



Estimating cost-saving potential from international sourcing and other sourcing levers

Relative importance and trade-offs

Estimating
cost-saving
potential

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Abstract

Purpose – Research results concerning the cost-saving potential of international sourcing have been ambiguous and the topic has been covered in isolation without accounting for influences of alternative cost-saving approaches. This paper aims to analyze the expected financial impact of international sourcing in relation to savings potential attributed to other sourcing tactics, such as, e.g. collaborative product improvement. Furthermore, the paper tests for potential trade-offs between different levers.

Design/methodology/approach – Data stem from results of 134 cross-functional cost-saving workshops using an identical methodology. Workshop participants identified and estimated cost-saving projects considering seven sourcing levers. Results were recorded in a standardized way and analyzed scrutinizing secondary data.

Findings – Contrary to other studies, data revealed that international sourcing projects averaged 3.4 percent savings expectations. More than 80 percent of total savings potential was attributed to other sourcing levers, such as pooling of demand or process improvement. Results highlight possible trade-offs between international sourcing and, e.g. joint product optimization.

Research limitations/implications – A rigorous and strict, highly standardized method was employed and data were validated via cross-functional team discussions, however, *ex ante* expectations instead of *ex post* realized savings are analyzed.

Practical implications – Findings give guidance on the importance of international sourcing compared to other levers and help to correct the misconception of international sourcing as a “purchasing panacea.” The findings highlight the need to develop a coherent sourcing strategy for specific commodity groups, including reinforcing tactics and avoiding trade-offs.

Originality/value – For the first time, explicitly cost-savings expectations from international sourcing have been analyzed together with other cost-saving levers concerning relative importance and possible trade-offs among them.

Keywords Globalization, Sourcing, Purchasing

Paper type Research paper



1. Introduction: achieving cost savings through sourcing

Most companies today engage in international sourcing in some form and to some extent (Trent and Monczka, 2003a). The motivations for companies to source internationally vary but generally fall into one of the following categories:

- (1) cost savings due to, e.g. lower factor costs or currency influences;
- (2) the procurement of highly innovative products or technology that would be otherwise unavailable; and
- (3) sales opportunities in the sourcing region (Bozarth *et al.*, 1998; Smith, 1999; Trent and Monczka, 2003a; Steinle and Schiele, 2008).

Although motives for international sourcing may differ according to the country in which a firm is based, cost motives often play the most prominent role (Trent and Monczka, 2003b; Nellore *et al.*, 2001; Kaufmann and Carter, 2002; Frear *et al.*, 1992). Also, a recent survey revealed a clear emphasis on cost savings, with 56 percent of all survey participants engaged in international sourcing for this reason only (Lionbridge, 2006). In accordance with this business focus, this paper highlights cost-saving aspects of international sourcing decisions of firms based in high-wage Western countries.

Beyond the level of anecdotal evidence, only a few attempts have been made to empirically quantify the impact of international sourcing and its benefits, linking the level of international sourcing with firm performance (Akkermans *et al.*, 1999). In past studies, the total cost advantages from international sourcing, particularly in terms of savings, ranged from negative or neutral effects (Kotabe and Omura, 1989; Murray *et al.*, 1995) to 20 percent savings (Frear *et al.*, 1992; Petersen *et al.*, 2000; Trent and Monczka, 2003a). Some major consulting firms even claim potential savings of up to 60 percent for certain products (Boston-Consulting, 2007), although many skeptics question these savings calculations. The diverse results of these studies might not be truly comparable because they use different measurement criteria or do not explain whether they address savings associated with single projects, commodity groups or a firm's entire purchasing volume. Moreover, Kinkel and Maloca (2009) have shown that in Germany, for instance, every fourth offshoring activity among manufacturing companies was followed by a backshoring activity within the next four years, indicating dissatisfaction with the outcome.

It is worth stressing that international sourcing is only one way of achieving cost savings, the ultimate objective. To operationalize and implement a cost-oriented sourcing strategy, several sourcing tactics can be employed (Stevens, 1989). International sourcing is one such tactic. Collaborative product improvement with a supplier could be another tactic used to achieve the strategic goal of supply cost reduction. Economies can be achieved using a series of tactical sourcing "levers" including not only international sourcing or collaborative product improvement but also other levers, such as the pooling of demand, price evaluation or process optimization (Semmler and Mahler, 2007; Schumacher *et al.*, 2008; Schuh *et al.*, 2009; Schuh and Bremicker, 2005; Schiele, 2007). Previous research has analyzed the effects of using each of these tactics separately. This research is the first to simultaneously ask firms to estimate the effects that they expect from several sourcing levers and not just from one tactic discussed in isolation. This more holistic approach allows to analyze potential trade-offs between the diverse levers.

Thus, the main aim of this paper is to evaluate the expected cost-saving impact of international sourcing in comparison with other established sourcing approaches. In other words, how much savings do companies expect to achieve through international sourcing? Additionally, how much do they expect to save by applying other sourcing levers, such as collaborative product and process development? To address these questions, this paper uses data from a cooperative study run by the authors and h&z,

a large procurement consultancy. We scrutinize a database detailing the results of 134 purchasing cost-reduction workshops that followed the “lever-workshop” method (Schuh and Bremicker, 2005; Schiele, 2007). This method essentially involves highly structured cross-functional firm workshops in which participants identify savings opportunities and jointly estimate their savings potential.

A challenge that previous studies on the effects of international sourcing have faced was that they had to rely on *ex post* perceptual data. The reliability and validity of such survey results is difficult to assess because firms are quite heterogeneous: for instance, in terms of how to account for success and which cost elements should be considered a part of “savings” (Ketokivi and Schroeder, 2004; Nollet *et al.*, 2008). To overcome the problem of unclear measurements of savings, we analyze savings potential as recorded in the sourcing strategy document issued after each lever workshop. Analyzing *ex ante* expectations developed following exactly the same principles and reporting requirements has the advantage of focusing on highly reliable and comparable data.

