing or inventory. Some provide support in the definition of the business and manufacturing strategies of the organisation, e.g. supply strategy models (Harland et al., 1999), core competencies identification frameworks (Hafeez et al., 2002), value stream mapping (Rother and Shook, 2003) and various analysis frameworks for the make/buy decision (Canez et al., 2000; McIvor and Humpherys, 2000; Berggren and Bengtsson, 2004; Michel, 2004; Geyskens et al., 2006). Others focus on the design of supply chains (Beamon, 1998; Bundschuh et al., 2003; Blackhurst et al., 2005; Meixell and Gargeya, 2005). And others focus on the implementation and management of supply chains (Lamber et al., 1998; Power, 2005; Kumar, et al., 2006; Lamothe et al., 2006). Hence:

GAP 2: Many of the packages reviewed seem to be complex and fragmented, and do not always take into account all aspects of implementing an outsourcing strategy through designing and operating a supply chain (Leahy, www.insight-mag.com, 25/05/06).

It can be said that there is a lack of theories and tools that enable practitioners to undertake successful outsourcing strategies, with some authors stressing that the outsourcing decision is one that is often taken without considering any strategic implications (Lonsdale and Cox, 1997). Nonetheless, the importance of a thorough

strategic planning of the outsourcing strategy is agreed upon in literature (Momme, 2001).

The present paper presents part of the work done within a larger study aiming to fill the identified gaps by creating an ICT enabled toolkit that will support manufacturers to set up and operate efficient and effective global supply chains.

In particular, this paper shares the knowledge accrued during the work undertaken concerning the process of analysing and implementing sourcing strategies. After briefly presenting the research methodology and a literature review on the topic, the remaining of the paper will present the three major outcomes of the research so far: the global sourcing process model, the project management checklists and the IT-enabled outsourcing module.

2. Research Methodology

The authors have used a mixed methodology encompassing both deductive and inductive research phases. The methods used within the methodology were qualitative in nature (Flick, 2002) as were the evaluation criteria used to ensure the robustness of the research findings (Lehaney and Clarke, 1995). The methodology was essentially divided in two phases, the theory building stage and the theory testing/development stage.

The initial stage of the research used both inductive and deductive research strategies to build theory, although the majority of the work was carried out in the inductive stream of research. Theory was developed using deductive strategies such as systematic literature reviews (Tranfield et al., 2003; Hart, 1998) on areas such as outsourcing and SCM. The inductive research strategy is loosely based on the grounded theory approach to management research (Glaser and Strauss, 1967). The inductive phase of the research used a number of methods such as interviews and focus groups (Kvale, 1996; Stewart and Shamdasani, 1990) and in-depth case studies (Eisenhardt, 1989; Yin, 2003). This ensured comprehensive data collection and enabled triangulation of the data collected (Kekale, 2001). The findings from the inductive stream were combined with the results from the structured literature review to develop the holistic toolkit that will be tested and further developed in the second stage of the research work.

The second stage of the research work will be carried out using an action research strategy (Eden and Huxham, 1996; McNiff, 2002; Huxham, 2003). Action research is cyclic process that is based on the researcher undertaking interventions within the case company. The toolkit will be modified and developed based on the implementation and observations and will be implemented again in another cyclic process (Westbrook, 1995; Coughlan and Coughlan, 2002). Due to the recurring and time-consuming nature of action research process it is acceptable that the interventions can take place in only one case organisation (Huxham and Vangen, 2003; Thompson and Perry, 2004), therefore this project will use one case company for the action research phase of the methodology.

3. The effects of globalisation on sourcing strategies: outsourcing versus supply chain models

As a result of globalisation, availability of advanced information and communication technologies (ICT), and the ever increasing level of integration between different cultures and markets, industries have become highly competitive, and operate under the constant pressure to produce high-quality products at ever lower costs and in a timely fashion (Gray et al., 2005; SAP, 2003; Mason et al., 2002). Also, supply chains have become highly dispersed and complex (Mason et al., 2002).

