



Philipp Horn

**Global Sourcing -
Performance and Integration**

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Philipp Horn

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Reflections on Performance,
Implications from Cross-Functional and External Integration

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GLOBAL SOURCING – PERFORMANCE AND INTEGRATION
REFLECTIONS ON PERFORMANCE,
IMPLICATIONS FROM CROSS-FUNCTIONAL AND EXTERNAL INTEGRATION

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on account of the decision of the graduation committee,
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by

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in London, UK

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Foreword Prof. Dr. habil. Holger Schiele

Buying goods from other countries – which we might summarize under the term “global sourcing” – has become commonplace for firms in highly industrialized countries in central Europe. In fact, sometimes the impression arises that global sourcing is considered to be a “purchasing panacea”.

More competition, induced by suppliers from countries which enjoy labor cost advantages compared to the traditional domestic sourcing markets, indeed sounds attractive for buying firms. While the arguments are compelling, it is surprising, how often global sourcing projects are started without conscious analysis of the particular case. A total cost calculation is not always performed, the results not usually analyzed after the project’s completion. This is precisely the point where academia can play its role: stepping aside, reflecting on the observed phenomenon and carefully analyzing it from diverse angles, validating or falsifying what for common sense may be a straight forward case.

Philipp Horn’s work is a nice example of that type of academic work in its best sense: researching a practically relevant issue, but applying diverse reflective angles, for which, in practice, usually nor time nor method skills are available. What characterizes Philipp’s work is the application of diverse methods of enquiry: a qualitative study, secondary data analysis and, eventually, the collection and analysis of survey data, when no data were readily available. This methodological pluralism in combination with Philipp’s sense for critical and thorough enquiries might be considered as one key ingredient which enabled the successful completion of this project.

It is further to be remarked that the results of Philipp’s work owe much to the context of their creation, as second key ingredient. I am hardly aware of any other large firm so open to promote academic research *and* to discuss the results then his’. Like in the case of the analysis of China-sourcing projects, which lead to the unveiling of the “ugly twins”: at first, managers put forward many arguments challenging his findings (which counter-intuitively indicated that many of these projects had actually failed). They requested more analyses. Philipp continued the analysis with data not only from 2009, but also from 2010 and – on the request of the editor of the Journal of Purchasing and Supply Management where findings were published – also from 2011.

In large, findings were confirmed. But Philipp did not stop there, “just” describing. Instead, his last paper – the survey – puts forward a way how to improve global sourcing projects. He shows that building up “social capital” can remedy some of the problems; though, for sure, only in case the costs match the realistic returns.

In sum, I would like to congratulate Philipp for his interesting work and, personally, thanking for inviting me to share this route of enquiry as his “doctor father” (the German word for the rather unspectacular English term “thesis supervisor”). It was a very joyful journey, the fun of academic work! At the same time, I wish that this book and its ideas get the attention they deserve, both in the academic and in the practitioner communities.

Prof. Dr. habil. Holger Schiele
Twente, May, 10th, 2013

Acknowledgements

Submitting this dissertation concludes a long-held dream, which started shortly after commencing my first position as a global lead-buyer in the chemical industry. In the three years during which I worked in this position I progressively became even more curious about the underlying structures of dyadic relationships in international trade, and the factors influencing the success of global sourcing ventures. Meeting the two young researchers Dr. Georg Mohr and Dr. Jens Hamprecht, who seemed to have learned the methods to approach any challenge in a structured way, I developed a strong will to engage in a Ph.D. project, and also the interest in learning new ways of structured scientific thinking.

This clear aim in mind helped me greatly to go through the strains and difficulties a Ph.D. project brings. However, this project would never have succeeded without the help of many people of whom I would like to mention the most important ones.

First of all, I would like to express my sincere and heartfelt gratitude to Prof. Dr. habil. Holger Schiele for giving me the opportunity to become a Ph.D. candidate, for his constant support and motivation, for picking me up in difficult times and for believing in my scientific abilities. I strongly admire his speed of thought, depth of judgement and profound scientific knowledge. His problem-solving expertise derived from many years of consulting practice and his scientific capability were always precious to my project. I am also grateful to have learned a great deal in terms of work organization and efficiency from him.

Many thanks go to the Volkswagen AG for setting up a splendid (yet extremely challenging) Ph.D. program. In particular, I would like to thank my VW mentor, Karsten Schnake, for his unconditional support in tough times, his visionary thinking and his truly inspiring and positive attitude. I thank Andrian Denkwitz for his trust, backing, and inspiring ideas, and Norma Seifert-Stolze for sharing her curiosity and project management skills with me. Many thanks also go to Jürgen Weinert for his continuous support throughout the years. I furthermore would like to thank the many bachelor/ master students and interns for their support and for going some of the way (and sometimes the extra mile) together with me, in particular Tiago Cassel Franck, Patrick Schwabe, Yan Bolotov, Frederik Vos and Paul Scheffler, the latter being my successor in researching global sourcing in Volkswagen AG.

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I would also like to thank Prof. dr. Erik van Raaij from the University of Rotterdam for being part of the committee and for his most valuable advice and enriching ideas on the “ugly twins” chapter which has been accepted for publication in the “Journal of Purchasing and Supply Management”. Furthermore, I would like to thank Prof. dr. Bart Vos of Tilburg University with whom we cooperated on the second chapter entitled: “Estimating cost-saving potential from international sourcing and other sourcing levers: relative importance and trade-offs” for the fruitful discussions and for being a member of my committee. Many thanks also to Professors Ulli Arnold, Johannes I.M. Halman, Koos Krabbendam and Jan Telgen for agreeing to participate in the committee.

I would like to thank Daniel Unterburger for his moral support, long hours of scientific discussions and Excel proficiency, and Malte Nonne for his confidence in my work and the many fruitful discussions in our shared office in Wolfsburg. Thanks to Susi Vachenauer for being a great moral support. Many thanks to Dr. John Murdoch for proof reading and for finding the million commas I seem to have omitted.

Finally I would like to thank my family. Without their love and kindness, I would have never been able to accomplish my goal. Thanks to my parents for being role models and for their support, to my sister Christine for teaching me how boldly to approach the world, to my sister Gerlinde for her loving support and for showing me that there is more to life than work, and to my grandmothers for teaching me how to keep your head up in stormy weather.

Philipp Horu

Wolfsburg, 10th of May 2013

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List of Abbreviations

AVE	average variance extracted
CEO	chief executive officer
CMV	common method variance
CPO	chief procurement officer
CR	composite reliability
Cronb. α	Cronbach's alpha
EDI	electronic data interface
Ext_Cog	external cognitive capital
Ext_Integr	external integration
Ext_Rel	external relational capital
Ext_Str	external structural capital
GS	global sourcing
GS_Suc	global sourcing success
H	hypothesis
Int_Cog	internal cognitive capital
Int_Integr	internal integration
Int_Rel	internal relational capital
Int_Str	internal structural capital
ISO	International organization for standardization
IT	information technology
JIS	just in sequence
JIT	just in time
LCCS	low cost country sourcing
NPD	new product development
OEM	original equipment manufacturer
OM	operations management
PCA	principal components analysis
PLS	partial least squares
R&D	research and development
RBV	resource based view
SCI	supply chain integration
SCM	supply chain management
SCT	social capital theory
SEM	structural equation modeling
SIC	standard industrial classification
SME	small and medium enterprises
SPSS	statistical package for the social sciences
TCE	transaction cost economics
TGP	traditional procurement market

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1 Thesis Background and Research Structure

1.1 Introduction

The following pages are intended to give the reader a brief introduction into the dissertation at hand. First, this introduction provides an overview about the global sourcing topic. Then, the general research question to be answered in this thesis is presented and shortly explained. Finally, the introduction contains an outline of the structure of the thesis in order to enable the reader to orient himself throughout the pages.

1.2 Global sourcing

Despite the fact that firms and individuals have been sourcing on a global basis since ancient times, the topic has been receiving considerable attention from managers and scholars alike during the past few years. Global business transactions have been reported to be growing three times stronger compared to domestic economies during the last decades and the trend continues (Bowersox and Calantone, 1998, Kusaba et al., 2011).

In the context of this work, sourcing refers to: *“(...) the process used to identify user requirements, evaluate the need effectively and efficiently, identify suppliers, ensure payment occurs promptly, ascertain that the need was effectively met, and drive continuous improvement.”* (Monczka et al., 2008, p. 89). Global sourcing, according to Murray et al. (1995), *“(...) involves setting up production operations in different countries to serve various markets, or buying and assembling components, parts or finished products worldwide”*. (Murray et al., 1995, p. 181) In that sense, global sourcing does not purely focus on the operational purchasing perspective but indeed has a rather strategic character and covers a broad range of activities (Trent and Monczka, 2003b).

Many terms have been utilized in the scientific approximation towards the topic, i.e. “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), “international procurement” (Scully and Fawcett, 1994), “low-cost-country sourcing” (Lockström, 2007) and “low-wage-country sourcing” (Schiele et al., 2011a). Within this thesis, the term global sourcing will be used as an umbrella term in which we conceive global sourcing as an attempt *“to utilize purchasing potential on a worldwide level”* (Arnold, 1989, p. 26). Chapter two is an exception, in the sense that the reviewers of the journal insisted on the utilization of the term “international sourcing”.

The drift towards global sourcing has been powered by two fundamental changes in both managerial and scholarly thinking (Mol et al., 2005). First, there is a lower vertical integration leading towards increased outsourcing following a core competency strategy (Bettis et al., 1992, Quinn and Hilmer, 1994). In fact, it can be observed that the depth of value added has decreased, e.g. to 25% in the automotive industry compared to around 80% in the 1980s (Heberling, 1993, Verband der Automobilindustrie, 2004). In line with that development, the direct labor cost decreased to approximately 10% in the majority of companies (Birou and Fawcett, 1993). Secondly, global sourcing is driven by the idea of the exploitation of lower factor costs by allocating activities in the value chain to regions with a lower

comparative price level (Hartmann et al., 2008, Kogut, 1985, Porter, 1990, Steinle and Schiele, 2008).

These factor costs (e.g. materials, labor, tax rates, etc.) are lower in comparison to the location where the buying organization is situated. Figure One is an exemplary representation of a case in which capital is relatively cheap in country II, whereas labor is comparably cheap in country I. In most cases, firms engaging in global sourcing will find themselves in a second type country, whereas country I more represents a typical sourcing region. Following the logic, capital intensive process steps are undertaken in country II and labor intensive work is more likely to be done in country I (Kogut, 1985). Therefore, the potential comparative advantage is assumed to influence the decision where to source and where to market, particularly when the respective cost factor is intensively used.

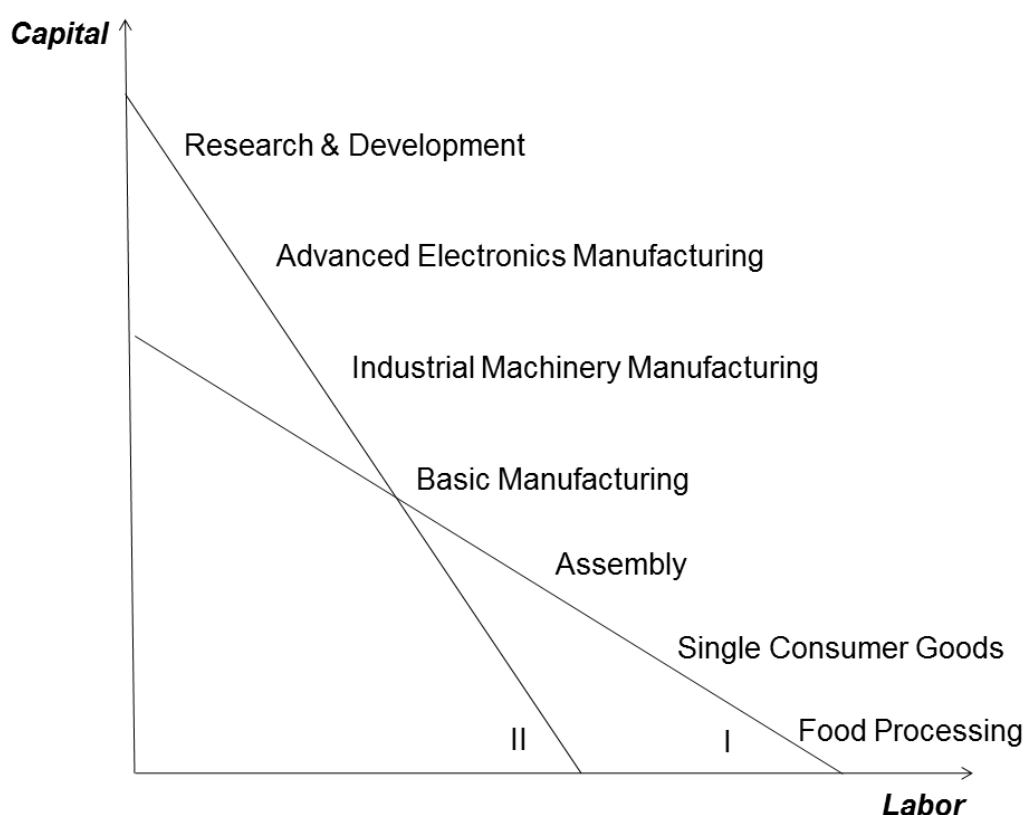


Figure 1: Value-added chain of comparative advantages

Source: based on Kogut (1985), p. 19.

As the graph indicates, global sourcing enables companies to use efficiently worldwide distributed resources by decoupling them from their regional economies and countries of origin (Birou and Fawcett, 1993). The superior exploitation and selection of sourcing locations can result in strategic and competitive advantages for the firm engaging in global sourcing (Kogut, 1985).

However, global sourcing, particularly under a cost-saving perspective, has been shown to be subject to the dynamic nature of many cost-drivers such as transportation and energy costs, labor cost inflation, or carbon offset costs which are not to be underestimated, indicating the need for risk assessment for operational

sourcing decisions (Holweg et al., 2010, Kotabe et al., 2009). Furthermore, global sourcing has been shown to be subject to various challenges, inter alia: regulations, logistics, cultural differences, country uncertainty (Cho and Kang, 2001), conflicts with lean supply, negative effects on complex parts (Nellore et al., 2001), flexibility, quality (Homburg et al., 2002), and the interplay with other sourcing levers (Nellore et al., 2001, Steinle and Schiele, 2008). It has also been argued that the mentioned challenges are contingent upon various factors, e.g. firm size, product type, percentage of imports, and regions (Cho and Kang, 2001). It has therefore been argued that global and international sourcing is better seen as a way to achieve short-term cost advantages on a unit price level - as opposed to a total cost approach (Petersen et al., 2000) - neglecting a longer term perspective without regard to the sustainable competitive advantage (Murray, 2001).