In our sample, expected savings from international sourcing projects accounted for about one-fifth of total estimated savings. On average, other levers, such as product optimization and bundling, were expected to be equally important or even stronger cost-savings tactics. Moreover, our data indicate that there could be trade-offs, particularly between international sourcing and joint product optimization and relationship-based improvement efforts. This trade-off implies that firms may have to choose a set of internally consistent sourcing levers that, when aggregated, form a coherent sourcing strategy. For instance, trying to reduce costs by jointly optimizing the product with suppliers while selecting new international vendors may not be a self-reinforcing strategy.

This paper is structured as follows. Section 2 defines international sourcing terminology and provides a structured literature review detailing the results related to international sourcing. In this review, we also present alternative sourcing approaches and discuss the need for a coherent sourcing strategy. Subsequently, the research methodology and results are presented. In the final section, we discuss findings, implications for different stakeholders, the limitations of the study and opportunities for future research.

2. Literature review: international sourcing and other procurement levers in the context of a coherent sourcing strategy

2.1 Differentiating between global-, international- and low-wage country sourcing

The fundamental concept behind cost-oriented cross-border sourcing is the idea of lower factor costs, in particular labor, resulting in lower comparative price levels in certain countries (Porter, 1990). Companies can benefit from those differences by allocating activities in the value chain to those regions, thus reducing costs (Kogut, 1985). Facilitated by easy communication, travel and the removal of trade barriers, in the context of globalization, firms are increasingly seeking to take advantage of lower factor costs (Kotabe and Murray, 1990; Bozarth *et al.*, 1998; Steinle and Schiele, 2008; Hartmann *et al.*, 2008).

Despite its apparent practical and scientific relevance, international sourcing must still be considered an under-researched topic (Kaufmann and Carter, 2006). The widespread utilization of terms already indicates this point and demonstrates the need for further clarification. Quintens *et al.* (2006a), for example, list six key phrases

for describing the phenomenon that have partly been differentiated and partially been used interchangeably: “global sourcing” (Kotabe, 1998), “international purchasing” (Motwani and Ahuja, 2000), “worldwide sourcing” (Monczka and Trent, 1992), “import sourcing” (Swamidass, 1993), “offshore sourcing” (Frear *et al.*, 1992) and “international procurement” (Scully and Fawcett, 1994). One may add “low-cost-country sourcing” (Lockström, 2007), though this would possibly better called “low-wage-country sourcing” because it is not clear if the *ceteris paribus* assumption is true and low wages automatically translate into low costs.

Scientific research on firms engaging in cross-border sourcing has evolved during the last 30 years. During the late 1980s and early 1990s, research mainly focused on international sourcing with a clear cost-reduction element (Trent and Monczka, 2003b). However, sourcing ventures’ that aimed for unit cost-reduction following a classical sourcing approach (Alguire *et al.*, 1994) did not necessarily lead to an overall cost advantage on the part of the firm (Levy, 1995). Embedding international sourcing ventures into a broader organizational strategy, the term “global sourcing” evolved.

Indeed, most scholars active in the field have highlighted the integrative and broader strategic aspect of global sourcing. Kotabe and Murray claim global sourcing to be the management of logistics, research and development (R&D), manufacturing and marketing on a global basis (2004). In a similar vein, Trent and Monczka (2003b, p. 608) argue that global sourcing is the “worldwide integration of engineering, operations, and procurement centers within the upstream portion of a firm’s supply chain”. Trent and Monczka (2003a) distinguish classical international purchasing from global sourcing. Within the latter context, international sourcing implies the exploitation of comparative advantage among countries with lower factor costs, albeit not necessarily within the scope of a larger strategy as the term global sourcing would imply.

For the remainder of this paper, we will use the term “international sourcing” to indicate non-domestic sourcing in a narrow and clear sense (Trent and Monczka, 2003a). International sourcing can thus be conceived of as one weapon in a strategic “global sourcing” arsenal that may well have an integrated and strategic character (Quintens *et al.*, 2006a).

2.2 Analyzing international sourcing success

This section contains a literature review indicating the relevant body of knowledge as an underlying methodological framework for the paper. A literature review can be described as “a systematic, explicit, and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners” (Fink, 2009, p. 3). We draw on a more formalized approach, creating a content-based literature review, as advocated by Mayring (2003) and Seuring and Müller (2008).

As a point of departure, we updated the review conducted by Quintens *et al.* (2006b). This review was based on 14 journals from three domains: supply chain management, international marketing management and international business[1]. They identified 123 papers related to international sourcing published between 1990 and 2005. We extended the review by including papers from the same journals between 2005 and 2008, adding an additional 31 papers. None of these more recent papers, however, tested the impact of international sourcing. In a second step, from this list we identified 11 papers quantitatively and/or qualitatively discussing the success of international

sourcing (Table I). In addition to information on methodology, key findings, and business areas, we added a column determining whether international sourcing interactions with other levers were addressed. In other words, we looked to see if the paper discussed potential trade-offs between different levers or, more generally, if cost-saving approaches other than international sourcing were considered.

The papers analyzed do not indicate clear and distinctive patterns of international sourcing success. Even research on companies operating in similar industries presented by authors with the same cultural background during a rather short period of time provides differing views on international sourcing (Frear *et al.*, 1992; Kotabe, 1998). Some studies support the idea of international sourcing as a source of substantial savings (Petersen *et al.*, 2000; Trent and Monczka, 2003a), while others take a neutral approach (Kotabe and Omura, 1989; Murray *et al.*, 1995; Bozarth *et al.*, 1998) or even discourage international sourcing ventures (Homburg *et al.*, 2002; Kotabe, 1998; Nellore *et al.*, 2001; Callahan, 2000).

The studies summarized in Table I mention a large number of contingencies for international sourcing success. These include having a fit between purchased product and industry characteristics (Cho and Kang, 2001; Frear *et al.*, 1992; Murray *et al.*, 1995) or cultivating long-term commitment and top management support (Petersen *et al.*, 2000). Furthermore, industry selection seems to be of importance. Apart from Cho and Kang (2001) and Nellore *et al.* (2001), who restricted themselves to one industry, most researchers working on this subject have collected data from a wide range of industries with differing degrees of maturity within the procurement sector, differing procurement needs (e.g. lower general sourcing needs in the service industry) and, hence, probably different expectations and results than appear in international sourcing.