Supply Chain Management (SCM) as an emerging discipline (Harland et al. 2006) has received wide attention from both academics and practitioners over the past decade or so (Storey et al. 2006). Nonetheless, outsourcing has lately become the focus of an increasing number of scientific studies and industrial cases (Jiang and Qureshi, 2006). Even though, research in these two fields seems to be developing on two parallel and seldom crossing paths, in terms of theories and tools being produced, and industry to which these are being applied. Neither one of these two concepts is new though: the roots of both can be found in the seminal works on transaction costs by Coase's (1937) and Williamson (1975). As Geyskens et al. (2006) puts it "the central question of transaction cost theory is whether a transaction is more efficiently performed within a firm (vertical integration) or outside it, by autonomous contractors (market governance)". More recent work on the "make or buy" strategic decision highlights well the links between SCM and outsourcing (Moller and Halinen, 1999, Tully, 1994).

In the age of "make or buy" third-party suppliers would manufacture specific products on a contract-by-contract basis. Thanks to economies of scale suppliers would be able to leverage operational expertise and optimised production to lower the costs to the Original Equipment Manufacturer (OEM), which in turn passed the savings along in part to its customers (Delattre et al., 2003)

Whereas this first example of "outsourcing model" has been used successfully in industry, e.g. automotive and electronic, for a long time (Jensen and Heinzi, 2001), recent events have changed the way manufacturing companies operate and compete making the model obsolete. Manufacturers nowadays are indeed faced with difficult challenges driven by (see also: Gray et al., 2005; SAP, 2003; Mason et al., 2002): technological development; increased number of global manufacturing locations; shortened product life cycles and "time to market"; increased importance of customers; emergence of new business models such as that of the virtual enterprise.

In order to win these challenges, OEMs have to re-evaluate and redefine their business strategy (products and services delivered, markets served) as well as their sourcing and manufacturing strategy (Collins and Bechler, 1999). OEMs have to quickly and cost-effectively identify and enter new markets, design, manufacture, and deliver products that meet customer requirements (Mason et al., 2002).

More specifically, greater importance is being placed on agility in terms of producing a broad range of low-cost, high-quality products with short lead times built to individual customer specifications (Narasimhan and Das, 1999).

"Buy" is not a good enough sourcing strategy anymore and more advanced outsourcing models have become the alternative. Access to lower labour and infrastructural costs and more favourable policies and tax regimes have blinded short-sighted companies (Warburton and Stratton, 2002; Gray et al., 2005) and **outsourcing has so become the business answer to globalisation** (Power et al., 2004). Outsourcing is now a top priority of executives as the business strategy that will create and sustain business value in the competitive global marketplace (Power et al., 2004).

However, even though outsourcing has become such a dominant trend, emerging evidence indicates that results have been contradicting, and there are few in-depth studies that can help decision makers recognize the complexities and common pitfalls of outsourcing (Coming and Hughes, 2003; Deloitte Consulting, 2005). A Dun & Bradstreet Survey shows that 20% of outsourcing relationships fail in the first two years, and 50% within five years. Also, a DiamondCluster International Survey (2002) shows that 78% of responding executives had to terminate agreements early due to poor service, a change in strategic direction, or costs.

Organisations have now started to understand that the answer to this dynamic and global industry is not necessarily outsourcing, but agility (Narasimhan and Das, 1999), i.e. the ability to respond quickly and effectively to satisfy customers. This means that supply chains are agile only if they are dynamic. Within this context, outsourcing may become the answer as one of the possible means to improved agility. This explains how for some companies outsourcing has definitely been a winning strategy (e.g. Dell), whereas for others vertical integration has been more appropriate (e.g. Samsung) (Berger, 2005). When outsourcing becomes the strategy of choice, the resulting supply chain is different from earlier models in the following dimensions:

- Higher network complexity: The move to outsourcing entails a higher degree of complexity than conventional supply agreements. The OEM now must deal with two or more corporate cultures, extended business processes and must-be-integrated technologies;
- Collaboration: outsourcing arrangements are highly dependent upon tight linkage between partners. The ability of the outsourcing relationship to become a “logical enterprise”—in which all trading partners in the supply chain are virtually synchronized—is critical to success;
- Shared strategic risk: outsourcing has caused an increase in the amount of information that is shared between supply chain partners. As a result, a greater reliance on suppliers and alliance partners has become essential for company survival and partners now must work together to achieve strategic outcomes (Tolone, 2000);
- Performance measurement: outsourcing requires new metrics. Performance management based on measures such as cost, quality, and asset efficiency is meaningless unless it takes into account new measures such as: agility, flexibility, time-to-market, total cycle time, market adoption rate and market share.