Despite the risks and opportunities for sourcing described above, many regions with comparably low labor costs have been characterized by fast economic growth and large markets in absolute terms, and firms thrive to set foot into those markets by allocating purchasing volumes to those regions (Barney, 1999, Bozarth et al., 1998, Handfield, 1994, Monczka et al., 2008, Smith, 1999, Spekman, 1991, Trent and Monczka, 2003b). In this context, Arnold (1989, p. 22) argues that *“by establishing a presence in the market through purchasing activities, a company can systematically and carefully prepare an entry into the sales market at a later stage.”* Sometimes firms also have to fulfill local content requirements, that is, sales activities are bound to sourcing activities in the respective countries (Bartlett and Ghoshal, 1999). Quintens et al. (2006b) stress the importance of assessing the consequences of global sourcing also on a functional level. Hartmann et al. (2008) argue in a similar way, stating that resources and capabilities accessed in the sourcing regions might lead to market advantages, e.g. through being able to sell differentiated and price-competitive products.

Apart from the above mentioned reasons for global sourcing, namely cost savings and the facilitation of sales activities, at least two more explanations for the initiation of global sourcing are known. First, the purchasing of highly innovative products and access to valuable technologies has been shown as one reason to go global with sourcing operations. This particular occurrence has also been referred to as global technology sourcing, meaning the identification of foreign suppliers offering superior products or technologies compared to those available in the home region (Steinle and Schiele, 2008).

Finally, institutional reasons have been argued to be the basis for the initiation of global sourcing activities. Global sourcing has been argued to be the collective mindset, acting as a “dominant logic” or “industry recipe” (Matthyssens, 2007, Spender, 1989). Therefore, psychological leader-follower effects (Kotabe and Mol, 2006), also referred to as “bandwagon effects” (Schweller, 1994) in which firms copy other firms’ behavior in an occurrence of isomorphisms, might be a valuable explanation for global sourcing initiation.

1.3 Derivation of research topic and research questions

Despite its apparent practical and scientific relevance, international sourcing must still be considered to be an under-researched topic (Kaufmann and Carter, 2006), and particularly research on performance in the field has remained relatively shallow (Easton et al., 2002).

Within the purchasing field, firms have been reported to be struggling with the calculations of the financial effects of their sourcing operations (Cokins, 2001, Innes and Mitchell, 1998). Within the field of purchasing research, Easton et al. (2002, p.126) claim that “(...) *a need for performance measurement in purchasing has long been recognized*”. Ever since the emergence of the term global sourcing there has been much academic attention regarding the benevolent effects of global sourcing (Alguire et al., 1994, Birou and Fawcett, 1993).

Furthermore, the methodological foundation of performance measurement within the field has been argued to be rather feeble, and issues regarding the scientific appraisal of purchasing success have been raised. Indeed, research analyzing sourcing success has mostly relied on ex-post perceptual data from surveys (Schiele et al., 2011a). The reliability of these surveys has been questioned on the grounds of heterogeneity of industries and firms, and in terms of differing accounting standards e.g. for saving measures (Ketokivi and Schroeder, 2004, Nollet et al., 2008, Steinle and Schiele, 2008). Concerning the dissertation at hand, chapters two and three take a step forward towards a more reliable performance measurement approach. By doing so, a call for research with “(...) *objective and ex-post, nonetheless comparable data, reflecting actual achievements*” (Schiele et al., 2011a, p.319) is taken up. The literature review in chapter two provides a summary about the current body of knowledge in the global sourcing performance measurement field.

As stated above, results from global sourcing have been shown to be ambivalent. Freytag and Kirk (2003) emphasize the complicated character of sourcing since it includes the consideration of the capabilities of functions, suppliers' performance and future tasks. Due to numerous additional barriers as mentioned above (regulations, logistics, cultural differences, country uncertainty, conflicts with lean supply, negative effects on complex parts, flexibility, quality, and the interplay with other sourcing levers) this holds particularly true for global sourcing. In a review regarding the cost elements of sourcing, Ferrin and Plank (2002) cluster 145 cost-elements into 13 clusters from various functional responsibilities of the firm.

The role of integration seems to play a crucial role, particularly for global sourcing, and it has long been recognized that internal (cross-functional) and external integration with market partners from the supply chain alike, can contribute to the performance of a company's bottom line (Fabbe-Costes and Jahre, 2007). In particular, integration has been shown to be of positive influence for the general performance of the firm (Maltz and Kohli, 1996), knowledge transfer and cooperation in NPD (Kahn, 1996), organizational learning (Huber, 1991) and for make or buy decisions (Moses and Ahlstrom, 2009).

Within the supply chain management context there has been a general call for more integration research (Pagell, 2004). The importance of internal factors, even for a

dyadic relationship (Hansen and Wernerfelt, 1989, Roquebert et al., 1996), and the importance of interaction of purchasing with other functions have been highlighted (Glock and Hochrein, 2011). Various scholars have linked supply chain integration (SCI) to success (Frohlich and Westbrook, 2001, Hui, 2004, Kim, 2006, Mollenkopf and Dapiran, 2005, Narasimhan and Kim, 2001). However, only recently, some scholars highlight that there might be a limit to the degree of integration, particularly in a dyadic relationship in which researchers report a “*dark side of integration*”, stemming from e.g. lock-in effects (Villena et al., 2011).

Many scholars in the field have highlighted the integrative character of global sourcing, e.g. Trent and Monczka (2003b) or Hartmann et al. (2008). In fact, it has been argued that due to the complex nature of global sourcing and its many influencing factors (Quintens et al., 2006b), “*the interaction of purchasing with other functional areas of the company is becoming more and more important*” (Glock and Hochrein, 2011, p. 170), and global sourcing success has been argued to be based on the “*(...) worldwide integration of engineering, operations, and procurement centers within the upstream portion of a firm's supply chain*” (Trent and Monczka, 2003b, p. 608).

Only very recently, a larger body of research on the topic has emerged. A literature review conducted in preparation for chapter five found 12 papers concerned with integration in the (international) purchasing field. All papers analyzed during the literature review are from the year 2001 or later, with seven papers published alone in 2011. Out of the 12 papers, four consider internal as well as external integration, seven focus on external integration alone, one paper focuses solely on internal integration and two papers on vertical integration. It has been argued that research in operations management (OM) should be based on a sound theoretical foundation (Hammervoll, 2011, Kern et al., 2002a, Matthyssens, 2007). Papers in the international sourcing and integration context are mainly based on either the resource based view (RBV) (Barney, 1991) or transaction cost economics (TCE) (Williamson, 1979), with only three papers employing other theoretical foundations. Furthermore, a clear dominance of survey based data collection was observed.

Based on the above-mentioned body of knowledge, the central purpose of this dissertation is therefore to answer the primary research question:

What are the real effects of global sourcing and in what way can internal and external integration enhance global sourcing success?

Guided by this central question, we answer the following secondary research questions:

1. *Can global sourcing be regarded and implemented as the central purchasing tactic compared to other known sourcing tactics?*
2. *What are real and perceived results of global sourcing ventures in terms of financial and operational performance?*
3. *What is the role of cross-functional integration within the boundaries of the firm?*
4. *Which role does cross-functional internal integration and external integration with suppliers play for global sourcing success?*

1.4 Research approach and thesis structure

1.4.1 Connection between theory and practice

Despite the fact that *“the research process is not a clear-cut sequence of procedures following a neat pattern but a messy interaction between the conceptual and empirical world, deduction and induction occurring at the same time”* (Gill and Johnson, 2002, p. 3) the research at hand follows a structure which will be explained below.

The thesis is an application oriented work, which, according to Ulrich (1981), can be assigned to the applied social sciences.

The framework of the research is based on a triangulation of methods, notably findings from qualitative and quantitative research, based on primary and secondary data, since *“the triangulation of methodology will be the best for the development of P&SM [purchasing and supply management] theory”* (Matthyssens, 2007, p. 221). As an overall guideline, the research framework follows the structure for scholarly research in a business context as suggested by Ulrich (1981), intertwining research and feedback loops (see Figure Two). Since the dissertation is split into four single building blocks, each treating a differentiated business problem, the framework was applied on a single paper unit rather than on the dissertation as a whole.



Figure 2: Research structure

Source: Redrawn from Ulrich (1981), p. 20

In order to bridge the gaps between the business and the research community, close connection to various research institutions was sought. In particular the research at hand was supported by methodological workshops and scientific discussions as laid out below:

- 2008: 14th IFPSM Summer School on Advanced Purchasing and Supply Research, Salzburg (Austria)
- 2009: 16th EurOMA Conference, Göteborg (Sweden)
- 2009: 18th IPSERA Conference - Doctoral Workshop, Wiesbaden (Germany)
- 2009: 2nd EIASM – EurOMA Workshop on Journal Publishing for Non-Native English-Speaking Researchers in OM and NPDM, Nice (France)
- 2009: Autouni, Institut der Beschaffung, Research Colloquium, Wolfsburg (Germany)
- 2009: Jacobs University, School of Humanities and Social Sciences, Research Colloquium, Bremen (Germany)
- 2010: 17th EurOMA Conference, Porto (Portugal)
- 2010: AutoUni, Institut der Beschaffung, Research Colloquium, Wolfsburg (Germany)
- 2010: Jacobs University, School of Humanities and Social Sciences, Research Colloquium, Bremen (Germany)
- 2010: Qualitative Research Methods, Freie Universität Berlin in Cooperation with AutoUni Volkswagen, Wolfsburg (Germany)
- 2010: Quantitative Research Methods, Freie Universität Berlin in Cooperation with AutoUni Volkswagen, Wolfsburg (Germany)
- 2011: Autouni, Institut der Beschaffung, Research Colloquium, Wolfsburg (Germany)
- 2011: IPSERA Node Meeting, Twente Enschede (the Netherlands)
- 2012: 19th EurOMA Conference, Amsterdam (the Netherlands)
- 2012: AutoUni, Institut der Beschaffung, Research Colloquium, Wolfsburg (Germany)
- 2012: IPSERA Node Meeting, Twente Enschede (the Netherlands)

1.4.2 Thesis building blocks

The present dissertation consists of four independent scientific papers (the chapters two, three, four and five) connected by means of a coherent scientific “storyline”, shedding light on the ambivalent picture of global sourcing prevailing in the supply chain management literature (for a graphic display of the connection between the four papers, please refer to Figure Three).

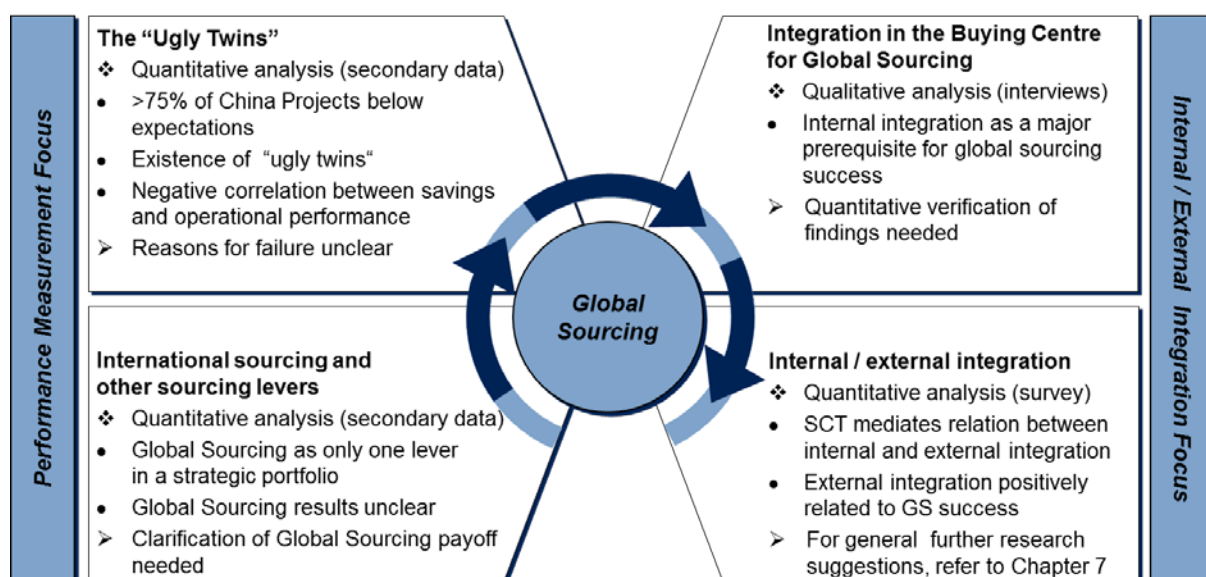


Figure 3: Flow of research

In Chapter two (international sourcing and other sourcing levers) the cost savings potential of global sourcing is compared to six known primary other sourcing levers. It addresses the perception of global sourcing as a purchasing panacea and the real results from global sourcing. Furthermore, trade-offs between sourcing levers are analyzed and recommendations given. The chapter additionally contains a content based literature review analyzing the body of knowledge regarding global sourcing performance. The research uses secondary data from a purchasing consulting company representing 134 workshops and over 7.000 hours of workshop discussions. Workshop results were recorded in a standardized way and stored in a comprehensive database.

Chapter three (the ugly twins) approaches global sourcing success from a quantitative perspective and sheds light on the ambivalent and often overrated results of global sourcing. Descriptive statistics together with single linear regression reveal that more than three quarters of the analyzed global sourcing projects do not reap the expected beneficial benefits. Additionally, failed low-wage-country sourcing projects entail so-called "ugly twins", meaning the need to resort back to suppliers from high-wage countries at a higher cost. The chapter is based on secondary data, in this case from the supplier data warehouse of an automotive OEM.

Chapter four (integration in the buying centre) addresses integration patterns in global sourcing organizations together with expectancies from and results of global sourcing. It is based on data gathered in semi-structured field interviews with six companies from the automotive supply chain. Whenever possible, managers of different functions of the firms were interviewed. The data gathered were arranged into an integration factor framework giving insight on an organizational level.

Chapter five (internal / external integration) explores the role of the buying companies' internal and external integration with suppliers under a social capital lens and gives insight on performance implications from integration. The data suggest that internal integration is a precondition for external integration with suppliers, which has a strong positive influence on global sourcing success. The direct relationship

between internal and external integration was not significant, indicating a mediating role of social capital within this relationship. Data was gathered from a survey among 82 purchasers of an automotive OEM and analyzed using structural equation modeling with partial least squares.

1.5 Research contribution

Given the close connection of the researcher to practice as well as to the scientific community, the research has several implications for practice as well as for theory. As to our knowledge, chapter two is the first empirical analysis that compares a wide range of sourcing levers. We show that global sourcing is one sourcing tactic among many others and should not be used as the sole tactical direction. Furthermore, we show trade-offs between various sourcing levers. In this way, this chapter contributes to the design and validation of a holistic sourcing approach. Findings 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. By using this new measure, practitioners and scholars alike are able to compare the effects of various sourcing tactics.