The literature review also revealed that most papers focus exclusively on international sourcing. Apart from that of Nellore *et al.* (2001), no paper listed in Table I explicitly mentions or quantifies the interplay between international sourcing and other sourcing tactics. To overcome the problems deriving from an isolated view, the following section discusses alternative sourcing approaches that might contribute to the target of cost reduction as part of an overall sourcing strategy.

2.3 Alternative sourcing approaches as a part of the commodity strategy

Sourcing strategies provide a general orientation indicating how a company plans to purchase a particular commodity. Despite a plurality of definitions of sourcing strategies, “[...] the most basic questions that need to be addressed in designing a coherent set of sourcing strategies are what to source, and where to source” (Kaufmann, 2002, p. 15). Such a strategy relates to specific actions that the purchaser may take to achieve his objectives (Carr and Smeltzer, 1997). The challenge lies in transitioning from the general strategy to these “specific actions”.

To link strategic goals to specific actions, Stevens (1989) distinguishes between a strategic and a tactical level. At the strategic level, the functional goals are defined, while at the tactical level, sets of measures that Stevens (1989, p. 4) calls “levers” are combined to achieve the desired strategic goals: “The functional goals provide the drivers for achieving the balance and inventory, capacity and service are the levers by which balance is achieved”. Stevens elaborates on designing a balanced supply chain strategy and – to operationalize it – distinguishes on the tactical level between the three levers of “inventory, capacity and service”. To develop an integrated strategy, following this

Table I.
Overview of papers
containing an appraisal
of international
sourcing effects

International sourcing results	Authors and year	Type of paper	International sourcing results detail	Sample drawn from	Industry of researched firms	Location of companies surveyed	International sourcing context and definition	Interaction with other levels
Positive	Frear <i>et al.</i> (1992)	Survey, 135 respondents	Expected savings from international sourcing average 21 percent	Members of the national association of purchasing management interested in international purchasing	Wholesale durable/non-durable, metal products, industrial machinery, electronic equipment, chemicals, furniture, rubber/plastic products and other	US companies	Offshore procuring/international sourcing (no differentiated definition)	Not mentioned
	Petersen <i>et al.</i> (2000)	Survey, 73 respondents, additional key informant interviews	Pursuing international sourcing strategies critical to business success regardless of the extent of overall business globalization Benefits: perceived competitive advantage	Sample of companies from the "Global Procurement and Supply Chain Benchmarking Initiative"; Michigan State University Apparel retailers and wholesalers	Industrial goods, consumer goods, services and other	USA (80 percent), Canada (3 percent), Western Europe (13 percent) and Australia (4 percent)	Differentiated definition of global sourcing and international sourcing, taking in strategic integration and coordination	Not mentioned
	Cho and Kang (2001)	Survey, 165 respondents	Worldwide sourcing as one last area for performance breakthroughs, average of 16 percent savings for certain companies, and 88 percent of companies report purchase price declined due to worldwide sourcing	Sample of companies from the "Global Procurement and Supply Chain Benchmarking Initiative", Michigan State University	Clothing (SIC code 23)	US companies	Global sourcing and international sourcing used interchangeably, no clear distinction	Not mentioned
	Trent and Monczka (2003a, b)	Survey, 162 respondents	No significant impact of international sourcing on general business success	Sample of companies from the international directory of corporate affiliations, with parent companies outside of USA	Industrial products, consumer products, high technology, service providers, basic materials, energy providers and other	USA (86 percent), Canada (2 percent), Latin America (1 percent), Western Europe (6 percent), Asia-Pacific (2 percent) and other (3 percent)	Clear distinction between global and international sourcing	Not mentioned
Neutral	Kotabe and Omura (1989)	Survey, 71 respondents	No significant impact of international sourcing on general business success	Companies from the international directory of corporate affiliations, with parent companies outside of USA	Selected industrial categories used in the <i>Fortune International 500</i> Directory (electronics, transportation, scientific equipment, motor vehicles and parts, aerospace, computers and office equipment, and industrial and farm equipment)	43 European and 28 Japanese multinational firms	Clear distinction between sourcing regions according to a 64-field typology framework of Kotabe and Omura (1986). No differentiation between strategic integration regarding global and international sourcing	Not mentioned

(continued)

International sourcing results	Authors and year	Type of paper	International sourcing results detail	Sample drawn from	Industry of researched firms	Location of companies surveyed	International sourcing context and definition	Interaction with other levers
	Murray <i>et al.</i> (1995)	Survey, 104 respondents	No impact of international sourcing strategy on market performance, particularly for complex products	Target companies from the international directory of corporate affiliations, with parent companies outside USA	Selected industrial categories used in the <i>Fortune International 500</i> Directory (electronics, transportation, scientific equipment, motor vehicles and parts, aerospace, computers and office equipment, and industrial and farm equipment)	71 percent European and 21 percent Japanese headquartered companies	No distinction between global sourcing and international sourcing made	Not mentioned
	Bozarth <i>et al.</i> (1998)	Survey, 97 respondents	No procurement performance differences between firms which proactively entered into international sourcing and those which did not	Manufacturing firms	Automotive, chemicals, computers, consumer products, electronics, industrial equipment, pharmaceuticals and steel	US companies	Clear distinction between international "ad hoc" buying and global – strategic – sourcing	Not mentioned
Negative	Kotabe (1998)	Survey, 100 respondents	Foreign sourcing of supplementary services is negatively related to two dimensions of a service firm's market performance (strategic and financial performance)	Companies among the <i>Fortune 500</i> list, evenly distributed	Global components/finished goods for the service sector, financial businesses, utility and transportation, construction, publishing/communication, retail/wholesale, health care and other	US companies	Distinction between passive importing (international sourcing) and proactive global sourcing	Not mentioned
	Callahan (2000)	Survey, 514 respondents	Purchasing managers from the USA and Canada draw a negative picture of suppliers from Mexico and other countries. Strong favour of suppliers from home region.	Random sample of Canadian and US professionals from a variety of industries	Automotive, electronics, general manufacturing, computers, construction, defense, consumer goods and other industries	US and Canadian companies	Not applicable, comparison of two countries (domestic US sourcing vs sourcing from Mexico)	Not mentioned
	Nelore <i>et al.</i> (2001)	Exploratory study, 35 interviews	International sourcing and lean supply conflict, international sourcing will tend to have negative effects for complex parts	One automotive OEM and six automotive suppliers	US automotive industry	US companies	Utilisation of the term global purchasing, no distinction between strategic aspects of global sourcing and <i>ad hoc</i> international purchasing	International sourcing and lean supply conflict
	Homburg <i>et al.</i> (2002)	Survey, 511 respondents	Lower level of customer satisfaction from international sourcing due to quality and flexibility problems	Manufacturing firms	Chemical, mechanical and electrical industries (US SIC codes 28, 30, 32-38)	US and German companies	Not mentioned	Not mentioned