In order to address these four dimensions a new process model needs to be developed that will lead companies through evaluating the appropriateness of outsourcing and then guiding them through the implementation process. Whether seeking specialized manufacturing technologies, contracting final assembly processes to less expensive operators, or leveraging international distributor networks, manufacturers must create new governance structures, processes, and information systems to proactively manage corporate performance as their global manufacturing networks evolve. The next section draws on these dimensions and from outsourcing process models found in the literature to create a global sourcing process model.

4. The global sourcing process model

Momme (2001) defines outsourcing as the process of establishing and managing a contractual relationship with an external supplier concerning provision of capacity that has previously been provided in-house. The process involves a fundamental change of the organisation, and all the important aspects of such a change have to be covered in the thorough strategic planning of the outsourcing process.

A number of authors have proposed different models of the outsourcing process. Franceschini and Galetto (2003) developed a simple model in four sequential steps: internal benchmarking, external benchmarking, contract negotiations and outsourcing management. Other models suggest step-by-step guides to outsourcing, and Table 1 provides an overview of some of the existing models.

Table 1 - Overview of existing outsourcing models from literature

Johnson (1997)	Greaver (1998)	Lonsdale & Cox (1998)	Jensen and Heinzl, 2001	Momme (2001)
Strategic Analysis	Planning initiatives	Assessment of criticality of business activities	Deciding on the company strategy	Competence analysis
	Exploring strategic implications	---	Describing the outsourcing project	---
Identifying best candidates	Analysing costs/performance	Assessment of supply market	"House cleaning"	Assessment & approval
Defining requirements	---	---	Defining the different production tasks	---
	---	Selection of appropriate types of supplier relationship	Designing the network	---
Selecting providers	Selecting providers	Supplier selection	Selecting the partners	---
Selecting operations	---	---		---
---	Negotiating terms	---	Framing the internal network structure	Contract negotiation
---	Transitioning resources	---	Implementation	Project execution
Managing relationships	Managing relationships	Supplier management		Managing relationship
---	---	Re-tender or return in-house	Continuous adjustments	Contract termination

The authors propose an outsourcing model that is a further development of the aforementioned ones. The models in Table 1 contain common steps and can be amalgamated to form an enhanced process model. The steps can be grouped into key phases and then for each phase a detailed process can be established. The outsourcing model highlights the four key phases each with steps that have to be undertaken in order to successfully complete an outsourcing project (Figure 1):

- **Business Strategy**, i.e. the process of re-defining own core competencies and strategy to see whether outsourcing would potentially fit in the overall business strategy;
- **Sourcing strategy**, i.e. the process of deciding whether or not to outsource, and, if so, what process should be outsourced and what processes should on the other hand be kept in house;
- **Partners Selection**, i.e. the process of looking for, evaluating and selecting outsourcing partners (and locations);
- **Outsourcing implementation**, i.e. the process of defining the relationship and agreement between outsourcing partners and managing the outsourcing transition, monitoring the overall evolution of the ongoing outsourcing project.

The steps in each phase of the model shown in Figure 1 were derived from the literature, for example Step 1.1 Define core competencies can be traced to, amongst others, Momme (2001) and Step 2.1 Select processes can be traced to Johnson (1997). It is important to note that the outcome of this process is not necessarily outsourcing, there are key evaluation points at which the outsourcing option can be quantified as inappropriate. Additionally, the process is iterative and the process will not be a simple linear sequence.