Chapter three reports implications for sourcing theory in general, and low-wage-country sourcing in particular. The chapter highlights that around 75% of global sourcing projects do not reap the expected results. Furthermore, analyzing “one part - multiple suppliers” combinations and not just a single project reveals the novel concept of the “ugly twins”, expanding the research by drawing attention to failed projects and their substitutes. The data suggests the need for a re-evaluation of low-wage-country sourcing success assessments. The study furthermore introduces a novel measurement, i.e. the ratio of budgeted vs. received volumes coined “call-offs”. The measurement can serve as a reliable proxy for a series of operational issues involved in low-wage-country sourcing, mainly relating to quality, production and logistics.

The key contribution of chapter four lies in the way it has taken a step forward for the understanding of the complex phenomenon of global sourcing in management practice. The chapter furthermore lays the foundation for chapter five and proposes several ways for future research. Since chapter three and four were written in part parallel, the propositions derived from the fieldwork are partially being tested in chapter three. The chapter therefore also lays part of the foundation for chapter three, although coming afterwards in order. The depth of insight generated was facilitated by using qualitative methods.

We finally conclude in chapter five that internal cross-functional integration can be seen to be a precondition for external integration with suppliers, and that external integration is a precondition for global sourcing success. Social capital theory is used as a theoretic lens. The absence of a direct connection between internal and external integration indicates a mediating role of the three dimensions of social capital within this relationship. This highlights the importance of social capital within the firm as facilitator for the development of social capital with external market partners such as suppliers. For a detailed overview about the scientific and managerial contributions, please refer to the discussion in chapter six.

2 Estimating Cost-Saving Potential from International Sourcing and Other Sourcing Levers: Relative Importance and Trade-Offs

2.1 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, Steinle and Schiele, 2008, Trent and Monczka, 2003a). 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 (Frear et al., 1992, Kaufmann and Carter, 2002, Nellore et al., 2001, Trent and Monczka, 2003a). 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 quantify empirically 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 total cost of ownership reductions, 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 (Schiele, 2007, Schuh and Bremicker, 2005, Schuh et al., 2009, Schumacher et al., 2008, Semmler and Mahler, 2007). Previous research has analyzed the effects of using each of these tactics separately. This research is the first simultaneously to 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 the analysis of 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 (Schiele, 2007, Schuh and Bremicker, 2005). 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, and 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. The next section 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.

2.2 Literature review: International sourcing and other procurement levers in the context of a coherent sourcing strategy

2.2.1 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 (Bozarth et al., 1998, Hartmann et al., 2008, Kotabe and Murray, 1990, Steinle and Schiele, 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. (2006b), for example, list six key phrases for describing the phenomena that have partly been differentiated and partially been used interchangeably: “global sourcing” (Kotabe et al., 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 be 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 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, 2003b, p. 608). 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 as one weapon in a strategic “global sourcing” arsenal that may well have an integrated and strategic character (Quintens et al., 2006b).

2.2.2 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.* They identified 123 papers relating 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 eleven papers quantitatively and/or qualitatively discussing the success of international sourcing (see Table One). 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.

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

2 Estimating Cost-Saving Potential from International Sourcing and Other Sourcing Levers: Relative Importance and Trade-Offs

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
Survey, 135 respondents	Expected savings from international sourcing average 21%	Members of the national association of purchasing management (NAPM) 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
Survey, 73 respondents, additional key informant interviews	Pursuing international sourcing strategies critical to business success regardless of the extent of overall business globalisation	Sample of companies from the "Global Procurement and Supply Chain Benchmarking Initiative", Michigan State University	Industrial goods, consumer goods, services and other	USA (80%), Canada (3%), Western Europe (13%), and Australia (4%)	Differentiated definition of global sourcing and international sourcing, taking in strategic integration and coordination	not mentioned
Survey, 165 respondents	Benefits: perceived competitive advantage	Apparel retailers and wholesalers	Clothing (SIC code 23)	US companies	Global sourcing and international sourcing used interchangeably, no clear distinction	not mentioned
Survey, 162 respondents	Worldwide sourcing as one last area for performance breakthroughs, average of 16% savings for certain companies, 88% 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	Industrial products, consumer products, high technology, service providers, basic materials, energy providers and other	USA (86%), Canada (2%), Latin America (1%), Western Europe (6%), Asia-Pacific (2%), other (3%)	Clear distinction between global and international sourcing	mentioned
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 and subsidiaries within in the US	Selected industrial categories used in the Fortune International 500 Directory (electronics, transportation, scientific equipment, motor vehicles and parts, aerospace, computers and office equipment, industrial and farm equipment)	43 European, 28 Japanese multinational firms	Clear distinction between sourcing regions according to a 64 field typology framework of Koabe and Omura (1986). No differentiation between strategic integration regarding global and international sourcing	not mentioned
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 and subsidiaries within in the US	Fortune International 500 Directory (electronics; transportation, scientific equipment; motor vehicles and parts; aerospace; computers and office equipment; and industrial and farm equipment)	71% European, 21% Japanese headquartered companies	No distinction between global sourcing and international sourcing made	not mentioned
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, steel	US companies	Clear distinction between international "ad hoc" buying and global -strategic- sourcing	not mentioned
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 Fortune 500 list, evenly distributed	Global components/finished goods for the service sector, financial businesses, utility and transportation, construction, publishing/communication, retail/wholesale, health care, other	US companies	Distinction between passive importing (international sourcing) and proactive global sourcing	not mentioned
Survey, 514 respondents	Purchasing managers from the US 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 U.S. 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 U.S. sourcing vs. sourcing from Mexico)	not mentioned
Exploratory study, 35 interviews	International sourcing and lean supply conflict, international sourcing will tend to have negative effects for complex parts	1 automotive OEM, six automotive suppliers	U.S. automotive industry	US companies	Utilisation of the term global purchasing, no distinction between strategic aspects of global sourcing and "ad hoc" international purchasing	International sourcing and lean supply conflict
Survey, 511 respondents	Lower level of customer satisfaction from international sourcing due to quality and flexibility problems	Manufacturing firms	Chemical, mechanical, and electrical industries (U.S. SIC codes: 28, 30, 32-38)	US and German companies	Not mentioned	not mentioned

Table 1: Overview of papers containing an appraisal of int. sourcing effects

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 (e.g. 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 (Bozarth et al., 1998, Kotabe and Omura, 1989, Murray et al., 1995) or even discourage international sourcing ventures (Callahan, 2000, Homburg et al., 2002, Kotabe, 1998, Nellore et al., 2001).

The studies summarized in Table One mention a large number of contingencies for international sourcing success. These include having a consensus 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 One 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.

2.2.3 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 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, 1989, p. 4). 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 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 to be 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 (Schiele, 2006, Wagner et al., 2002) and commodity-spanned levers (Schumacher et al., 2008). Except for the commodity-spanned 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 Rüdrieh, 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 (Schiele, 2007, Schuh and Bremicker, 2005, Schumacher et al., 2008).

Conceptually, these authors distinguish between two general types of levers: a) those that follow a transaction-oriented (i.e., cost-centered) perspective and b) 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:

1. *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).

2. *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. Today, 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.

3. *International sourcing*, understood as buying goods from suppliers in a foreign country, is another sourcing lever already discussed above.

4. *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 components to ensure equal or better product properties (Sakurai, 1990).

5. *Process optimization* can lead to substantial savings from procurement. For instance, electronic data interfaces (EDI) play a crucial role in reducing transaction costs between companies (Trent, 1998).

6. *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 (Schiele, 2006, Trent, 2005) 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 is being exchanged between buyer and seller (Ellram, 1996), and this is occurring in both directions to some degree (Christopher, 1999).

7. *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.

2.3 Research approach

2.3.1.1 Research questions

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

Question 1: 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:

Question 2: 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 (see Table One). 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.

Question 3: Do firms see the application of multiple sourcing levers resulting in trade-offs, or could there be various levers reinforcing each other?

2.3.2 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 10 years old, was updated via research into the literature on each of the levers. Furthermore, we held a brainstorming session with 10 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 check-list 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.

Parallel to this, 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 eventually to 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 said, “*the connection to practice makes relevance a major criterion for good operations management research*” (Karlsson, 2009, p. 13). 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% of the workshops), electronic parts (6%), other production materials (32%), machine components (14%) and associated technical services such as machine maintenance (20%). The average purchasing volume per commodity group analyzed was 11.5 million Euro. 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 the 95% 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:

Workshop preparation by the supporting consultant and the purchaser responsible for the commodity group that is the object of analysis.

The participation of cross-functional partners in the workshop was mandatory, as often recommended in other studies (Kotabe and Murray, 2004, Lockström, 2007, Murray, 2001). 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.

Running the half-day lever workshop, including a standard presentation on the method and the seven levers, ensures 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.

After the idea collection step is repeated for all seven levers, a final workshop round estimates the savings potential 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 as 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 (a) the input requirements are clear, (b) the results are jointly developed by the group of workshop participants and (c) 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).

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.

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 7000 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.

2.4 Results

2.4.1 Determination of the magnitude of potential savings from international sourcing

Figure Four illustrates 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 with 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 added, 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 Four can therefore not simply be added up.

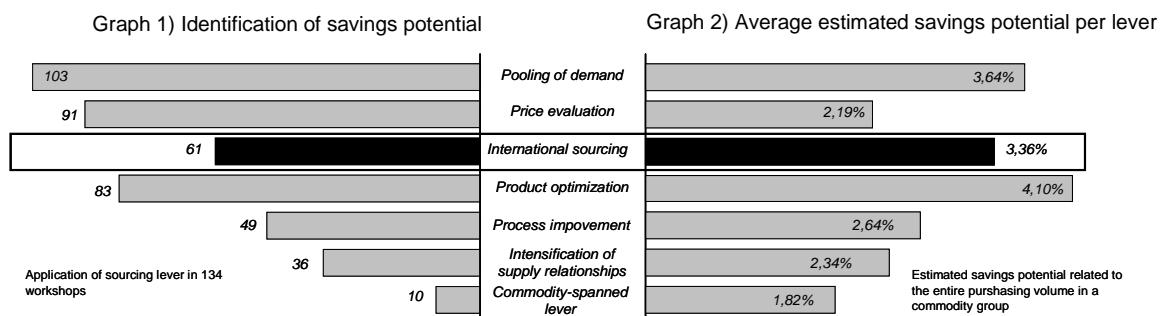


Figure 4: International sourcing opportunities

With respect to our first research question (the magnitude of potential savings from international sourcing), Figure Four indicates that teams identified an 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 to 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.

2.4.2 Relative importance of international sourcing compared to other sourcing levers

Our second research question concerned the importance of international sourcing relative to that of other sourcing levers based on the expectations of the workshop participants. As summarized in Figure Five, we used three calculations to determine this. First, “amount of application” depicts how often projects resulted from the discussion of the respective lever. With reference to 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 under consideration. 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 Five 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 of 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 less often in new projects. 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.

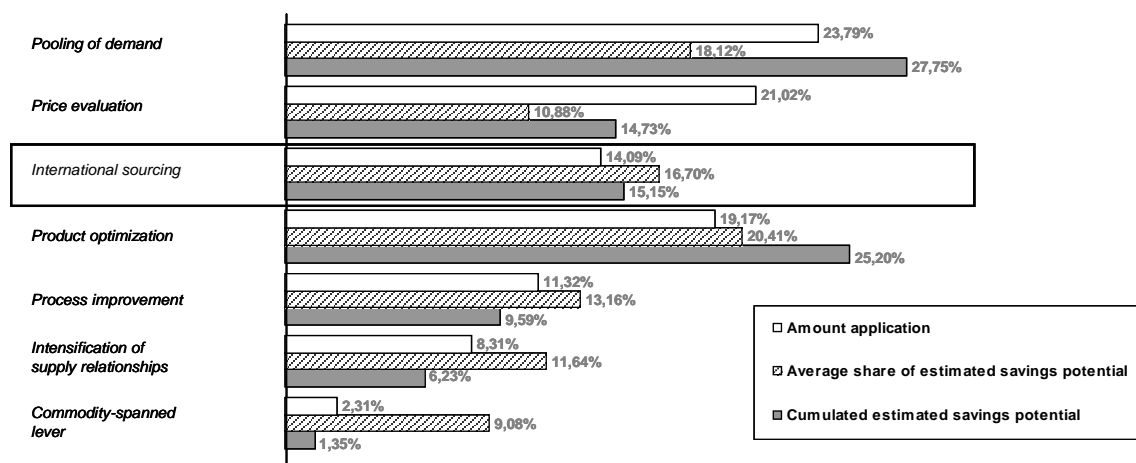


Figure 5: Relative importance of various sourcing levers

2.4.3 Trade-offs with other levers

Our third research question 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 enables the identification of 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 (see Table Two). For instance, the 47 workshops that identified both international sourcing and price evaluation opportunities yielded a mean savings potential of 2.45% based on price evaluation, while the 46 workshops that identified price evaluation opportunities but did not propose international sourcing activities yielded an average saving potential of 1.88%. In other words, the combined use of the levers of price evaluation and international sourcing resulted in a 0.57% 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.

Sourcing lever	International sourcing applied?	Amount of workshops	Mean potential savings	Std. Deviation	Std. Error Mean	Difference in potential savings	Significance
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 (n.s.)
Process optimization	Y	23	1.96%	1.98	0.41		
	N	26	2.70%	2.72	0.53	-0.74%	0.29 (n.s.)
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 (n.s.)
Product optimization	Y	38	3.19%	3.41	0.55		
	N	48	6.95%	7.22	1.04	-3.76%	0.004

Table 2: Analysis of trade-offs and synergies

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 to a decrease of 1.41% 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% lower potential savings than did those firms trying to achieve cost savings through joint product improvement in collaboration with their traditional 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 noting that in this case the opportunity costs exceed the average estimated savings from international sourcing projects.

2.5 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 tactic but that it is only one of several. The savings potential suggested as deriving 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 (see Table One).

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. 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 et al., 2011b). In order to comply with 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 (Bozarth et al., 1998, Kotabe and Omura, 1989, Murray et al., 1995). 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 of 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 also Quintens et al. (2006b)).

2.6 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 particularly cautious procedure. It should be emphasized that specific firm characteristics must be considered in developing a sourcing strategy (Akesson et al., 2007).

Secondly, 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 has 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.

2.7 Abstract for journal / keywords

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 analyzes 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 we test for potential trade-offs between different levers.

Design/methodology/approach

Data stem from the 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% 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 as to the importance of international sourcing compared to other levers and help to correct the misconception of international sourcing as a “purchasing panacea.” Our 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 the relative importance and possible trade-offs among them.

Keywords: global sourcing, international sourcing, low-cost country sourcing, purchasing levers, balanced sourcing, sourcing strategies, globalization

3 The “Ugly Twins”: Failed Low-Wage-Country Sourcing Projects and Their Expensive Replacements

3.1 Introduction

Most larger companies today engage in international sourcing in some form and to some extent. The importance of international sourcing is rising steadily both in business practice and as a topic for scholarly research (Quintens et al., 2006b, Steinle and Schiele, 2008, Trautmann et al., 2009a, Trent and Monczka, 2003b).