Table I.

model, a strategic perspective is combined with a tactical perspective; i.e. an overall strategic direction is being operationalized through tactical levers. In the context of a sourcing strategy, sourcing levers can therefore be defined as “[...] a set of similar measures that are used to improve the firm’s sourcing performance in a commodity group” (Schiele, 2007, p. 279).

Based on the distinction between strategic goals and the tactical levers employed to achieve them, international sourcing should not be called a sourcing strategy but should instead be considered one tactical lever used to achieve the strategic goal of cost reduction, for instance. There are also other levers that may – alternatively or complementarily – support the same strategic goal. Researchers and practitioners have explored diverse sourcing levers, including the pooling of demand and volume bundling (Arnold, 1999), price evaluation through enhanced negotiation (Krishna, 2009; Soellner *et al.*, 2007), product optimization (Sakurai, 1990), process optimization (Trent, 1998), supplier integration strategies (Wagner *et al.*, 2002; Schiele, 2006) and commodity-spanned levers (Schumacher *et al.*, 2008). Except for the commodity-spanning lever, sourcing levers are applied on a commodity-group level. Commodity groups are general categories of purchased items, including materials or services of a similar type provided by the same group of suppliers (Kalbfuß and Rüdric, 2004; Rendon, 2006).

Though not limited to the German-speaking world, the concept of the sourcing lever approach seems to have gained the most attention there as a tool for defining commodity-group sourcing strategies. In recent years, a set of sourcing levers has been proposed and gradually been refined to encompass the seven levers explained below (Schuh and Bremicker, 2005; Schumacher *et al.*, 2008; Schiele, 2007). Conceptually, these authors distinguish between two general types of levers:

- (1) those that follow a transaction-oriented (i.e. cost centered) perspective; and
- (2) those taking up the more relational-oriented philosophy that emerged in the 1990s (Sheth and Sharma, 1997).

The first three levers from the following list are the more transaction-oriented levers, while the other ones fall more into the relational category:

- *The pooling of demand and volume bundling.* The pooling of demand and volume bundling can be performed in different ways. A company can bundle its own demands internally. Alternatively, similar companies (often part of one parent company) can bundle their purchasing needs together to leverage their buying power with suppliers (Arnold, 1999).
- *Price evaluation through enhanced negotiation concepts.* Price evaluation through enhanced negotiation concepts can reach far beyond classic competitive methods and conventional negotiation techniques. Practitioners and scholars have both endorsed the main strategic weapons – game theoretic negotiation design, auctions and price regression analysis – that have evolved during the last few years. In particular, the field of game theory has yielded a whole range of negotiation and auction designs. Recently, several types of highly elaborate auctions are available (Krishna, 2009). Cost-regression analysis is another price reduction approach (Soellner *et al.*, 2007) under the enhanced negotiation concept umbrella.
- *International sourcing.* International sourcing, understood as buying goods from suppliers in a foreign country, is another sourcing lever already discussed above.

- *Product optimization.* Product optimization has become an important cross-functional tool for attaining further savings, especially when classic sourcing levers have been overstretched. Product optimization ventures often employ target-costing approaches. Target costing is a concept that originated in the automotive industry; a cross-functional team assesses potentially cheaper alternatives to the existing component to ensure equal or better product properties (Sakurai, 1990).
- *Process optimization.* Process optimization can lead to substantial savings from procurement. For instance, electronic-data interfaces play a crucial role in reducing transaction costs between companies (Trent, 1998).
- *Supplier integration strategies.* The products procured can feature high technical complexity and entail associated high development costs. Companies often pursue core competency strategies to reduce their asset levels to a minimum. Therefore, companies increasingly depend on their innovative suppliers and have to integrate them more closely (Cousins, 2005; Tan *et al.*, 1999; Wagner *et al.*, 2002). Research also suggests that becoming a preferred customer is increasingly a prerequisite for sustainable competitive advantage (Trent, 2005; Schiele, 2006) because it involves developing innovative contracts with profit-sharing clauses or early supplier involvement in new product development (O'neal, 2008). Open-book policies are another interesting aspect of supplier integration that has received increased scholarly attention (Agndal and Nilsson, 2008). Within this particular form of cooperation, cost data are being exchanged between buyer and seller (Ellram, 2006), and this is occurring in both directions to some degree (Christopher, 1999).
- *Commodity-spanning levers.* Cost reduction in one commodity group may increase costs in another commodity group. For example, cheaper paper could require more ink for printing and ultimately lead to an increase in cost per page (Schumacher *et al.*, 2008). Therefore, "commodity-spanning levers" analyze the interplay and potential trade-offs between different materials or services.

Purchasing managers can employ a wide range of cost-saving levers. The final decision regarding which levers to choose depends on a wide range of factors, taking into account the influence of purchased products, purchasing markets, supplier structures and general firm strategy, among others.