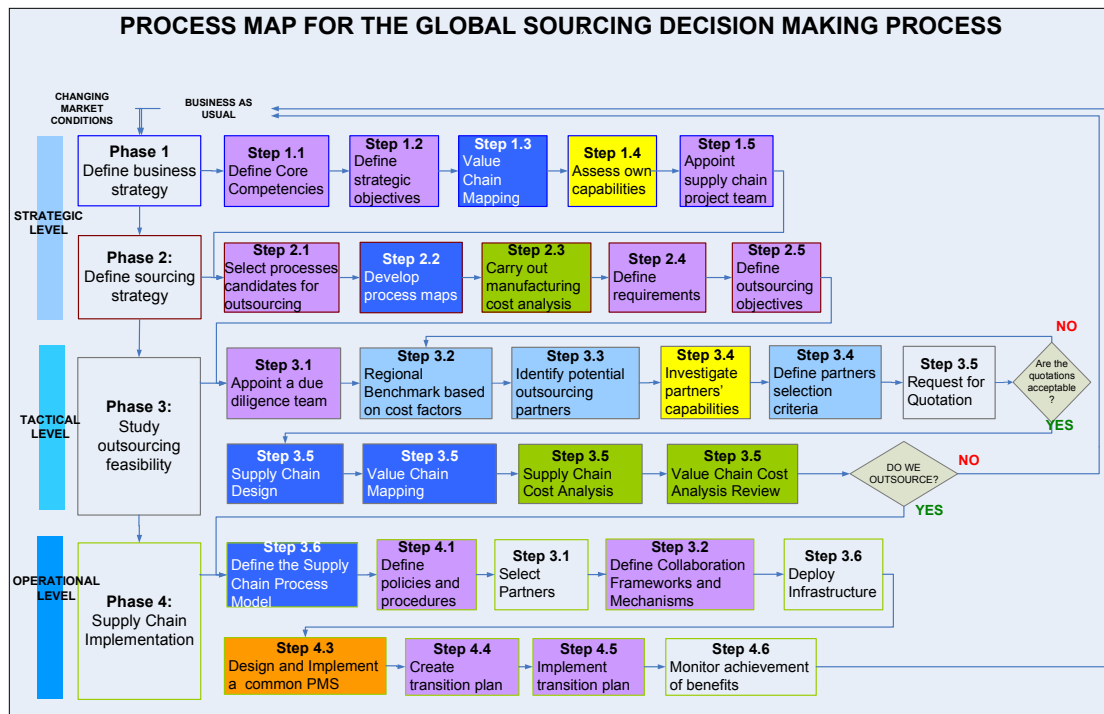


Figure 1 - The Global Sourcing Process Model

To support decision makers in each phase identified in Figure 1, the authors have developed a number of “project management checklists”, which are discussed below.

5. Project Management Checklists

The Global Sourcing Process Model shows clear process steps to follow when engaging in outsourcing decision making and implementation. Drawing from the literature the best practice approaches do not simply appear as process steps but as critical success factors, risks & pitfalls, etc. This section provides detail of some of the steps as well as providing overall good practice.

Critical success factors

As outsourcing arrangements have grown more complex, OEMs must work harder to achieve success. Existing studies and practical experience show that to be efficient and effective outsourcing partners should focus on the following critical success factors (Delattre et al., 2003):

Table 2 - Critical Success Factors checklist

CSF	Action	<input type="checkbox"/>
Continuous improvement	Must be the focus of the business and manufacturing strategy of both the OEM and the outsourcing partner (Cant and Jaynes, 1998).	<input type="checkbox"/>
Power balance	Outsourcing at the operational level can easily lead to the development of dependencies that create unforeseen strategic vulnerabilities (Insinga and Werle, 2000, see also Rossetti and Choi, 2005). OEMs excellence in their core competency, e.g. design, and outsourcing partner's excellence in manufacturing should maintain a power balance that would enable a win-win situation.	<input type="checkbox"/>
Management innovation	Management skills are required to: improve customer responsiveness; leverage network partner capabilities; and increase enterprise business performance (Lankford and Parsa, 1999)	<input type="checkbox"/>
Accountability	Efficiency is the core objective of outsourcing and requires collaboration (Lankford and Parsa, 1999). Therefore, all parties must be vigilant about rooting out and eliminating inefficient practices that could limit the benefits of the arrangement.	<input type="checkbox"/>