In a survey by Bovet and Martha (2000), around 95% of CEOs declared “going global” to be their prime challenge over the medium to long-term planning horizon. Among the various reasons why companies choose to source internationally, three main motivations appear: 1) Cost savings, e.g. due to lower factor costs, such as wages or currency influences; 2) access to highly innovative products or technology that companies otherwise would not have and 3) promotion of sales activities in the sourcing region (Barney, 1999, Bozarth et al., 1998, Schumacher et al., 2008, Smith, 1999, Trent and Monczka, 2003b). Earlier research (Handfield, 1994, Monczka and Giunipero, 1985, Spekman, 1991) demonstrates a clear focus on the cost-saving aspects of international sourcing, particularly for western companies. Apart from the three “classic” reasons for international sourcing, recent literature has tried to explain some of the international/global sourcing trends with a fourth factor, namely: 4) psychological leader-follower effects (Kotabe and Mol, 2006), also referred to as bandwagon effects (Schweller, 1994). There seems to be strong consensus that international sourcing is either inevitable and/or beneficial to firms. International sourcing has been called “...an automatic expectation to respond to competition” (Carter et al., 2008, p. 225), which would leave firms little choice as to whether or not to engage in it.

A fundamental question, though, has not yet been fully answered: Does it really help and if so, under which conditions? Beyond the level of anecdotal evidence, few attempts have been made to quantify empirically the impact of international and in particular low-wage-country sourcing and its benefits, linking the level of international sourcing to firm performance (Akkermans et al., 1999). Moreover, the findings are somewhat ambiguous concerning the success of attempts to save costs. While “firms located in developed countries often find that labor costs are high, compared to the value that is added to their products” (Kotabe and Mudambi, 2009, p.122), substantial differences in factor costs between developed and less developed countries, such as these labor costs, should theoretically lead to lower prices. Both managers and scholars, however, highlight the difficulty of calculating the objective value of international sourcing initiatives (Horwell and Soucy, 2007, Trent and Monczka, 2003b). Favorable factor costs do not automatically translate into lower sourcing costs. The findings on the actual cost-saving results from international sourcing vary greatly, ranging from negative or zero (Kotabe and Omura, 1989, Murray et al., 1995) to 20% (Alguire et al., 1994, Petersen et al., 2000, Weber et al., 2010).

Some of the ambiguous results of previous research may stem from methodological issues. With the exception of one recent contribution (Schiele et al., 2011a) and two case studies (Nellore et al., 2001, Weber et al., 2010), all previous studies we could identify rely on perceptual information on international sourcing success from survey data. Therefore, collecting survey data from purchasing managers may measure their expectations, rather than actual outcomes. If, as suggested above, international

sourcing was a fashion, then biased, socially desired responses could occur in a perceptual survey.

Another source of the ambiguous results of previous studies may be that they tend to concentrate on the project level of a single supplier-part combination, thus possibly analyzing a biased sample which overestimates international sourcing benefits by not taking into consideration its effects on the entire material group or “one part – multiple suppliers” combination.

Furthermore, earlier studies have relied on successful projects only. However, in order to obtain a realistic picture of the phenomenon, it is particularly helpful to learn from failures and understand the reasons (Hoopes and Postrel, 1999).

Accordingly, the objective of this paper is to provide a more realistic picture of international sourcing success, enabling more accurate sourcing decisions. In particular, we wish to obtain more realistic estimates of the cost and operational success potential of low-wage-country sourcing, i.e. international sourcing with the purpose of achieving expected cost savings due to factor cost differences. Furthermore, the paper contributes by revealing why some low-wage-country sourcing projects fail. Finally, an objective of the research is to understand the effect of low-wage-country sourcing not only on single and isolated projects, but on the organization as a whole.

In order to achieve these goals, this research uses an empirical approach different from previous papers. Instead of perceptual, survey-based data we analyze contractual data of real-life projects. Furthermore, instead of analyzing “one supplier – one part” projects, we evaluate the impact of failed projects on “one part - multiple suppliers” combinations. We concentrate on a sample of 214 sourcing projects from China, sourced by one Western-European OEM for one European location.

Our findings reveal that in the present sample, less than a quarter of the projects were fully successful in terms of operational and financial performance. In order to define success, we not only consider price reductions compared to previous years, but also call-offs. We find a significant negative correlation between price reductions according to contract and call-offs; this means that often those suppliers who promised the best prices did not ultimately deliver the ordered goods, or at least not in the desired quality. Furthermore, when analyzing what happened to these failed contracts, this research unveils the existence of “ugly twins”. The unfulfilled contract awarded to a new supplier has to be taken over by the established supplier from a high-wage country, leading to a replacement contract with less favorable conditions. Referring to these replacement contracts and the failed China-sourcing contracts, we use the term “ugly twins”. In assessing international and low-wage-country sourcing impact, these extra costs must be deducted from the alleged or gross savings of international sourcing projects. In our sample, these costs are substantial, suggesting that in the previous literature the benefits of international sourcing may have been overestimated, because the costs of failed projects were not deducted explicitly from the benefits of successful projects.

This paper is organized as follows: we first examine the literature on the concepts and reasons for international and low-wage-country sourcing and on performance measurements, leading to a set of four expectations derived from the literature. We

then present our methodology and relate our set of expectations to the empirical results. Finally, we discuss some implications of the observed phenomena and conclude with the limitations of our study.

3.2 Literature review

3.2.1 Previous research on international and low-wage-country sourcing and its impact

International sourcing must still be considered an under-researched topic (Kaufmann and Carter, 2006) and fundamental questions remain unanswered (Mol et al., 2004), as indicated by the utilization of many differing terms for the research field (Schiele et al., 2011a). In a literature review about the state of the art of international sourcing, Quintens et al. (2006b) list six key terms describing the phenomena that have partly been differentiated and partially been used interchangeably: “global sourcing”, “international purchasing”, “worldwide sourcing”, “import sourcing”, “offshore sourcing” and “international procurement”. One may add “low-cost-country sourcing” (Lockström, 2007), although this would possibly be better called “low-wage-country sourcing”, because it is not clear whether the *ceteris paribus* assumption is true and low wages automatically translate into low costs (Schiele et al., 2011a). For the remainder of this paper, the term “low-wage-country sourcing” will be used to indicate, sourcing of physical goods from countries with lower factor costs of labor in a narrow and clear sense.

Measuring the outcome of low-wage-country sourcing strategies is challenging. First, it has been reported that firms themselves struggle to calculate the financial effects of their sourcing operations (Cokins, 2001, Innes and Mitchell, 1998), and that a “...need for performance measurement in purchasing has long been recognized” (Easton et al., 2002, p.126).

Secondly, methodological issues regarding the scientific appraisal of purchasing success have been raised. Research analyzing sourcing success has mostly relied on ex-post perceptual data from surveys (Schiele et al., 2011a). The reliability of these surveys has been questioned on the grounds of heterogeneity of industries and firms, and in terms of differing accounting standards e.g. for saving measures (Ketokivi and Schroeder, 2004, Nollet et al., 2008, Steinle and Schiele, 2008). Therefore, there has been a call for research with “...objective and ex-post, nonetheless comparable data, reflecting actual achievements” (Schiele et al., 2011a, p.319).

Studies on the success of low-wage-country sourcing ventures give an ambiguous picture. Following the logic of the literature review of Quintens et al. (2006b) and Schiele et al. (2011a), we expand their research with three recent papers leading to a total of fourteen papers discussing the financial results of low-wage-country sourcing (see Table Three).

<i>Evaluation</i>	<i>Authors/Year</i>	<i>Type</i>	<i>Results</i>	<i>Location</i>	<i>Industry</i>
<i>positive</i>	Frear et al., 1992	Survey, 135 respondents	Expected savings from global sourcing average 21%.	USA	Various
	Petersen et al., 2000	Survey, 73 respondents, key informant interviews	Pursuing global sourcing strategies critical to business success regardless of the extent of overall business globalization.	Worldwide	Various
	Cho and Kang, 2001	Survey, 165 respondents	Benefits of global sourcing: perceived competitive advantage.	USA	Clothing
	Trent and Monczka, 2003	Survey, 162 respondents	Global sourcing as one last area for performance breakthroughs, average of 20% savings for certain companies, 88% of companies report purchase price declined due to worldwide sourcing.	Worldwide	Various
<i>neutral or case specific</i>	Weber et al., 2010	Single case study, 147 components purchased from high- and low-wage countries	Annual total costs for components from low-wage countries constitute only 43.1 percent of the total costs in high-wage countries. Non-purchase price costs gain importance in low-wage country sourcing.	Germany	Medical device industry
	Kotabe and Omura, 1989	Survey, 71 respondents	No significant impact of global sourcing on general business success.	Europe, Japan	Various
	Murray et al., 1995	Survey, 104 respondents	No impact of global sourcing strategy on market performance, particularly for complex products.	Europe, Japan	Various
	Bozarth et al., 1998	Survey, 97 respondents	No procurement performance differences between firms which proactively entered into international sourcing and those which did not.	USA	Various
	Kinkel and Maloca, 2009	Survey, 1663 respondents	Between 16 to 25 % of all offshoring activities are followed by a backshoring activity within four years. No significant benefits from outsourcing to Eastern Europe were found.	Germany	Manufacturing sectors
	Schiele et al. 2011	Secondary data analysis, 134 workshops within different companies	Global sourcing only valuable in particular situations, other sourcing levers generate more savings on average.	Germany	Various
	Kotabe et al., 1998	Survey, 100 respondents	Foreign sourcing of supplementary services is negatively related to a service firm's strategic and financial market performance.	USA	Various
	Callahan, 2000	Survey, 514 respondents	US and Canadian purchasing managers draw a negative picture of Mexican and foreign suppliers. Strong favor of suppliers from home region.	USA, Canada	Various
	Neillore et al., 2001	Exploratory study, 35 interviews	Global sourcing and lean supply conflict, global sourcing will tend to have negative effects for complex parts.	USA	Automotive
	Homburg et al., 2002	Survey, 511 respondents	Lower level of customer satisfaction in global sourcing due to quality and flexibility problems.	USA, Germany	Various
<i>negative</i>					

Table 3: Ambivalent results of low-wage-country/global sourcing

All but three papers (Nellore et al., 2001, Schiele et al., 2011a, Weber et al., 2010) base their work on surveys, with sample sizes between 71 and 1663. Most surveys cover a wide range of industries, chosen from various Standard Industrial Classification- (SIC) Codes- (Homburg et al., 2002) or different Fortune 500 companies (Murray et al., 1995). Only three papers focus on one industry (Cho and Kang, 2001, Nellore et al., 2001, Weber et al., 2010). Given the degree of heterogeneity in respondents, one can expect to find differing degrees of maturity within the sourcing sector, differing sourcing needs (e.g., lower general sourcing needs in the service industry) and different expectations and results from low-wage-country sourcing.

Similar to the ambiguous results on outsourcing from Lacity et al. (2010), the results were found to be positive, neutral or negative. Interestingly, analyses of companies operating in similar industries in the same country and within a relatively short period of time differ strongly in their appraisal of low-wage-country sourcing success (e.g. Frear et al., 1992, Kotabe, 1998), despite using similar methods. While some studies support the notion of low-wage-country sourcing as a source of substantial savings (Frear et al., 1992, Petersen et al., 2000, Trent and Monczka, 2003b), others take a neutral approach (Bozarth et al., 1998, Kotabe and Omura, 1989, Murray et al., 1995) or even negatively assess low-wage-country sourcing projects (Callahan, 2000, Homburg et al., 2002, Kotabe, 1998, Nellore et al., 2001). However, despite empirical challenges, the conceptual logic of factor cost advantages translating into lower prices implies a positive expectation of low-wage-country sourcing efforts for firms based in high-wage countries.

3.2.2 Achieving lower purchasing prices through low-wage-country sourcing

The notion of exploiting lower factor costs, in particular labor, can be seen as the basis of cost-oriented cross-border sourcing (Porter, 1990). It has been argued that companies facing global competition should adopt a low-wage-country sourcing strategy to gain competitive advantages (Carter and Narasimhan, 1996) by allocating activities in the value chain to regions with a lower comparative price level (Kogut, 1985). Previous research has identified total average cost savings per annum in the automotive industry at about 4.2% (Wallentowitz et al., 2009). We therefore offer the following expectation for the financial results from low-wage-country sourcing:

1) Sourcing from low-wage countries will yield cost savings that are higher than industry average annual cost savings.

This expectation is grounded in the assumption that due to the higher risks involved in low-wage-country sourcing, this sourcing tactic may only be beneficial if the savings achieved exceed the cost reduction that could be expected from the established suppliers.

Traditional performance measures, such as mere saving calculations, have been criticized for being too strongly based on financial measures and not enough on operational measures (Caplice and Sheffi, 1995). We therefore add an operational perspective to our analysis.

3.2.3 Ambiguous operational results of low-wage-country sourcing

It has been argued that purchasing performance measures should be multidimensional, support continuous improvement, and be integrated with other departments such as logistics (Caplice and Sheffi, 1995, Ghalayini and Noble, 1996, Neely et al., 1997). Achieving a lower price, but receiving supplies of lower quality, in the end might not be beneficial for the buying firm (Degraeve and Roodhooft, 1999). In order to gain a realistic picture, therefore, operational performance measures may have to be used to balance perceptions of low-wage-country sourcing.

From interviews with scholars in the field and with industry practitioners from within the automotive industry, we conclude that call-off ratios could serve as a valid indicator of operational performance. The call-off indicator is a ratio of goods received versus budgeted volumes. The calculation can be performed as follows: e.g. if the agreed-upon volume with a supplier had been set at 1000 units and only 400 had ultimately been called off throughout the duration of the frame contract, one would see a 40% call-off rate for that specific supplier-part combination. Interviews with purchasing managers and supplier intelligence personnel, in combination with spot tests, show that three quarters of all sourcing projects from high-wage countries exceed a 75% call-off rate. Call-off rates below the 75% threshold would indicate a problem within the project. Issues leading to low call-off rates can indicate problems on the supplier side as well as problems from within the buying firm such as internal resistance from stakeholders such as logistics, quality or production. We account for market demand effects on call-off ratios for China-sourcing projects, as will be discussed in the methodology section.

Global supply chains are difficult to handle in comparison to local ones (MacCarthy and Atthirawong, 2003), due to low-skilled work force and different understandings or concepts of quality (Meixell and Gargeya, 2005), volatile currency exchange rates, economic and political instability, and changes in the regulatory environment e.g. customs, just to name a few (Carter and Vickery, 1989, Dornier et al., 1998). Concluding this section on operational performance of low-wage-country sourcing and its possible measurements, we offer the following expectation to be analyzed by our set of data.

2) Sourcing from low-wage countries will yield lower operational performance compared to sourcing from high-wage countries.

3.2.4 Impact of failed low-wage-country sourcing projects

Holweg et al. (2010) differentiate three different cost types for low-wage-country sourcing; 1) Static costs, notably the purchase price ex-factory gate, transport costs, customs etc.; 2) Dynamic costs such as increased pipeline and safety stock and 3) Hidden costs such as labor cost inflation, currency fluctuations or the loss of intellectual property. Although it is becoming increasingly more difficult to measure the non-static costs, it is certainly conceivable that there could be low-wage-country sourcing projects in which the benefits of factor cost advantages are more than offset by other costs related to low-wage-country sourcing (Chen and Yang, 2002, Levy, 1995, Weber et al., 2010).