3. Research approach

3.1 Research questions

Based on current international sourcing results and the desire for coherence and a more precise assessment of these results (Trent and Monczka, 2003a; Quintens *et al.*, 2006a), the following question arises:

RQ1. How much savings do companies expect to achieve through international sourcing activities?

Our literature review reveals that, in addition to international sourcing, other sourcing levers exist that firms can use to achieve cost reductions. This results in our second research question:

RQ2. How do firms estimate the relative cost-saving potential of international sourcing compared to that of other sourcing levers?

Finally, we set out to determine whether various levers influence each other, leading to trade-offs among the sourcing levers. For instance, awarding volume to new international suppliers will lead to reduced leverage for bundling with existing suppliers, hence reducing the opportunity to generate savings elsewhere in the purchasing organization by (no longer) profiting from volume discounts. In other words, we need to know how to design a coherent sourcing strategy. Most of the literature on international sourcing does not discuss this lever in the wider context of other cost-saving measures (Table I). The few exceptions discussing the relationship between the levers do indicate a possible trade-off between international sourcing and “lean supply” (Nellore *et al.*, 2001) and the “intensification of relationships” (Steinle and Schiele, 2008). On the other hand, it seems logical that the pooling of demand should reinforce attempts to make new price evaluations through enhanced negotiation concepts such as e-auctions, which would indicate that the two levers should be used simultaneously. Combining reinforcing levers and avoiding trade-offs allows firms to design a coherent strategy:

RQ3. Do firms see the application of multiple sourcing levers resulting in trade-offs, or could there be various levers reinforcing each other?

3.2 Methodology: comparing the effects of structured “lever workshops” on cost-saving approaches

The research project is situated in the operations management context, described as an evolving subject area and an expanding field (Croom, 2009). Researchers such as Matthyssens (2007) have called for research to incorporate paradigmatic tolerance and pluralism and the avoidance of methodological extremism (Ramsay, 2007). Bearing this in mind, we analyzed a database containing the results of cost-saving workshops to answer the three research questions. The decision to use the workshop database instead of a classic survey was mainly based on reliability considerations. Survey respondents could have had different ways of understanding the various levers, so the questionnaires would have had to include extensive explanations. Moreover, with international sourcing endorsed as a universal tool by top management, we could not have excluded the possibility that a strong social desirability bias would affect the responses. Different controlling and accounting systems also make it more challenging to compare figures such as those indicating savings (Ketokivi and Schroeder, 2004).

Our research approach consists of three steps: instrument design, application in lever workshops and analysis of the results. The data collection resulted in a comprehensive dataset containing financially evaluated cost-saving projects and considering all seven sourcing levers as explained above.

As a workshop foundation, the original model of “lever analysis” (Schuh and Bremicker, 2005), which is more than ten years old, was updated via research into the literature on each of the levers. Furthermore, we held a brainstorming session with ten experts on commodity-group savings projects, all of whom were experienced operations management consultants for the consultancy company supporting the project. Next, the updated method was pre-tested during five lever workshops. Furthermore, a detailed checklist specifying the information on each lever was generated, thus helping to ensure high-content validity (Punch, 2005). We then prepared a detailed manual on how to run cost-saving workshops. This extensive manual served as the basis for several training

workshops that we conducted with the consultants who were to hold the workshops. A sufficient number of personnel were trained to apply the method in a consistent way.

In parallel, a supporting software tool was developed. This software had two purposes. First, it supported the workshops by offering a rigid structure and the ability to record results in a uniform way. Second, the software allowed us to construct a database hosting the results of all workshops, enabling us to eventually analyze them when a sufficient amount of workshop data had been gathered.

One of the authors of this paper conducted 20 of the workshops himself. However, the bulk of the data were collected not by the researchers but instead by the trained consultants. This may imply that our dataset is actually comprised of secondary data (Cowton, 1998). However, our data do not have the disadvantage often found with such data: namely, that they “are likely to map only approximately onto the researcher’s research questions” (Cowton, 1998, p. 429). Instead, measuring international sourcing as one of seven sourcing levers helps to answer the research question regarding the relative importance of this lever. Furthermore, as Karlsson (2009, p. 13) said, “the connection to practice makes relevance a major criterion for good operations management research”. Using data gathered in a business context reduces the likelihood of the results’ being considered irrelevant by practitioners.

Once the design of the method was complete, during the second step, the lever workshops were conducted with different firms. All workshops used the same process as documented in the handbook and enforced by the software.

Within this research project, only workshop results from typical industry commodity groups were used. These included metal parts (28 percent of the workshops), electronic parts (6 percent), other production materials (32 percent), machine components (14 percent) and associated technical services such as machine maintenance (20 percent). The average purchasing volume per commodity group analyzed was €11.5 million. Workshops were held at 38 firms that belonged to production-oriented parent companies with medium to high levels of technology content and multiple business units. We conducted an outlier analysis, eliminating the extreme cases that fell outside of the 95 percent normal distribution. This process yielded a final set of 134 fully documented workshops, each containing validated cost-savings projects for a commodity group.

A lever workshop consists of the following steps, which, due to rigorous research and workshop preparation, resulted in comparable, reliable and valid data:

- (1) Workshop preparation by the supporting consultant and the purchaser responsible for the commodity group that is the object of analysis.
- (2) Mandatory participation of cross-functional partners in the workshop, as often recommended in other studies (Murray, 2001; Lockström, 2007; Kotabe and Murray, 2004). The method requires including at least one or two representatives from the engineering department, a delegate from production/logistics and a participant responsible for handling quality issues. A cross-functional approach reduces what has been known as single informant bias because all results have to be agreed upon by a team.
- (3) Running the half-day lever workshop, including a standard presentation on the method and the seven levers, to ensure that all participants share a common understanding. During the course of the workshop, all levers are sequentially discussed. First, the participants are asked to freely explore ideas for savings

concerning the lever at hand. Then, the facilitating consultant presents the checklist of potential cost-saving ideas related to the lever. All ideas which the team judges as realistic for the firm at hand are recorded using the software. Always using the same software-supported checklist helps to ensure the high level of reliability of the findings in the sense that the same people working under the same circumstances should achieve the same results using this instrument even if the process occurs at a different time (Punch, 2005). From a practical perspective, the value of a lever workshop lies in its ability to ensure that all participant ideas are captured rather than leaving the outcome to chance.