CSF	Action	<input type="checkbox"/>
Win-win mentality	Outsourcers' competitive factor is the ability to building products better, faster, and less expensively. However, the outsourcing arrangement must be a solid business proposition hence OEMs cannot aim for costs lower than the outsourcers' required margin. On the other side, outsourcers' must be aware that their most significant value proposition is to create a profit for OEMs.	<input type="checkbox"/>
Performance management	By working together to continually monitor the operation and identify ways to improve it, all parties can help ensure that the relationship is still meeting the market's needs while optimizing the relationship's overall performance (e.g. Choi and Hartley, 1996; Gunasekaran et al., 2002)	<input type="checkbox"/>
Strategy planning	OEMs must understand the strategic implications of outsourcing. Unlike the old days, outsourcing is no longer strictly a transaction. Therefore, it's critical for an OEM to confirm how outsourcing fits within the context of its various strategies and amend them to accommodate tighter working relationships with partners (Lankford and Parsa, 1999; Jennings, 2002)	<input type="checkbox"/>
Incremental outsourcing	For OEMs new to manufacturing outsourcing, starting small is advisable. Outsourcing relationships take time to mature, and the impact on the OEM's culture and organizational processes will take time to implement and adjust. This way the model could be adjusted before implementing large-scale change.	<input type="checkbox"/>
Forward thinking	OEMs should start small but think big. When considering outsourcing, an OEM shouldn't be content with achieving only manufacturing efficiencies. Cost reduction is just the start.	<input type="checkbox"/>
Target planning	In today's economy and labour market, organizations looking for differentiated growth solutions should avoid outsourcing when based solely on cost savings (Deloitte Consulting, 2005) However, companies should outsource only commodity functions to guard against a loss of knowledge and should plan for short-term outsourcing to prevent vendor dependency	<input type="checkbox"/>

Setting Objectives and generating Benefits

Steps “1.2 Define strategic objectives” and “2.5 Define outsourcing objectives” are key steps in the overall global sourcing process. They bound the scope of outsourcing as well as enable the decision to be quantitatively assessed. Later they enable the outsourced process to be monitored, i.e. “4.6 Monitor achievement of benefits”. This section provides further detail of these steps.

An organisation must know both the benefits and risks of outsourcing in order to outsource intelligently (Vining and Globerman, 1999, as cited in Mason et al., 2002). Outsourcing has been promoted as the way for organisations to reduce costs, focus on core business processes, improve services, enhance skills, reduce time-to-market and increase overall competitive advantage (Power et al., 2004).

More precisely outsourcing manufacturing enables OEMs to (Hadaya, et al., 2000; Simchi-Levi et al., 1999; Lankford and Parsa, 1999; Cohen, 2004; Shy and Stenbacka, 2003; Mason et al., 2002; Lankford and Parsa, 1999; Jennings, 2002):

- **Concentrate efforts on core competencies:** outsourcing allows a company to focus its resources on its core business.
- **Reduce and control costs:**
 - **Overhead:** businesses have traditionally viewed overhead as a fixed expense. A growing number of companies are raising fundamental questions about the value of fixed cost overhead. Outsource manufacturing allows businesses to contain overhead costs by more effectively managing their workflow.

- **Manpower and training costs:** outsourcing gives companies an opportunity to exercise a tighter rein on manpower and training costs. Businesses can enjoy lower fees during slower periods and avoid the expense of staffing up during busier ones.
- **Avoid capital expenditures:** the production of ever-evolving products means capital investments in equipment, facilities and workforce expertise. When manufacturing is outsourced, those costs are borne by others.
- **Redirect resources** toward activities that provide a greater return: outsource manufacturing allows a company to direct more resources toward strategic activities, such as product development and marketing. The benefits are: better product design, increased speed to market, improved understanding of the market, and a strategic advantage over competitors.
- **Improve flexibility:** outsource manufacturing allows a company to convert production costs from fixed to variable to better meet fluctuating demand. These businesses are better able to utilize their resources where and when required. They can quickly react to increased (or decreased) product demands.
- **Improve focus:** every organization has limits on the resources available to it. Outsourcing permits an organization to redirect its resources (most often people resources) from non-core activities toward greater value adding activities which serve the customer. The company can focus its resources on meeting its customers' needs.
- **Increase customer satisfaction:** Through outsourcing people whose energies are currently focused internally can now be focused externally - on the customer.

The above list can be quickly put into a checklist (Busi and Ball, 2006) and used by decision makers to (in reference to Figure 1):

- During Phase 2: clearly define the objectives of the outsourcing initiative to ensure the right focus, and
- During Phase 3: monitor the benefits arising along the project to make sure that the project implementation is proceeding as dictated by the “Code of best practice”.

Avoiding Risks and Pitfalls

As said earlier, organisations must be aware of the risks involved in outsourcing in order to outsource intelligently (Vining and Globerman, 1999, as cited in Mason et al., 2002). Major risks and pitfalls are hidden in each of the four key phases of the outsourcing model presented in Figure 1 - The Global Sourcing Process Model. Addressing these risks will go a long way to making the benefits of outsourcing reality (Tompkins, 2004).