In the case of a serial production system, if the decision is made to source a particular component from a low-wage country, this means that the previous supplier gets less business or none at all. The other way around, if the new low-wage-country supplier fails to deliver part of the order or does not produce the agreed-upon quality, the purchaser responsible has to find a replacement. Such a replacement may cause higher costs than planned, thus defeating attempts to achieve the savings. Our expectation from the data analysis can therefore be stated as such:

3) Failed low-wage-country sourcing projects may incur more expensive replacement supplies in order to be able to deliver the necessary amount of items for production.

3.2.5 Global sourcing as a form of institutionalized practice

Recent research has started to investigate the reasons for commencing low-wage-country sourcing ventures by means of neo-institutional arguments, such as so-called “leader-follower effects” (Kotabe and Mol, 2006). These effects have also been referred to as bandwagon effects (Schweller, 1994) which imply that managers are, to a certain degree, less pragmatic problem solvers than followers of fads and fashions (Abrahamson, 1996, Kieser, 1997). Indeed, with many trends, it can be observed that firms mimic each other’s behavior (on mimicking IT outsourcing, see Lacity & Hirschheim, (1995) or on strategic decision making, Ghoshal (1988)).

Apparently, among top managers and company stakeholders, there seems to be a strongly held belief in the beneficial effects of low-wage-country sourcing (Steinle and Schiele, 2008). It seems that *“internationalization of sourcing is not only a strategic choice but to some extent also an imperative dictated by industry competitors”* (Mol et al., 2002, p. 8).

The question arises as to whether such isomorphisms (Di Maggio and Powell, 1983) negatively influence procurement performance, since they induce procurement managers to engage in potentially deficient low-wage-country sourcing projects. If low-wage-country sourcing is conceived as an “industry recipe” (Spender, 1989) resulting from mimetic or normative isomorphism, it could be expected that the associated recommendations are also applied in situations where assumptions – such as a sufficient labor content in the production process of the material allowing the company to seize factor cost advantages – do not hold. The results are unrealistically high expectations and a correspondingly high degree of project failure, e.g. expressed through low call-offs. Based on assumptions from the literature on institutionalized practice patterns in the form of “best practice”, we conclude with the following expectation:

4) The higher the contracted savings for a low-wage-country sourcing project, the lower the operational performance.

3.3 Analysis

3.3.1 Automotive sourcing

The study takes the perspective of a Western-based (high-wage country) organization engaging in low-wage-country sourcing activities from China for intermediate products from third parties. We choose the automotive industry as a case because this industry is of particular importance to the world economy and continues to globalize, demanding continued attention from operations management researchers (Taylor and Taylor, 2008). Furthermore, the industry is highly competitive, and research findings are more generalizable than those of many other industries, because the automotive supply chain “...encompasses a wide variety of products (e.g., stamped metal, seating systems, and steering assemblies) and a diversity of processes (job shop, manufacturing cell, continuous flow, etc.)” (Droge et al., 2004, p. 558).

The automotive industry can be described as one of “assembly”, in which cooperation with suppliers is very important (Kotabe, 1998). During the last few decades, firms have continuously engaged in outsourcing activities (von Corswant and Fredriksson, 2002). Automotive firms are currently reaching levels of a quarter or lower in terms of depth of production, i.e. most of the turnover is directly paid to the suppliers (VDA 2004). All projects analyzed in this research are direct items, i.e. products actually built into the vehicles, as opposed to indirect (and Capex) items such as machinery or office equipment.

3.3.2 Automotive sourcing from China

There are substantial differences between low-wage-country sourcing markets, for instance in terms of industry development in a country, the availability of regional or national industry clusters, institutional frameworks, logistical challenges, etc.. Applying filters prior to the analysis helps to check for disturbances. The data is less likely to be influenced by a large set of moderators on low-wage-country sourcing (Quintens et al., 2005). For this paper, the analysis therefore focuses on one industry within one cultural context, namely the automotive industry and the sourcing market of China, in order to limit the amount of interfering factors. In line with Nassimbeni and Sartor (2007) and Schoenherr (2009), Hultman et al. posit: “*China is naturally a critical context in which to explore changing patterns in global [low-wage country] sourcing, and there is a need to understand the country’s significance as a source of supply for foreign companies*” (2012, p. 2). In total, a sample of 214 China-sourcing projects undertaken by this European automotive OEM was obtained for the years 2008, 2009 and 2010.

China is generally regarded as a country with expanding markets and low labor costs (Salmi, 2006). It constitutes an important region for sourcing (Salmi, 2006) and is of particular interest to multinational corporations (Eberhardt et al., 2004). According to Heckscher (1919) and Ohlin (1933), a country has a comparative advantage in commodities that extensively use the factors of production with which it is well endowed. Since labor costs are low in China (Salmi, 2006), many firms have outsourced labor-intensive processes there. Furthermore, the country has become the largest car-producing region in the world, with 13.8 million produced units in

2009, compared to 7.8 million in Japan, 12.3 million in Western Europe and 8.8 million in North America. This must be compared to 1990 when China produced 0.5 million units, constituting an almost 30-fold increase (VDA 2010). All projects analyzed in the current study are from 2008, 2009 or 2010, thus excluding effects from the new Chinese labor law introduced in January 2008.

3.3.3 Data and methodology

Scientific information can be gathered from both primary and secondary channels (Cooper, 1998). The former consist of data gathered specifically for the particular research project, whereas the latter deals with data gathered for other reasons and processed for example by data mining, a process for selecting, exploring and modeling large quantities of data from a data warehouse (Giudici, 2003).

The data for the present study have been extracted by using a carefully designed data mining process within the data warehouse of the focal company, which is a globally operating multi-billion Euro turnover automotive enterprise. The data warehouse contains data related primarily to administration, contracts, billing procedures and consumption recordings. For this research, data on the company's China-sourcing initiatives were gathered and collated from a large array of data from the supplier intelligence department of the focal company.

Low-wage-country-sourcing success in general and China-sourcing success in particular is known to be contingent upon a variety of factors. Analyzing the impact of these various key success factors and project success has been described as “...one of the thorniest issues confronting the academic researcher” (Venkatraman and Ramanujam, 1986, p. 801). Acknowledging such limitations, the contracted price savings and the goods received in fulfillment of the contract were selected as indicators of project success, since they approximate to the desired outcome.

For the analysis, the following data from the focal company's database were obtained: (1.) budgeted and contracted volumes with suppliers, (2.) goods received from suppliers, (3.) contractually documented price savings negotiated with suppliers: Budgeted volumes are calculated according to a three-step process, which involves the focal firm's sales plans, the plants' production planning, and a match with product attributes, such as vehicle extra equipment e.g. sunroofs.

In order to generate a variable for operational project success, goods received are compared with planned budgets, thus generating a call-off ratio. We reason that low call-off ratios (<75%) could indicate problems in the process. In order to exclude market- or product-specific influences, projects with low call-offs due to changes in demand or significant changes in product features (e.g. technical change leading to the allocation of a new product description number), are excluded from the analysis. We furthermore excluded projects with call-off rates above 200% following a flawed planning. Each project was individually checked before being removed.

The negotiated price savings were then extracted from the data warehouse, i.e. the contracted prices. Savings are analyzed, since, as described above, earlier research has shown that the majority of low-wage-country- and China-sourcing projects are initiated mainly to save costs. This also applies to the focal company, as discussed with purchasing managers throughout the company. Therefore, we consider

commercial performance, expressed as negotiated price savings, as the second performance indicator next to call-offs. Savings refer to the difference between negotiated price and average price paid in the previous year for the part in question. Prices and volumes are negotiated on a yearly basis and only contractually agreed upon prices are paid, i.e. there is no difference between budgeted and paid price. The prices are ex-works and thus do not include transport costs. Furthermore, data from the data warehouse were cleared of currency fluctuations by internal accounting measures, so that data are also comparable in this respect.

All parts purchased are intermediary items and customer-specific, at least to a certain degree. That is, the underlying technology is often fairly similar, but adapted to the buying company. Data have been gathered for three consecutive years, in order to reduce possible misinterpretation and exclude particularities valid for only one year (Haenecke, 2002).

3.4 Results

3.4.1 The majority of China-sourcing projects cause “ugly twins”

The presentation of results is structured as follows. First, we refer to the set of expectations derived from the literature and relate them to the results of our secondary data analysis. Subsequently, we present some qualitative insights into challenges of and barriers to low-wage-country sourcing from our focal company.

Project success was compared by scattering the individual sourcing projects in a graph as shown in Figure Six. Data on the Y-axis contain the call-off ratios. The data for the three years were aggregated. The X-axis shows the savings negotiated. Each point plotted in the matrix represents one sourcing project from China at the component level. A total of 214 projects were analyzed.

A four-quadrant matrix was then applied to the data, in order to arrive at an improved understanding of project success. The quadrants are divided by two threshold lines as explained above, i.e. savings and operational performance level. Again, following discussions with other researchers in the field and interviews with sourcing managers and China-sourcing staff within the automotive firm analyzed, it was concluded that call-off ratios below 75% indicate a problem within the project. The number furthermore corresponds to the average call-off ratio within the time frame analyzed for all projects worldwide. Projects below that line fall into the fail zone (Quadrants III and IV in Figure Six). Secondly, average savings were considered, and the value was set as an X-axis threshold value. Projects below a 4.2% savings range, i.e. lower than the normal annual savings, would only make sense in a strategic perspective of breaking up monopolies or increasing competition with established suppliers from high-wage countries. Therefore, those projects are characterized as of doubtful financial benefit (Quadrant I). Successful projects fall into Quadrant II, high savings coinciding with high call-offs, i.e. the buying firm achieving acceptable savings.

3 The “Ugly Twins”: Failed Low-Wage-Country Sourcing Projects and Their Expensive Replacements

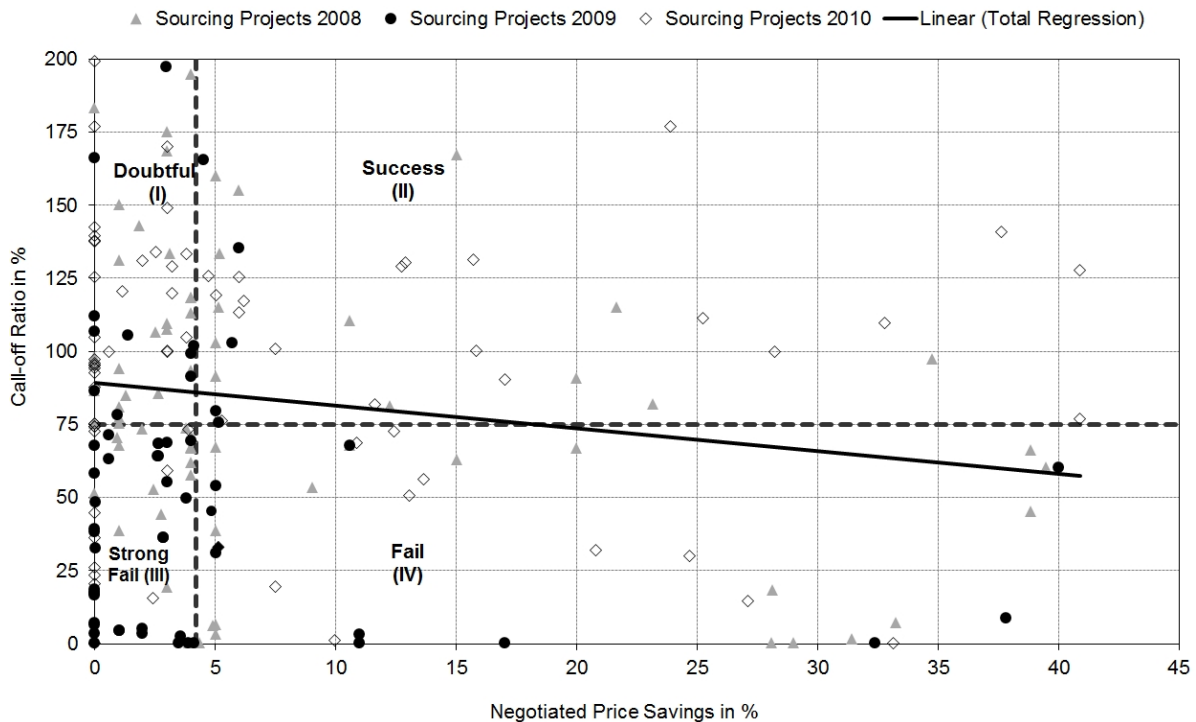


Figure 6: Ambivalent results of China-sourcing

In the data analyzed, 43 projects (20.09%) provided entirely satisfactory results in terms of savings and call-off ratio (success quadrant, II). For 70 projects, or 32.71%, the results can be seen as ambiguous, that is projects were successful at an operational level, but lagged behind in terms of financial performance, with average savings of 1.67% (doubtful quadrant, I). 101 projects, or 47.20% had below-average call-off rates, indicating weak operational performance (fail and strong fail quadrant). Of those 101 projects with low operational performance in the fail and strong fail quadrant, 62.15% were projects with below-average savings (strong fail quadrant, III), 37.85% were projects with above-average savings (fail quadrant, IV). For a detailed evaluation, refer to Table Four.

Our data support earlier research regarding the ambivalent results of low-wage-country sourcing. Taking only operationally successful projects into account (exceeding 75% call-off ratio), only 43 out of 113 projects (= 38.05%) have an above-average (4.20%) savings rate. The majority of operationally successful projects (70 out of 113 projects = 61.95%) yield below-average (4.20%) savings. However, on average those operationally successful projects resulted in total savings of 6.18%. This is due to the fact that a few very successful projects with high savings strongly influence the average; however, the majority of projects remain below the 4.2% savings threshold line.

All 214 projects combined, regardless of operational performance, resulted in average savings of 7.03%. Again, for a detailed evaluation, refer to Table Four. With regards to our first expectation from literature it can be observed that whereas the total of all operationally successful projects and the total of all projects together yield above-average savings, the majority of operationally successful projects lag behind in terms of savings and only 20.09% can be regarded as entirely successful.

The results can be regarded as “optimistically” biased, because transport costs and other elements of the total cost calculation were not included in our analysis, which used ex-works prices.

The analysis shows that 52.80% of the projects exceed the threshold 75% call-off rate, compared to an average of 75% for high-wage countries. Overall, 47.20% of all projects fail in terms of operational performance. With regards to our second expectation based on the literature, we observed that operational performance from low-wage-country sourcing (in the case of sourcing from China) is indeed below the operational performance from high-wage countries.