- (4) After the idea collection step is repeated for all seven levers, a final workshop round estimates the savings potential at play expressed in real monetary terms. Using Euros as a measure makes the process very clear and guarantees interpretative validity; i.e. it ensures “that the researcher accurately portrays the meaning given by the participants to what is being studied” (Croom, 2009, p. 77). The entire cross-functional team agrees on the savings potential and drafts a project plan for capitalizing on it. A list of improvement projects emerges with the value of the expected savings. Because:
 - the input requirements are clear;
 - the results are jointly developed by the group of workshop participants; and
 - these results are immediately documented in the software and are visible to the entire group, the findings have a high level of descriptive validity, i.e. the account reported is likely to reflect the respondents’ joint predictions (Croom, 2009).
- (5) After the workshop, the responsible purchaser further validates the workshop results. In particular, information is often added that might not have been available originally; for instance, one might update the transport cost estimation using the latest corporate frame contract rates. Finally, a management presentation concludes the effort. Usually, the validated results of the workshop are included in the targets for the buyer, and some firms even incentivize their buyers on this basis. Nonetheless, it is a matter for question whether the workshop results present sufficient predictive validity for the buyer to commit to delivering them. This is a particular problem when exogenous factors, such as the financial crisis of 2009/2010, influence the realization of sourcing plans. Our data, however, were collected prior to the crisis. Nonetheless, for our analysis, savings achieved would have been an even better measure than the results of the lever workshops, which reflect potential and not yet realized savings. However, the use of *ex post* “objective data” has also been criticized on the grounds of the presence of differing accounting systems for different firms, which makes comparison difficult (Ketokivi and Schroeder, 2004). In contrast, the results of the lever workshops for different firms can be compared. They are documented and calculated in a uniform way; e.g. by deducing the costs of implementation from the expected savings. We also noted regarding the firms running the lever workshops that their purchasing controlling showed considerable diversity from one firm to the next, making an *ex post* comparison unfeasible.
- (6) After an extensive test, Ketokivi and Schroeder (2004) concluded that relying on a single informant is highly problematic in operations management. It is exactly the

strength of the lever-workshop method that it does not rely on possibly biased single informants but instead is based on team data that has been cross-functionally agreed upon. The total time made available to generate the data in the workshops was about 7,000 hours, far more than the amount of time that the participating individuals could have dedicated to a classical survey questionnaire.

Finally, the defined targets of the cost-savings projects are uploaded to the database and used for our analysis, leading us to achieve the results presented in this paper.

4. Results

4.1 Determination of the magnitude of potential savings from international sourcing

Figure 1(a) shows the distribution of the individual sourcing levers for the 134 workshops. The most prominent lever was the pooling of demand. In 103 out of the 134 (i.e. in 75 percent of the workshops), the cross-functional team discussing potential savings for a selected category of materials agreed on project ideas concerning this lever. In accordance to the lever-analysis method, this lever was discussed during all workshops, but not all teams identified any savings opportunities as related to this particular lever. Almost half of the workshops identified international sourcing opportunities. On average, about three levers contained valuable ideas for future cost savings per commodity group.

To understand how much could be potentially saved through international sourcing, we calculated the average expected savings per lever. When it was decided to use a lever as part of a commodity-group sourcing strategy, the percentage of potential savings agreed upon was summed, and the total value was divided by the number of workshops in which that particular lever would be useful. Because not all levers were useful in all workshops, the savings shown in Figure 1(b) can therefore not simply be added up.

With respect to our *RQ1* (the magnitude of potential savings from international sourcing), Figure 1(b) shows that teams identified average savings potential of 3.36 percent of the total purchasing volume of that commodity group. This percentage is low compared to the expected savings of 20-60 percent mentioned in the literature (Frear *et al.*, 1992; Petersen *et al.*, 2000; Trent and Monczka, 2003a). This may be a result of our savings calculations. Here, savings are always expressed in relation to the total purchasing volume for a commodity and not just in relation to a single project. For instance, a new low-cost supplier offering 20 percent savings valid for a fifth of the total material needed is recorded as offering potential savings of 4 percent. This method of savings analysis provides a more realistic picture.

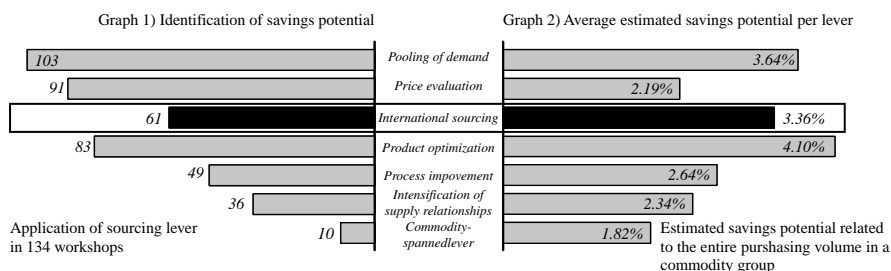


Figure 1.
International sourcing
opportunities –
descriptives

4.2 Relative importance of international sourcing compared to other sourcing levers

Our RQ2 concerned the importance of international sourcing relative to that of other sourcing levers based on the expectations of the workshop participants. As shown in Figure 2, we used three calculations to determine this. First, “amount of application” depicts how often projects resulted from the discussion of the respective lever. Recall that during the workshops, all seven levers were successively discussed. However, sometimes no ideas emerged regarding how to achieve savings using a particular lever for the particular commodity at hand. Taking the example of international sourcing, we note that 61 activities out of a total of 433 in our database referred to this lever (i.e. 14.09 percent). The second row in Figure 2 compares the average magnitude of savings potential per lever. For instance, in those cases in which the teams decided to register international sourcing projects, they expected to save 3.36 percent of the commodity purchasing volume on average. Assuming the ideal case in which a team can identify the potential for savings based on all levers, this amounts to 20.1 percent in the cases analyzed in our research. The average expected share of savings for international sourcing amounts to 16.7 percent of this total. Because there were no commodities projects that included all levers, however, this value is theoretical only, as none of the firms identified savings referring to all levers.