Table 3 is the last of the checklists provided in the framework presented in this paper (see also Power et al., 2004; Tompkins, 2004; McIvor, 2000). The aim of this checklist is to make sure decision makers are aware of the risks and are acting towards avoiding the potential pitfalls.

Table 3 – Risks and Pitfalls typical in an outsourcing initiative

Risks & Pitfalls	
Strategic Risks	<input type="checkbox"/>
Outsourcing undesirable functions versus those with the greatest potential gain	<input type="checkbox"/>
Not clearly defining goals and objectives of the outsourcing initiative	<input type="checkbox"/>
Not establishing an effective performance measurement system for supplier evaluation	<input type="checkbox"/>
Outsourcing in the international market without international operations experience	<input type="checkbox"/>
Developing an inadequate business case	<input type="checkbox"/>
Outsourcing without thoroughly understand internal costs & performance	<input type="checkbox"/>
Not considering the impact of outsourcing on other functions	<input type="checkbox"/>
Not recognising the impact of cultural differences	<input type="checkbox"/>
Lacking risk analysis – risk assessment planning	<input type="checkbox"/>
Partners' selection Risks	<input type="checkbox"/>
Not including enough resources to effectively manage the vendor selection process	<input type="checkbox"/>
Not selecting the proper internal skill set to effectively manage the selection process	<input type="checkbox"/>
Developing inadequate service/product specifications	<input type="checkbox"/>
Inaccurate costing of assets that will be transferred to the service or product provider	<input type="checkbox"/>
Minimal knowledge of outsourcing methodologies	<input type="checkbox"/>
Insufficient knowledge of service provider capacity limitations	<input type="checkbox"/>
Implementation risks	<input type="checkbox"/>
Initiating collaboration that limits instead of bursting flexibility in the future	<input type="checkbox"/>
Having an unrealistic timeline	<input type="checkbox"/>
Poor implementation planning	<input type="checkbox"/>
Inadequate planning concerning information systems	<input type="checkbox"/>
Inadequate technology development before implementation	<input type="checkbox"/>
Rushing through the initiative	<input type="checkbox"/>
Management risks	<input type="checkbox"/>
Lack of management commitment	<input type="checkbox"/>
Lack of an outsourcing communications plan	<input type="checkbox"/>
Lack of a contingency plan for major disruptions at the service provider	<input type="checkbox"/>
Lack of a formal outsourcing governance program	<input type="checkbox"/>
Not fully defining an organisational change plan	<input type="checkbox"/>

6. Developing an ICT Enabled Outsourcing Tool

The process model introduced in Figure 1 shows the phases and, in turn, steps to introduce and manage outsourcing. These steps can be enhanced through the use of ICT. For example, developing process maps can be initially carried out on paper in a workshop environment but would later benefit from software support to map out formally. Additionally, to carry out manufacturing cost analysis a software tool, be it a spreadsheet template or more sophisticated software package, would be extremely helpful. This section therefore draws on the process model and project management checklists to derive requirements for ICT support.

In order for the ICT-tool to enable quick monitoring and assessment of the required information, it should provide relevant and timely information that would allow decision makers to answer and continuously update the following key questions:

- When and if outsourcing is beneficial for them
- What processes would be best outsourced than kept in house
- Where these processes would be best outsourced to; and
- How the outsourcing relationship, i.e. the supply chain, should be designed and run to ensure supply chain agility.

The toolkit should be a set of models, framework, guidelines and techniques that will provide support to manufacturers gain full benefit from their collaborative relationship with their outsourcing partners at all levels and activities identified in the proposed outsourcing process model (Figure 1). In more detail, the toolkit is envisioned to be a

computer aided dashboard integrated at a network level. *Figure 1* **Error! Reference source not found.** shows in more detail the outsourcing process map; *Figure 2* shows the major areas that the tool will cover highlighting the support of the tool at the different levels, and Table 4 shows indicative references to previous work and tools that the project intends to analyse and potentially use as a base for further development.