	<u>Doubtful</u>	<u>Success</u>	<u>Total Horizontal</u>
% Average Call Off	124.25%	124.73%	124.43%
% Average Savings	1.67%	13.52%	6.18%
% > 4.2% Savings	0.00%	100.00%	38.05%
% > 75% Call-Off	100.00%	100.00%	100.00%
% Share of Total Projects	32.71%	20.09%	52.80%
# Absolute Projects	70	43	113
	<u>Strong Fail</u>	<u>Fail</u>	<u>Total Horizontal</u>
% Average Call Off	42.81%	30.47%	38.17%
% Average Savings	1.69%	18.39%	7.97%
% > 4.2% Savings	0.00%	100.00%	37.62%
% > 75% Call-Off	0.00%	0.00%	0.00%
% Share of Total Projects	29.44%	17.76%	47.20%
# Absolute Projects	63	38	101
	<u>Total Vertical</u>	<u>Total Vertical</u>	<u>Total All</u>
% Average Call Off	85.68%	80.51%	83.72%
% Average Savings	1.68%	15.81%	7.03%
% > 4.2% Savings	0.00%	100.00%	47.00%
% > 75% Call-Off	52.63%	53.09%	53.00%
% Share of Total Projects	62.15%	37.85%	100.00%
# Absolute Projects	133	81	214

Table 4: Comparison of China-sourcing success 2008 - 2010

Furthermore, direct and quantifiable results of failed China-sourcing projects were scrutinized with regard to the third expectation, namely that failed low-wage-country sourcing projects would have to be replaced by other suppliers in order to ensure continuity of supply.

In order to do so, projects with low operational performance, i.e. those located in Quadrants III and IV, were analyzed for their negative impact on other part-supplier combinations. For a better overview, we only display projects from one year in Figure Seven. Due to the strong possible financial impact, all projects from the fail quadrant were chosen. Furthermore, we picked a random sample from the strong fail quadrant for our analysis.

The black dots in Figure Seven represent failed China-sourcing projects taken from data in Figure Six. Each black dot is connected to a small box, representing the established supplier from a high-wage country the company subsequently had to turn

to in order to fulfill the capacity needs. From the 15 projects analyzed, all but three resulted in unfavorable conditions, compared to the planned outcome of the low-wage-country sourcing project. In terms of opportunity costs, the buying company clearly lost money through these China-sourcing projects. The results for the other years and the remaining projects reveal a similar pattern.

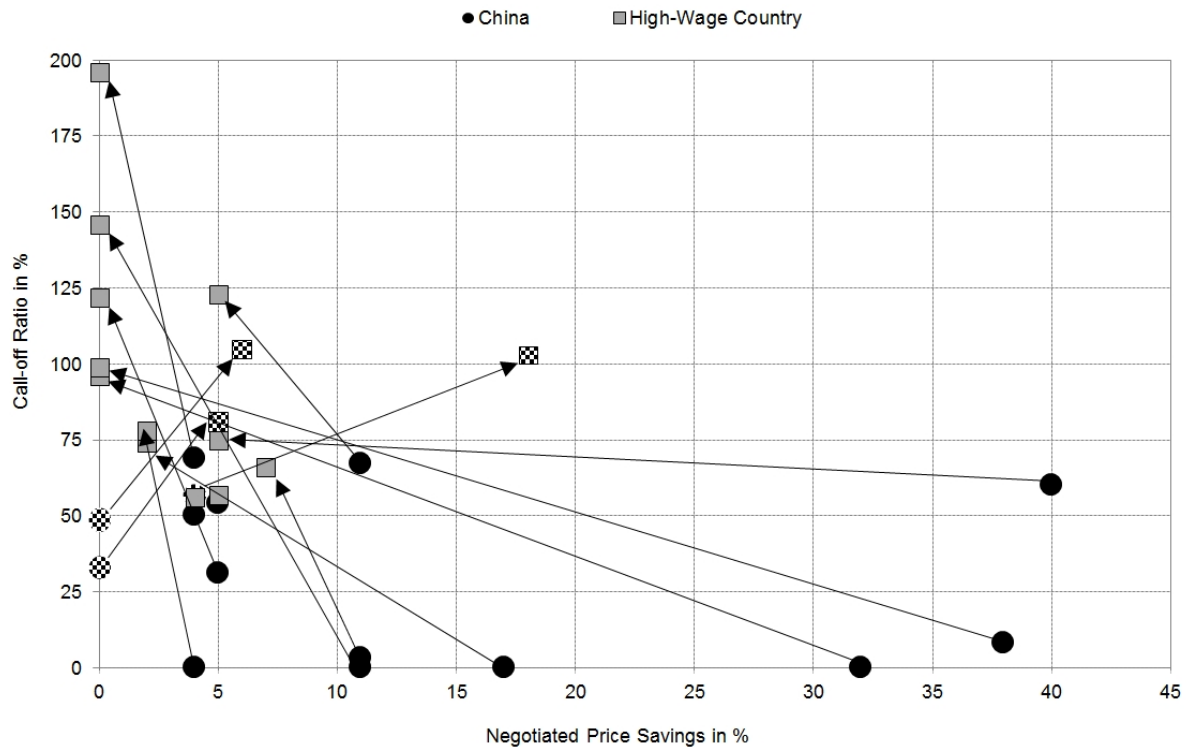


Figure 7: Failed China-sourcing projects with an "ugly twin"

Project	China		High-Wage Country		Difference Savings (%)
	Call-Off (%)	Planned Savings (%)	Call-Off (%)	Achieved Savings (%)	
Project 1	0.0%	11.0%	146.0%	0.0%	-11.0%
Project 2	0.0%	17.0%	74.0%	2.0%	-15.0%
Project 3	0.0%	32.0%	96.0%	0.0%	-32.0%
Project 4	0.0%	4.0%	78.0%	2.0%	-2.0%
Project 5	3.0%	11.0%	66.0%	7.0%	-4.0%
Project 6	8.0%	38.0%	99.0%	0.0%	-38.0%
Project 7	31.0%	5.0%	122.0%	0.0%	-5.0%
Project 8	33.0%	0.0%	81.0%	5.0%	+5.0%
Project 9	49.0%	0.0%	105.0%	6.0%	+6.0%
Project 10	50.0%	4.0%	56.0%	4.0%	0.0%
Project 11	54.0%	5.0%	57.0%	5.0%	0.0%
Project 12	57.0%	4.0%	103.0%	18.0%	+14.0%
Project 13	60.0%	40.0%	75.0%	5.0%	-35.0%
Project 14	67.0%	11.0%	123.0%	5.0%	-5.0%
Project 15	69.0%	4.0%	196.0%	0.0%	-4.0%
Average	32.0%	12.0%	98.0%	4.0%	-8%

Table 5: Comparison of "ugly twins"

The phenomenon of the “ugly twins”, i.e. the failed low-wage-country sourcing contract and its high-wage-country replacement contract, may be explained as follows. Since the focal firm’s production line had to keep running, volumes from failed China-sourcing projects had to be allocated to established suppliers from high-wage countries.

Given lead-time issues, only established suppliers from high-wage countries, or those which were meant to be replaced, can be considered. More often than not, a poor negotiating position when returning to the established high-wage-country supplier led to higher sourcing costs. In the worst case, the former supplier who lost the volume to the new low-wage-country supplier might already have accordingly reduced its production capacity. Indeed, failed low-wage-country sourcing projects negatively affect the performance of other supplier-part combinations for the same part, simply because in a large series production, the material has to be sourced elsewhere, and in the event of a sudden switch due to project failures, conditions tend to be less favorable than before the low-wage-country sourcing. Furthermore, low-wage-country sourcing will lead to less leverage with the established suppliers from high-wage countries, because volumes decrease.

Finally, based on the research stream on institutionalized practice patterns, we were expecting a negative relation between the size of contracted savings and operational performance. The correlation analysis supports the visual analysis, revealing a correlation coefficient of -0.13 , which is significant at the 5% level for the three years. High savings expectations are correlated with lower call-offs, although not very strongly. Furthermore, failed projects (financially promising but low on operational performance) yield average savings of 18.93%, whereas successful projects (financially and operationally successful) yield average savings of 13.52%, somewhat supporting the fourth expectation from our literature review.

3.4.2 General remarks on reasons for project failure

Faced with a surprisingly high failure rate of China-sourcing projects, it would be useful to supplement this research by gaining some insights into exactly why this is the case. In order to do so, 15 semi-structured interviews were conducted with managers involved in various China-sourcing projects from different functional areas. Experts were asked to share their *general* insights, not the particulars of individual projects. We interviewed quality personnel (3 interviews), logistics personnel (3 interviews), R&D personnel (2 interviews), purchasing managers (4 interviews) and China-sourcing interface managers (3 interviews).

From the interviews, the following key points emerged. According to the focal firm’s experts, there are many reasons for low call-off rates with China-sourcing projects. One strategic purchasing manager remarked: *“We are experiencing the drama of hard to quantify, quasi infinite influencing factors which change dynamically according to the distance of the low-wage-country sourcing decision.”*

In general, influencing factors can be classified as external or internal. Regarding the external influencing factors, i.e. supplier- induced reasons for project failure, it was suggested that many project failings follow a previous series of incidents. Since many

of the Chinese suppliers are fairly new to international business, they appear to have a tendency to underestimate the difficulties of international trade. This includes underestimating the importance of raw material and currency hedging, customs issues, or logistical challenges. Having secured the contract and starting deliveries, many suppliers then become aware of the fact that they will not actually be able to keep to the agreed prices as not all costs have been anticipated. With the prospect of negative margins and being unable to renegotiate new prices afterwards, suppliers start (possibly even intentionally) delivering low-quality products and hence get blocked by the quality-control department. This observation fits to the notion of the winner's curse, i.e. the winner of a deal will tend to overestimate the benefits of that deal and hence pay too much (Kern et al., 2002b). In the case at hand, a supplier would quote too low a price.

Possibly there is also a cultural issue involved, with a different interpretation of the flexibility of contracts. Whereas on the Chinese side, a contract seems to be interpreted more as a statement of intention to develop a collaboration, the high-wage-country buying firm understands it as a non-alterable and final deal.

In addition to external reasons for project failure, internal organizational reasons were frequently mentioned. Those internal challenges can be grouped into the sub-categories of differing incentive systems and cross-functional integration. Purchasing managers' incentives are based on contracted savings. Plant and quality managers' performance, on the other hand, is measured by either low failure rates and minimal or zero plant breakdowns, or smoothly running supply. While the first implies a propensity to try out new low-wage-country suppliers, the latter implies stable supply chains. Depending on the fine-tuning of the two incentive systems, the optimal setup for some of the units within the company might negate or conflict with the optimum for the company as a whole, again explaining internal resistance. The head of quality laboratories of the focal company mentioned his observation that procurement managers deliberately lower quality requirements set by technicians and developers, in an attempt to create further cost savings. One could consider a total cost incentive as a solution to these internal problems.

As for the topic of cross-functional integration, it was repeatedly mentioned by managers of all functions that during the last few years, a clear focus had been set on operational and tactical optimization of individual functions. This approach led to improved processes in procurement, logistics and quality management. Procurement optimized their operations e.g. by e-procurement and electronic supplier integration, logistics further enhanced their operations in terms of “just in time/sequence” (JIT/JIS). At the same time, quality departments optimized their operations with regard to various quality initiatives such as implementing ISO-standards. However, most managers mentioned that despite increased efficiency, the actual effectiveness of low-wage-country sourcing had stayed at a rather constant level, since the great majority of improvement initiatives were pursued primarily on a functional level. Since the barriers to low-wage-country sourcing tend to stem from functions other than procurement, managers suggested closer integrated decision-making and target-tracking processes as a possible remedy.

3.5 Discussion and Implications

3.5.1 Discussion of results

In this paper, we have analyzed the success of low-wage-country sourcing projects, specifically from a Western perspective, using the case of Chinese automotive part supplies. We find that more than three quarters of the analyzed projects do not reap the expected benefits, either because they did not generate savings at or above the annual average for the automotive industry and/or because the products were not delivered as agreed. Instead, the missing components had to be sourced elsewhere, a process that usually incurred additional costs. We have baptized these replacement contracts and the failed low-wage-country sourcing contracts as the “ugly twins”. In our sample, higher savings expectations tended to correlate negatively with the operational performance of suppliers, even though only weakly.

One of the objectives of this paper was to contribute to a more realistic picture of low-wage-country sourcing success and estimate the magnitude of cost and operational success potential. Our findings with respect to China-sourcing are based on a case study from the automotive industry, which challenges the magnitude of benefits that are often reported or claimed. In fact, our study adds to the more “pessimistic” stream of research findings (Kotabe and Omura, 1989, Mol et al., 2005, Murray et al., 1995). Factor cost advantages, in particular low labor costs, do not seem to translate automatically into successful sourcing. The assumption of lower operational performance in the low-wage countries is supported by our data on China-sourcing. The newly introduced measure of “call-offs” seems to be a good indicator of such operational problems. Price and operational issues seem to constitute two sides of the same coin.

Another objective of this paper was to integrate low-wage-country sourcing decisions into the wider context of sourcing decisions for “one part - multiple supplier” combinations. To the best of our knowledge, this paper is the first explicitly to analyze the impact of failed projects at this level. The analysis reveals that the planned volume from each failed low-wage-country-sourcing project had to be sourced in part or entirely from suppliers from high-wage countries, leading to less favorable conditions than expected when sourcing an item from China.

In this context, firms struggle to calculate the financial impact of their sourcing operations (Cokins, 2001, Innes and Mitchell, 1998), and the *total cost of ownership* approach has been proposed as a remedy (Cavinato, 1992, Ellram, 1995, Ellram and Siferd, 1993). The ability to apply a total cost calculation and thus fully to engage in international and low-wage-country sourcing may have to do with the purchasing maturity level a firm has reached (Schiele, 2007). From a total cost perspective, it becomes clear that the costs of failed projects have to be deducted from the benefits of other projects, in order to provide a realistic assessment (Holweg et al., 2010). This means that low-wage-country sourcing success cannot be measured on a single-project base, but must embrace “one part - multiple supplier” combinations.

A useful perspective to this argument has been gaining increasing attention in the research community, which is that low-wage-country sourcing tactics can impede other sourcing tactics (Schiele et al., 2011a). Operations management research has

analyzed a wide range of sourcing tactics besides low-wage-country sourcing, such as the pooling of demand (Arnold, 1999), process and product improvement (Sakurai, 1990, Trent, 1998) or supplier integration strategies (Wagner et al., 2002). For instance, awarding volume to new low-wage-country suppliers leads to reduced leverage potential for volume bundling with established suppliers from high-wage countries, hence reducing the opportunity to generate savings elsewhere by (no longer) benefiting from volume discounts. Current research in the field has further identified potential trade-offs between low-wage-country sourcing and “lean supply” (Nellore et al., 2001), low-wage-country sourcing and the “intensification of relationships” (Steinle and Schiele, 2008) and supplier integration and low-wage-country sourcing (Schiele et al., 2011a). This implies that low-wage-country sourcing projects are associated with opportunity costs, even if successful from the perspective of an individual project.