Therefore, we calculated a third indicator, the cumulative savings expectations. This indicator reflects the total savings achieved by multiplying the number times a particular lever was used with the average expected savings recorded in these cases. This procedure accounts for the fact that some levers, in particular the cross-commodity lever, resulted in new projects less often. Based on this metric, international sourcing was responsible for 15.15 percent of all savings identified, ranking fourth in its contribution after product optimization, pooling and price evaluation.

Hence, the data from the workshops indicate that firms expect international sourcing to be a potentially powerful tool but that this lever was responsible for less than 20 percent of the total savings potential of the firms in our sample.

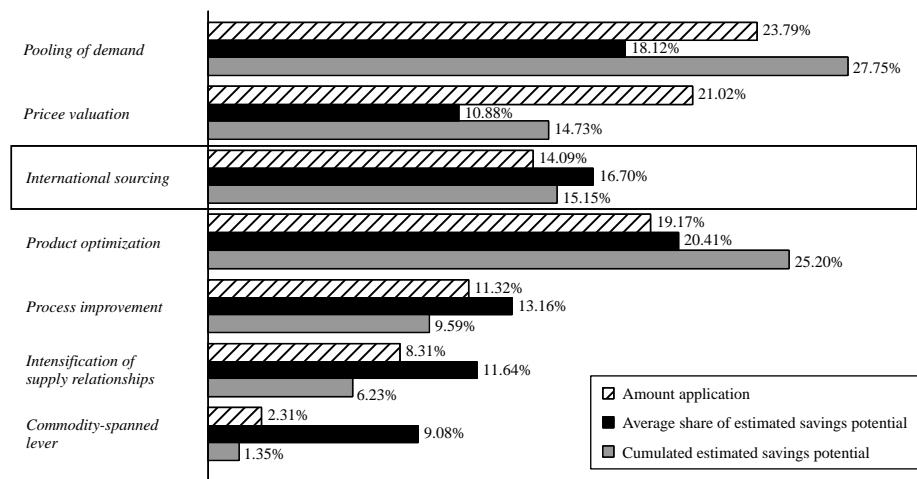


Figure 2.
Relative importance of various sourcing levers

4.3 Trade-offs with other levers

Our RQ3 deals with synergies and trade-offs between international sourcing and the other sourcing levers. Because all workshops discussed all seven sourcing levers but not all identified savings potential resulting from each lever, our database allows to identify apparent trade-offs. We split the dataset into two groups: those workshops in which international sourcing projects were initiated and those in which this lever was not found to be of use. Next, we calculated the differences in the results and used a *t*-test to identify their significance (Table II). For instance, the 47 workshops that identified both international sourcing and price evaluation opportunities yielded a mean savings potential of 2.45 percent based on price evaluation, while the 46 workshops that identified price evaluation opportunities but did not propose international sourcing activities found an average saving potential of 1.88 percent. In other words, the combined use of the levers of price evaluation and international sourcing resulted in a 0.57 percent higher average figure for prognosticated savings ($p = 0.085$). This may have occurred because price negotiations may be more effective if the buyer can realistically threaten traditional suppliers with new international alternatives.

In our sample, the international sourcing and price evaluation levers appear to strengthen each other, forming a coherent strategy. Based on our dataset, product optimization, supplier integration and possibly process improvement should constitute an alternative set of complementary levers that form a coherent, mutually reinforcing strategy.

On the other hand, the levers of supplier integration and international sourcing do not form a successful combination. Our results point at a decrease of 1.41 percent in average savings ($p = 0.052$). The combination of international sourcing and product optimization seems to be particularly detrimental. Firms that attempted to achieve product optimization in combination with international sourcing efforts reported 3.76 percent lower potential savings than did those firms trying to achieve cost savings through joint product improvement in collaboration with their traditional

Sourcing lever	International sourcing applied?	Amount of workshops	Mean potential savings		SE mean	Difference in potential savings (%)	Significance
			(%)	SD			
International sourcing	Y	61	3.31	3.35	0.43		
	N	0	–	–	–	–	–
Price evaluation	Y	47	2.45	1.63	0.24		
	N	46	1.88	1.52	0.22	0.57	0.085
Pooling of demand	Y	50	3.80	3.60	0.51		
	N	51	3.59	3.27	0.46	0.21	0.75 (ns)
Process optimization	Y	23	1.96	1.98	0.41		
	N	26	2.70	2.72	0.53	–0.74	0.29 (ns)
Supplier integration	Y	20	1.69	1.40	0.31		
	N	17	3.10	2.75	0.67	–1.41	0.052
Cross-commodity levers	Y	6	1.50	1.07	0.44		
	N	3	2.92	3.99	2.30	–1.42	0.42 (ns)
Product optimization	Y	38	3.19	3.41	0.55		
	N	48	6.95	7.22	1.04	–3.76	0.004

Table II.
Analysis of trade-offs
and synergies

suppliers ($p = 0.004$). The choice between either going global or engaging in joint innovation projects with suppliers emerged as creating the single most significant trade-off. It is worth to note that in this case the opportunity costs exceed the average estimated savings from international sourcing projects.

5. Discussion and implications: a balanced sourcing approach in practice and as a research agenda

Based on the results of our analysis of the workshop participants' savings expectations, we conclude that international sourcing could indeed be an important sourcing tactics but that it is only one of several. The savings potential suggested to derive from international sourcing did not exceed 20 percent of the total savings potential. Moreover, no single predominant lever emerged. Thus, we suggest that a balanced sourcing approach is more effective than an emphasis on any single tactic. This recommendation contrasts with the conclusion asserted in the majority of studies, which do not consider international sourcing in relation to other sourcing levers (Table I).