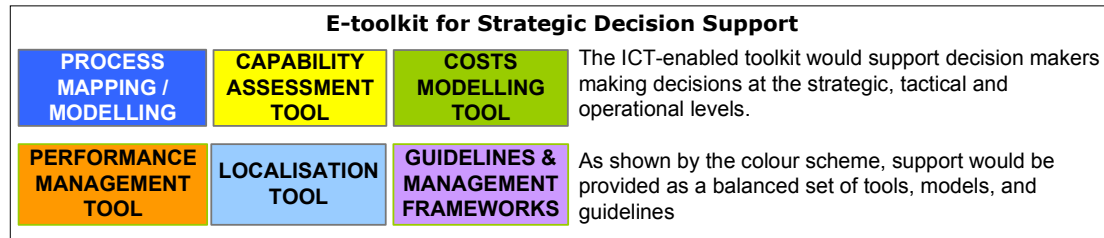


Figure 2 - The support areas covered by the toolkit

Being designed this way, the tool not only would provide support in the design, implementation and management of globally outsourced manufacturing supply chains, but it would also enable network- and industry-wide benchmarking (through the performance management model) and training and education (through the guidelines and management framework and the clear and structured display of information).

In order to establish what tools exist to provide such an ICT toolkit a literature and software search was carried out. The search established a number of sources to provide either the specification of or the actual tool for each area of the toolkit, see Table 5.

Toolkit areas	Support	Existing Tools	Indicative References
Process Mapping and Modelling		Value Stream Mapping Value Stream Attribute Mapping IDEF Tools, Petri-Nets Role Activity Diagrams SCOR SIMPROCESS Workflow Analyser Product Chain Decision Model (PCDM) Modelling framework for supply chain simulation ProcessWizard (formerly SCORWizard) LogicTools supply chain optimisation software	Rother and Shook, 2003 Monroe, 2006 IDEF, Defining IDEF Van der Aalst and van Hee, 1996 Ould, 1995 SCOR reference model; QUEST; SIMPROCESS; Michel, 2004 van der Zee and van der Vorst, 2005 www.process-wizard.com www.logic-tools.com
Capability Assessment		Capability Assessment Framework; Framework for Identifying Core competences; Integrated Supplier Selection Model	Prahalad and Hamel, 1994; Bakker and Nijhof, 2002; Hafeez et al., 2002; Haq and Kannan, 2006
Cost Modelling		Activity Based Costing; PILOT Model; Transaction Cost Theory; Case based reasoning for the make/buy decision	ABC costing related literature; Cohen and Moon, 1991 Geyskens et al., 2006 McIvor and Humpherys, 2000
Performance Management		Measuring Supply Chain Performance; Performance Measurement and Design in Supply Chain	Beamon, 1998; Baiman et al., 2001; Busi and Bititci, 2006
Localisation Tool		Provision by companies such as: TFI eKNOWtion	www.economy.com/dismal www.worldbank.org/data/countrydata/countrydata.html
Guidelines and Management Framework		PRTM process reference model; Collaborative Supply Chain System Design and Operation; PACE Model; SCOR Model; Conceptual framework for outsourcing	Stephens, 2001; Muckstadt et al., 2001; McGrath, 2004; Huan et al., 2004; Harland et al., 2005

Table 4 - Indicative list of existing tools and references established for the toolkit

The above work has established the key areas of the toolkit and potential sources for integration of tools to complete it.

7. Conclusions

This paper has argued that there is the need for an integrated toolkit to support global sourcing decision managing and management. The paper has identified that current tools and theories are fragmented and there is a high incidence of reported outsourcing failures. With the provision of an outsourcing process model, project management checklists and IT-enabled outsourcing module there is potential to improve the quality of decision making and management of outsourced operations.

The global sourcing process model was derived from an extensive search of the outsourcing and make-vs-buy literature. Analysis of the published models enabled generic phases to be identified and the steps necessary to complete these phases to be drawn from multiple sources.

The project management check lists presented draw from the same literature review. The checklists support the process model in a generic way through the “risks and pitfalls” checklist or in a very specific way related to individual steps such as the “objectives and benefits” list.

In order to make the process model and checklists a practical proposition for companies, a high level view of a supporting ICT toolkit was presented. The toolkit supports key steps in the process model such as the cost analysis or the performance measurement system creation as well as the use of the project management checklists.

The next steps of this research are to further validate the process model against manufacturing companies who have carried out and managed successful or otherwise outsourcing initiatives. From here, the specification and then development of the ICT toolkit will be carried out before piloting in companies embarking on an outsourcing project. This action research stage of the work will provide further refinement of the model and tools as well as provide valuable insight into the management of outsourcing initiatives.

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