Despite the counter-intuitive character of the expectation - high savings leading to low operational performance - it is worth mentioning the slightly negative slope of the regression line linking China-sourcing success in contracted savings and the actual call-offs. Our data might be interpreted in so far as (unrealistically) high savings expectations lead to low operational performance. The observation of a sociological phenomenon by means of data from a company data warehouse seems difficult. Nevertheless, some implications are apparent from our data. Based on assumptions from the literature on institutionalized practice patterns in the form of “best practice”, we suggest that the observed patterns could, to a certain degree, be attributed to isomorphism, which would be one explanation for the enduring failure.

Sourcing from China seems to be a fashionable topic among purchasing professionals. We argue that a proportion of unsuccessful projects were initiated despite a “congenital defect”. Some of the reasons why moderating factors and barriers might not have been taken into account may be explained by behavioral practices of the firm (Cyert and March, 1992). This concept can be reduced to three key aspects, notably bounded rationality, the related satisficing principle and the tendency to conduct only local searches (March et al., 1958). In this respect we argue that purchasing managers may make decisions under bounded rationality, following decision heuristics (Tversky and Kahneman, 1974), being overconfident in the data at hand (Camerer and Lovallo, 1999), and subject to other influences from cognitive psychology such as anchoring (Bowman, 1963) or insufficient adjustment (Tversky and Kahneman, 1974). For a detailed review of behavioral operations, refer to Bendoly et al. (2010). Given these aforementioned influences, purchasers do not take all potential barriers into account, even though making the seemingly rational and safe decision to source from a low-wage country. However, the complex nature of low-wage-country sourcing generates various barriers and limits to successful implementation (Kotabe et al., 2009, Trent and Monczka, 2003b), such as product, firm management, network, industry competition and environmental contingencies (for a detailed list of factors see Quintens et al., 2006).

Following the research of Di Maggio and Powell, (1983) on isomorphistic behavioral patterns, and Spender’s notion of “industry recipes” (Spender, 1989), low-wage-country sourcing could be interpreted as an industry recipe. An industry recipe can be described as an established way of “... *organizing, controlling, and directing business enterprises that become institutionalized as the dominant form of business*

organization" (Whitley, 1992, p.125), or as institutionalized best practice. An industry recipe will lead to a consensus on the method, structure and perceived results of strategy decisions (Ghoshal, 1988). As a result, managers might feel tempted not to calculate the costs and benefits associated with their individual project, but – often disastrously – transfer the industry recipe to their particular situation, failing to check for the contingencies.

Isomorphism could be one possible explanation for the negative correlation between savings and operational excellence expressed in the form of call-offs. Our data does not enable a conclusive confirmation of this interpretation, but we suggest that particularly with low-wage-country sourcing, it would be worth exploring explanatory patterns related to isomorphism in greater depth.

3.5.2 Implications and contributions to theory and practice

This paper reports various implications for sourcing theory in general and low-wage-country sourcing in particular. The approach of considering "one part - multiple supplier" combinations, and not just a single project, reveals the novel concept of the "ugly twins". The "ugly twins" concept expands the perspective of research on low-wage-country sourcing, by drawing attention to failed projects and their substitutes, suggesting the need for a re-evaluation of low-wage-country sourcing success assessments.

At the same time, the "ugly twins" concept has implications beyond the sourcing context; it is easily conceivable that the same phenomenon applies to other types of projects, for instance, failed collaborative new product developments (Hoopes and Postrel, 1999). Again, if a solution needs to be developed and one supplier fails to do so, with an inevitable loss of time and money, another partner has to be found to take up the task, thus, the "ugly twin" concept should contribute meaningfully to other domains beyond low-wage-country sourcing.

Concerning the "ugly twins", this study expands the theory on the *total cost of ownership* approach. We demonstrate the need to include the costs of failed projects. Even though vast amounts of potential costs have been identified, the costs of failed projects are seldom considered. Ferrin and Plank (2002), for instance, surveyed 115 procurement managers and distinguish 247 specific total cost drivers. So far, the literature has neglected such costs, but, generalizing from low-wage-country sourcing, it is arguably important to include a cost position for failures in total cost calculations.

Our study also introduces a novel measurement – call-offs – as a reliable proxy for a series of operational issues involved in low-wage-country sourcing, mainly relating to quality, production and logistics. While it is more difficult to measure each in isolation, the call-off rate against a frame contract reflects the level of customer satisfaction with the relationship.

Our study broadens the knowledge base on strategic sourcing, not just with respect to a "one supplier - one part" sourcing project, but for the totality of all resources of a particular type that a firm may need. The work also sheds light on some of the

reasons for the continuing ambiguity surrounding low-wage-country sourcing success, thus opening the path to a new avenue of research.

Furthermore, we offer isomorphism as a potential explanation for this counterproductive sourcing behavior.

The study has several managerial implications. First, our findings suggest that due caution is necessary in proceeding with low-wage-country or global sourcing, even when such projects seem particularly promising. The initiators of such projects might not have considered all barriers and moderators and are merely following a standard industry recipe.

Secondly, managers may benefit from employing extended calculation methods when analyzing low-wage-country sourcing projects. Sourcing projects should not be considered and evaluated in isolation, but in the context of possible effects on the existing supply situation.

Thirdly, we observe that China-sourcing, as a popular example of low-wage-country sourcing, did produce ambivalent results in our sample. This may alert management to the need to examine thoroughly alternatives before engaging in risky low-wage-country sourcing activities. Each country and each project should be calculated individually, following a realistic, total cost approach, which also includes an estimated calculation – and ex-post controlling – for “ugly twins”.

3.6 Limitations

The study is subject to some limitations. The findings were obtained using a fine mesh of filters (e.g. industry surroundings, firm size, countries sourced from and products sourced), potentially limiting the external validity. Despite a small, but statistically significant negative correlation between call-off rate and cost saving, the number of cases sets some limitations to the study and gives it a rather explorative character.

The correlation referred to above warrants further study in terms of causality. In accordance with Quintens et al. (2006b), we suggest that case studies are of particular value in further enriching the body of knowledge on low-wage-country sourcing. However, social desirability influences (Fisher, 1993) could make difficult a case-by-case verification of the observed phenomenon. Furthermore, our data consists of ex-works prices. Logistics and duty costs are included in the decision-making stage, but the data warehouse does not yield reliable information which can be allocated to individual projects. For instance, many parts are collected in a milk-run system, where one transporter commissioned by the buyer collects parts from various suppliers and ships them jointly to Europe. Such a system makes it more difficult to assign exact transport costs to each material. Further studies should consider such costs in an ex-post review of savings potential.

It is worth mentioning that our data has been obtained from one buyer (the focal firm), refer to one country (China) and one industry (automotive parts). This research setup offers benefits in terms of the reduction of confounding factors influencing the

results of our analyses. However, there are also limitations due to the research setup:

The question arises as to whether the findings in the context of the sourcing market of China can be generalized to all low-wage-country sourcing. Differences in cultural distance and the development level of the countries may also need to be taken into account (Hofstede, 2001). This is most certainly true for the amount of savings as well.

Regarding the positive economic development in China during the period analyzed, it is also not clear how attractive new buyers from high-wage countries really were for Chinese suppliers already struggling with shortages in production capacity. The attractiveness issue may be linked to the notion that it is more challenging for a buyer from a high-wage country to become a preferred customer of a supplier in a strong domestic cluster (Steinle and Schiele, 2008). Such a firm may obtain less favorable prices and treatment than customers from that low-wage country.

There is an obvious difficulty with a single firm case study in that unique peculiarities in the focal firm's strategy or corporate culture may lead to some of the outlined problems. For instance, the axiomatic insistence on contract fulfillment may be a case in point. It cannot be fully ruled out either that this firm was particularly lacking in China-sourcing capabilities, such as processes, mindset etc. Although we did not find evidence of this, attempts to transfer the results to other contexts may need to take this into account. While the findings on China-sourcing may be context specific, the concept of the "ugly twins" is unaffected by the context.

The data analyzed covers three years, creating another possible limitation to generalizability, since longitudinal aspects may influence the effects. Furthermore, the data analyzed partially come from years within a big recession, following the global financial crisis in 2008, potentially influencing project success.

Finally, the limitation to the automotive industry, with materials falling typically into the categories of metal, plastic and electronic components, might pose an additional constraint. Although we could not detect any significant differences between these general categories, it might be worth differentiating low-wage-country sourcing activities according to commodity groups. What is striking, though, is that the automotive industry is one of China's strongest. One can only speculate about the competitiveness of less developed industries in China as sourcing markets for Western companies.

The results reveal somewhat negative effects of low-wage-country sourcing on the focal firm. However, if low-wage-country sourcing is a successful means of introducing increased competition to the supply base from high-wage countries, the implementation of low-wage-country sourcing initiatives may lead to positive long-term effects not reflected in our study. On the other hand, a focus on low-wage-country sourcing as a primary sourcing lever may deprive the firm of potentially even more powerful sourcing levers and thin out the local expertise cluster. Again, we did not take such effects into account.

Our findings suggest several paths for future analysis. First of all, research and practice would benefit from a better understanding of the “ugly twins” phenomenon, for instance by identifying the antecedents to such failures. While we gathered some data on internal antecedents to project failure from interviews with managers from the focal company, data from a supplier perspective would be a valuable contribution to future studies. Furthermore, exploring isomorphism and fashions in management thinking may increase realism in the description of management practices applied to a particular case, such as low-wage-country/global sourcing, but also e-business a few years ago or green procurement today. Finally, and generally speaking, our findings may encourage scholars to use more data gathered in firm databases, which often represent a rich and reliable data set and avoid the problem of low response rates in survey-based business-to-business research.

3.7 Acknowledgements

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3.8 Abstract for journal / keywords

International sourcing and sourcing from low-wage countries remain topics of high priority for firms in industrialized countries. Lower factor costs, particularly in low-wage countries, have led to high expectations of savings from both managers and academics. All too often, scientific and particularly practitioner publications present international sourcing as a *conditio sine qua non* for becoming a (more) successful company. However, research has shown that these extensive savings do not materialize automatically, particularly when sourcing customer-specific items, such as automotive components. This paper analyzes the operational and financial implications and real effects of cost-oriented sourcing from China, based on the specific example of a European automotive OEM. Furthermore, it sheds light on the ambivalent and often overrated savings impact of sourcing from low-wage countries. Our analysis of a comprehensive set of secondary data from a company data warehouse reveals that more than three quarters of the analyzed China-sourcing projects do not reap the expected benefits. Moreover, each failed low-wage-country sourcing project has its so-called “ugly twin”, the need to resort back to suppliers from high-wage countries at a higher cost. Implications for managerial practice include the suggestion to employ extended calculation methods, entailing influence factors other than from procurement, particularly for low-wage-country sourcing. Furthermore, we recommend creating an awareness of potentially biased decision-making among purchasing personnel who follow standard industry recipes.

Keywords

International Sourcing, Low-Wage-Country Sourcing, Global Sourcing, Performance, Isomorphism, Total Cost of Ownership, China

4 Integration in the Buying Centre for Global Sourcing Ventures: an Exploratory Study within the Automotive Supply Chain

4.1 Introduction

Global sourcing remains a hot topic for companies and most, particularly larger companies, engage in global sourcing (Schiele et al., 2011a, Trent and Monczka, 2003a), and global business transactions have been growing three times stronger compared to domestic economies (Bowersox and Calantone, 1998). The key reasons to engage in global sourcing are cost savings, the purchase of high-tech products, the promotion of sales activities, and psychological leader-follower effects (Barney, 1999, Bozarth et al., 1998, Handfield, 1994, Kotabe and Mol, 2006, Monczka et al., 2008, Schweller, 1994, Smith, 1999, Spekman, 1991, Trent and Monczka, 2003b), with western based companies clearly emphasizing the cost saving effects (Alguire et al., 1994, Handfield, 1994, Monczka and Giunipero, 1985, Spekman, 1991). However, previous findings are contradictory concerning the results of global sourcing initiatives (Schiele et al., 2011a).

Within the global sourcing context, organizations struggle to “*integrate internal functions as well as the entire supply chain*” (Pagell, 2004). Overall, success factors for global sourcing have been widely researched on a dyadic level. Earlier research has employed various theoretical lenses e.g. the transaction cost economics view (Kotabe, 1994, Murray, 2001, Murray et al., 1995), the resource based view (Espino-Rodríguez and Padrón-Robaina, 2006), or under a social capital perspective (Krause et al., 2007, Lawson et al., 2008, Min et al., 2008). Apart from various theoretical foundations, differing scientific methodologies such as case studies (Forza et al., 2000), surveys (Frohlich and Westbrook, 2001) and simulations (Sahin and Robinson, 2005) were used. For a detailed literature review see Fabbe-Costes and Jahre (2007).

Research from general management theory highlights the importance of factors from within the firm, even for a dyadic relationship (Hansen and Wernerfelt, 1989, Roquebert et al., 1996).

Scholars have highlighted the importance of intra-firm integration, e.g. in terms of knowledge transfer and cooperation within the firm, e.g. for new product development (Kahn, 1996), make-or-buy decisions (Moses and Ahlstrom, 2009), organizational learning (Huber, 1991), and general performance of the firm (Maltz and Kohli, 1996). Research shows how operational and organizational performance rises when companies integrate processes (Ettlie and Stoll, 1990, Narasimhan and Das, 2001, Pagell et al., 2000, Safizadeh et al., 1996).

Furthermore, integration has been researched in the wider context of purchasing teams (Ellram and Pearson, 1993, Pearson, 1999), involving members from different functional entities of the firm as well as customers or suppliers (Glock and Hochrein, 2011).

In light of the growing importance of global sourcing and supply chain integration, (Pagell, 2004) there has been a general call for research on a firm's internal prerequisites for global sourcing (Glock and Hochrein, 2011, Quintens et al., 2006b, Trent and Monczka, 2003b).

This paper aims at narrowing the research gap as to why companies need to integrate, particularly in the global sourcing context, and provides insight into the effects of different modes of integration within the global sourcing context.

The paper is organized as follows: The next section gives an insight into research previously carried out in this area of study and from other areas deemed applicable. The research is based on a structured literature review. Following a short presentation of the methodological approach, findings from in-depth interviews in six companies of the automotive industry are presented and discussed. The paper concludes by presenting theoretical and managerial implications together with suggestions for further research*.

4.2 Literature review

Since the literature review part of a paper is often treated less rigorously than other steps of the research process (Seuring et al., 2009), this research engages in a content-based literature review (e.g. Mayring, 2003, Mayring, 2008, Seuring and Müller, 2008). It includes four core steps, notably: material collection, a descriptive analysis to assess formal aspects, category selection in order to select the structural dimensions, and an evaluation of the material. The material collection process follows the system of a wider-scoped, more general literature review on global sourcing done by Quintens et al. (2006b) about the state of the art of global purchasing which was extended by Schiele et al. (2011a) and complemented by this research. As with the aforementioned authors, this literature review is restricted to fourteen journals with a key interest in global sourcing from the three domains: supply chain management, international marketing management and international business. Quintens et al. (2006b) identified 123 papers between 1990 and 2005 using the search terms “global”, “international”, “foreign”, “offshore”, “inward”, “worldwide” in combination with “purchasing”, “sourcing”, “procurement”, “import”.