In our sample, the analysis of the workshops indicated product optimization as the lever with the largest individual impact in the eyes of the participants. Systematically trying to generate innovations, often in close collaboration with the supplier, might require long-term stable relationships that persist for ten or more years (Håkansson, 1989; Handfield *et al.*, 1999; McCutcheon *et al.*, 1997; Ragatz *et al.*, 1997). The finding that innovation collaboration usually takes place between firms with decade-long relationships may offer some explanation for the expected trade-off between product improvement and international sourcing, the latter implying the selection of previously unknown remote suppliers. A similar trade-off has been found between low-cost and innovation-oriented outsourcing strategies (Bengtsson *et al.*, 2009). In fact, facing the increasing importance of supplier contribution to innovation, the purchasing function is growing into a new "dual" role: contributing to new product development while managing the overall costs of a firm (Schiele, 2010). In order to comply to this new dual role, it might be advisable to consider possible trade-offs implied in sourcing decisions.

In addition, some levers form more powerful combinations than others. Our data have revealed two possible sets of sourcing levers that, when combined, can form coherent sourcing strategies. One strategy entails the classic cost leadership focus, employing a mix of international sourcing, price evaluation and (possibly) pooling with other business units from the same group of firms. The second strategy is one of differentiation and would involve the product optimization and supplier integration levers, possibly supported by process improvement strategies. Mixing these strategies might, at worst, neutralize the effects of the selected cost-saving measures. At some firms, the top management imposes international sourcing quotas, "which often means that the companies source to achieve budget goals" (Fredriksson and Jonsson, 2009, p. 228). Our findings challenge the virtues of such quotas due to their potentially negative effect because of trade-offs.

The moderate impact of international sourcing may also help to explain the inconsistent results of previous research attempting to link the level of international sourcing with performance outcomes (Kotabe and Omura, 1989; Murray *et al.*, 1995; Bozarth *et al.*, 1998). If international sourcing is responsible for no more than a fifth of the total potential savings as estimated in our workshops and if cost efficiency was only one factor contributing to the overall performance of a firm, it becomes clear how

difficult it can be to establish a link between the level of international sourcing activities and a firm's success.

This paper contributes to the extant body of research in several ways. To the best of our knowledge, this research is the first empirical analysis that compares a wide range of sourcing levers. More specifically, it is the first paper that considers international sourcing in the wider context of the cost-saving initiatives of firms, supporting the argument with empirical findings based on a wide array of workshop participant opinions. In this way, this paper contributes to the design and validation of a holistic sourcing approach.

There seems to have been little progress in the last decades in the development of cost-savings controlling (Nollet *et al.*, 2008). Our findings also extend previous research on the effect of international sourcing by introducing a new measure, savings as a percentage of total purchasing volume in a commodity group. This measure allows both practitioners and scholars to compare the effects of international sourcing with those of other tactics. Moreover, the use of this measure prevents misconceptions from arising based on the generalization of results for single projects to the firm level.

This paper also contributes to the strategy literature in general and to the sourcing strategy development in particular. The concept of “levers” as operationalized tactical building blocks of sourcing strategy can improve the strategy development progress and link strategy to implementation. The identification of trade-offs between the levers provides an empirical illustration of the importance of developing a coherent strategy involving several reinforcing measures.

From a managerial perspective, a balanced sourcing approach constitutes a potentially viable substitute for beginning successive waves of international sourcing projects. Before deciding to “go global”, with a balanced sourcing approach, firms should compare alternative cost-savings levers, thus avoiding trade-offs and eventually achieving higher savings than any single-sided traditional approach could yield. Our findings do not recommend international sourcing as “[. . .] an automatic expectation to respond to competition” (Carter *et al.*, 2008, p. 225). International sourcing is not a natural outcome of globalization; rather, our findings indicate that it should be a deliberate choice of tactic considered on a case-by-case base. It is one thing to search for new suppliers on a global basis, but expecting international sourcing to be a purchasing panacea is likely to lead to disappointing results according to the estimates developed in the workshops. An innovation-oriented strategy focusing on joint product optimization and supplier integration, often in a domestic environment, can constitute an alternative to a strategy focused on international sourcing. Strategy choice depends on context factors, such as the nature of the product or the relationship types typically found in an industry (for a detailed view of influencing factors, see to Quintens *et al.*, 2006a, b).

6. Limitations

This research entails several limitations. First, our data come from subsidiaries of large or medium-sized groups of companies. For small companies, the “pooling of demand” lever is likely to be less important. Hence, transferring the results to such companies may require a particular cautious procedure. It should be emphasized that specific firm characteristics must be considered in developing a sourcing strategy (Akesson *et al.*, 2007).

Second, our analysis is based on the results of workshops that developed project ideas and assessed their potential in a cross-functional manner. Experience shows that

this approach tends to result in realistic targets, but it would have been ideal to rely on objective and *ex post* nonetheless comparable data reflecting actual achievements.

Third, the idea of balanced sourcing might be transferable to other materials and other types of firms. The exact size of the savings reported here, however, depends on each situation and point in time and might not be transferable.

Fourth, our analysis focused on international sourcing as a tactic for achieving cost savings. Firms that opt for international sourcing as a way to achieve higher quality or acquire new technology may reach different conclusions.

Future research should take these limitations into account and thereby contribute further to the development of an empirically tested holistic model for sourcing strategy development, which science not yet fully achieved. The exploration of the opportunity costs associated with individual sourcing levers might constitute a fruitful path for future research. Future research would profit from avoiding inquiries into any single lever, alone and without taking the other levers into consideration.

Note

1. Supply chain management (*Journal of Supply Chain Management, Journal of Purchasing and Supply Management, Supply Chain Management, International Journal of Physical Distribution & Logistics Management* and *International Journal of Operations & Production Management*), international marketing management (*Industrial Marketing Management, Journal of International Marketing, International Marketing Review, European Journal of Marketing* and *Journal of Business and Industrial Marketing*) and international business (*Journal of International Business Studies, International Business Review, Management International Review* and *Journal of Business*).

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