Following the data analysis process proposed by Quintens et al. (2006b) the number of papers was extended by articles from the same range of journals between 2005 and June 2011, adding 39 papers, averaging about eight articles per year for the last 18 years. To a very limited extent, papers were added using the snowball principle, including papers other scholars frequently referred to, or with high rankings in scientific databases.

4.2.1 Global sourcing results

Cost oriented cross-border sourcing is based on the notion of comparative advantage (Porter, 1990, Ricardo, 1817), stating that certain countries can produce a particularly good service at a lower opportunity cost. Differences result from the endowment of countries with differing factor costs such as labor, raw material or capital (Porter, 1990). Those variances in factor costs imply that *“a firm should locate its activities in*

* N.B. Since chapter three and four were written in part parallel, the propositions derived from the fieldwork (chapter four) are partially being tested in chapter three. In order to enhance the reading flow of the four papers together the present order was chosen.

those countries that possess a comparative advantage in terms of the relevant intensive factor" (Kogut, 1985, p. 18).

Facilitated by improved communication, travel and the elimination of trade barriers etc. within the course of globalization (Fahy, 2001), firms try to benefit from different factor costs, e.g. by global, international and low-wage country sourcing (Bozarth et al., 1998, Hartmann et al., 2008, Kotabe and Murray, 1990, Steinle and Schiele, 2008). In doing so, companies would produce labor-intensive parts of the value chain in countries with low labor costs, whereas capital or research intensive tasks would be performed in developed countries (Deardorff, 1979, Kogut, 1985).

However, earlier research highlights the complexity of global supply chains in comparison to domestic supply chains. (Dornier et al., 1998, MacCarthy and Atthirawong, 2003). Problems mentioned in previous research include difficult transportation due to bad transport infrastructure and longer lead-times (Min, 1994); low skilled work forces; bad quality compared to traditional procurement markets (Meixell and Gargeya, 2005); currency exchange rate volatility; economic and political instability; and changes in the regulatory environment e.g. customs, etc. (e.g. Carter and Vickery, 1989, Dornier et al., 1998). To an increasing extent, in recent years various issues subsumed under the topic of sustainability have gained in importance, in particular, the responsible care of nature, workers' rights, protection against child labor (Mamic, 2005, Sethi, 2003) and carbon dioxide emissions from supply chains (Curtis, 2007).

Research in the global sourcing field has employed various terms, definitions and sub-categories (Schiele et al., 2011a). While: "global sourcing" (Kotabe, 1998) and "international purchasing" (Motwani and Ahuja, 2000) are most widely used, other terms such as, "worldwide sourcing" (Monczka and Trent, 1992), "import sourcing" (Swamidass, 1993), "offshore sourcing" (Frear et al., 1992) and "international procurement" (Scully and Fawcett, 1994), "low cost country sourcing" (LCCS) (Hartmann et al., 2008, Lockström, 2007, Ruamsook et al., 2009) or "low-wage-country sourcing" (Schiele et al., 2011a) have been increasingly used during the past few years.

Scholars using the term global sourcing, often emphasize the integrative character of global sourcing and highlight strategic aspects, e.g. Kotabe and Murray (2004) for the management of logistics, research and development (R&D), for the manufacturing and marketing on a global basis, or Trent and Monczka (2003a) for the integration of engineering, operations and procurement.

Despite apparent practical and scientific relevance, global sourcing still can be considered to be an under-researched topic (Kaufmann and Carter, 2006), as a widespread use of terms indicates. In this paper the term "global sourcing" will be used as an umbrella term for cross-border sourcing aiming at cost savings, as opposed to the term traditional procurement markets (TGP) for established sourcing markets (Lockström, 2007, Weber et al., 2010) .

The first part of the literature review concerns the financial impact of global sourcing on the firms observed. As described above, studies on the success of international sourcing ventures do not produce a clear pattern. Following the logic of the literature review of Quintens et al. (2006b) and Schiele et al. (2011a), their research was

expanded leading to a total of 16 papers discussing the financial results of international sourcing (see Table Six). Four categories were chosen to be applied to the literature analysis. First, the methodological approach, secondly the performance evaluation of global sourcing in terms of savings achieved, thirdly the geographical area the sample was drawn from, and finally the type of industry analyzed. The papers then were grouped into three groups, papers showing positive, neutral, or negative aspects of global sourcing.

<i>Evaluation</i>	<i>Authors/Year</i>	<i>Methodological Approach</i>	<i>Results</i>	<i>Location</i>	<i>Industry</i>
<i>positive</i>	Frear et al., 1992	Survey, 135 respondents	Expected savings from global sourcing average 21%.	USA	Various
	Petersen et al., 2000	Survey, 73 respondents, key informant interviews	Pursuing global sourcing strategies critical to business success, regardless of the extent of overall business globalization.	Worldwide	Various
	Cho and Kang, 2001	Survey, 165 respondents	Benefits of global sourcing: perceived competitive advantage.	USA	Clothing
	Trent and Monczka, 2003	Survey, 162 respondents	Global sourcing as one last area for performance breakthroughs, average of 20% savings for certain companies, 88% of companies report purchase price declined due to worldwide sourcing.	Worldwide	Various
	Weber et al., 2010	Single Case Study	Total cost for global sourcing components only 43.1% percent of traditional sources. Higher safety stocks for GS overcompensated by lower unit price leading to overall lower capital and warehousing costs.	Germany	Medical Device Industry
<i>neutral or case specific</i>	Kotabe and Omura, 1989	Survey, 71 respondents	No significant impact of global sourcing on general business success	Europe, Japan	Various
	Murray et al., 1995	Survey, 104 respondents	No impact of global sourcing strategy on market performance, particularly for complex products.	Europe, Japan	Various
	Bozarth et al., 1998	Survey, 97 respondents	No procurement performance differences between firms which proactively entered into global sourcing and those which did not.	USA	Various
	Kinkel and Maloca, 2009	Survey, 1663 respondents	Between 16 to 25 % of all offshoring activities are followed by a backshoring activity within four years. No significant benefits from outsourcing to Eastern Europe were found.	Germany	Manufacturing sectors
	Schiele et al., 2011	Secondary data analysis, 134 workshops	Global sourcing only valuable in particular situations, other sourcing levers generate more savings on average.	Germany	Various
	Horn et al., 2012	Secondary data analysis, 214 projects	Only ~25% of international sourcing projects reap the expected benefits. Majority of projects fail, negative correlation between financial and operative performance	Germany	Automotive
	Levy, 1995	Case Study	Demand-related supply chain disruptions create substantial and unexpected costs. Production-related disruptions declined over time, but demand-related disruptions do not.	USA	Computer Industry
	Kotabe et al., 1998	Survey, 100 respondents	Foreign sourcing of supplementary services is negatively related to a service firm's strategic and financial market performance.	USA	Various
<i>negative</i>	Callahan, 2000	Survey, 514 respondents	US and Canadian purchasing managers draw a negative picture of Mexican and foreign suppliers. Strong favor of suppliers from home region.	USA, Canada	Various
	Nellore et al., 2001	Exploratory study, 35 interviews	Global sourcing and lean supply conflict, global sourcing will tend to have negative effects for complex parts.	USA	Automotive
	Homburg et al., 2002	Survey, 511 respondents	Lower level of customer satisfaction in global sourcing due to quality and flexibility problems.	USA, Germany	Various

Table 6: Ambivalent results of international/global sourcing

While some studies provide support for the idea of strong savings from global sourcing (Cho and Kang, 2001, Frear et al., 1992, Petersen et al., 2000, Trent and Monczka, 2003b, Weber et al., 2010), others take a neutral approach (Bozarth et al., 1998, Horn et al., 2012, Kinkel and Maloca, 2009, Kotabe and Omura, 1989, Murray et al., 1995, Schiele et al., 2011a) or even negatively assess global sourcing projects (Callahan, 2000, Homburg et al., 2002, Kotabe, 1998, Levy, 1995, Nellore et al., 2001).

All but five papers (Horn et al., 2012, Kinkel and Maloca, 2009, Levy, 1995, Nellore et al., 2001, Schiele et al., 2011a) employ survey based research. Among companies researched, a wide dispersion can be observed concerning the bases of industries and firms. Samples were drawn from differing surroundings, including various standard industrial classification (SIC) Codes (Homburg et al., 2002) or different Fortune 500 companies (Murray et al., 1995), and German firms (Kinkel and Maloca, 2009, Schiele et al., 2011a). Only four papers focus on one industry (Cho and Kang, 2001, Horn et al., 2012, Levy, 1995, Nellore et al., 2001, Schiele et al., 2011a), while ten papers focus on one country.

4.2.2 Intra-organizational integration as a structural prerequisite for global sourcing

Previous research describes the structure of a purchasing organization as the basis for the allocation of tasks towards the members of the organization and the definition of responsibilities and authorities (Jones, 2004, Robbins, 1990). Glock and Hochrein (2011) differentiate standardization, specialization, configuration, involvement, formalization and (de-)centralization as the six structural variables that have evolved in purchasing research. Since it has been argued that "*the basic managerial problem is that the purchasing function has the ability to influence corporate profitability only when it is operating at a strategic level at the firm*" (Ellram and Carr, 2006, p. 10), integration has been highlighted as one of the most important structural variables.

Among the stakeholders of the procurement decision, different objectives and performance indicators exist (Kathuria et al., 1999). Following this discrepancy, the importance of aligning the functional and the business strategy (Hayes and Wheelwright, 1984, Pagell, 2004) and the task of bringing the strategy into practice have been identified as the crucial, yet challenging, aspects of global sourcing (Kaufmann and Hedderich, 2005, Kotabe and Murray, 2004).

Despite its growing importance (Glock and Hochrein, 2011), large parts of the literature have omitted intra-organizational success factors (Hartmann et al., 2008), despite a growing amount of research on global sourcing success factors (Ellram, 1991, Quintens et al., 2006b)

Therefore, the second part of the literature analysis covers the body of research concerning cross-functional integration in global sourcing surroundings. As before, the categories to be applied were identified. For the second part of the literature analysis, three categories are applied. First, the methodological approach, secondly

the key findings concerning integration in the global sourcing process, and thirdly whether a more detailed assessment of integration in the process was given.

Author	Title	Method/ Sample	Key Message / Suggestions	In Depth Analysis
Carter and Narasimhan, 1990	Purchasing in the international marketplace: implications for operations.	Field interviews with various U.S. firms	Important to create awareness that purchasing decisions impact many cross-functional decisions such as capacity requirements, equipment needs, product cost, quality performance delivery reliability and product innovation. When embarking upon international purchasing, cross functional support should be obtained. Close coordination with manufacturing, design engineering and quality assurance. Extremely difficult for most firms.	no
Bartlett and Ghoshal, 1999	Organizing for worldwide effectiveness: The transnational solution.	Two company case study	Challenging environment requires companies to link their diverse organizational perspectives in order to achieve global coordination and national flexibility.	no
Petersen et al., 2000	An empirical investigation of global sourcing strategy effectiveness.	Survey based research, 73 respondents	Global sourcing structures and processes found to be important to the development of global sourcing business capabilities. GS capabilities positively related to global sourcing effectiveness. Logistics and supply chain processes and supply chain information systems are particularly important. Difficult for firms to engage in global sourcing before developing right structures and processes.	no
Trent and Monczka, 2003	Understanding integrated global sourcing.	Survey based researched 162 respondents; 10 case studies	Global sourcing defined as worldwide integration of engineering, operations, logistics, procurement and marketing. Only 16% of companies surveyed engage in global sourcing in a broad sense. Internal buy-in among top ten precedents of global sourcing. Functional requirements should be represented by executives in the decision making. Cross-functional buy-in to worldwide agreements is essential.	no
Gopal et al., 2004	A team approach to global sourcing.	Practitioner paper, no methodologic approach	Cross functional success depends on team integration. Purchasing, logistics, operations, engineering, accounting and finance should participate in the team.	no
Quintens et al., 2006	Global purchasing strategy: conceptualization and measurement.	Survey based research, 264 respondents	In order to remain competitive and obtain competitive, advantage firms should coordinate product, process and personnel policies. Global sourcing implies careful alignment of purchasing-related decisions in the organization.	no
Weber et al., 2010	Low cost country sourcing and its effects on the total cost of ownership structure for a medical devices manufacturer.	Single case study	Particularly costs in activities other than from purchasing increase strongly when sourcing from LCCs. Activities put strains on human resources of buying company, particularly outside of purchasing department. Global sourcing projects take on average 18 month to the start, compared to 12 month for established sources.	no

Table 7: Literature review, functional integration in the global sourcing context

Among the papers analyzed, two main methodological approaches prevail, quantitative, survey-based research (Petersen et al., 2000, Quintens et al., 2006a, Trent and Monczka, 2003a) and case-study research (Bartlett and Ghoshal, 1988, Carter and Narasimhan, 1990, Weber et al., 2010).

Concluding from Table Eight on cross-functional integration in the global sourcing environment, the following points emerge. Cross-functionality is an essential prerequisite for global sourcing, and all papers analyzed above consider the scope and degree of intra-organizational-integration within the firm's boundaries as one key precondition to global sourcing success. The operationalization of these findings into the design of global organizations proves to be particularly challenging, yet essential for the success of global sourcing strategy. Global sourcing decisions impact cross-functional aspects such as capacity requirements, quality performance and product development. It has been argued that the policies regarding product, process and personnel policies should be coordinated. In doing so, logistics, quality, manufacturing, R&D, marketing, accounting and finance should form part of the decision-making process, since in particular expenses and costs from functions other than purchasing increase when engaging in global sourcing (Weber et al., 2010). Additionally, global sourcing activities have been shown to put strong strains on personnel, particularly caused by functions other than purchasing. However, coordination is difficult and the majority of firms do not yet engage in global sourcing in an integrated and cross-functional form.

4.2.3 Modes of cross-functional integration within the firm

Quantitatively, internal integration has, albeit on a rather high and unspecific level, been shown to be of positive influence for global sourcing and LCCS ventures. Trent and Monczka (2003a) report that companies moving into a more advanced and integrated level of sourcing achieve better results from their global sourcing ventures. However, more than four fifths of all firms surveyed have not yet entered that stage (Trent and Monczka, 2003a), and strategic consensus among functional entities on a general level is still rare (Boyer and McDermott, 1999). Similarly, Hartmann et al. (2008) conclude that internal resources have a considerable positive impact on global purchasing success, yet again not showing what the influencing factors on the procurement process are, or which departments ought to be integrated. For a detailed review concerning integration-construct in the operations management literature, see Pagell (2004).

As described above, relatively little has been published about the cross-functional integration concerned with procurement decisions. Freytag and Kirk (2003) emphasize the complicated character of the sourcing decision process since it includes consideration of the capabilities of functions, suppliers' performance and future tasks. Some research has been carried out regarding the cross-functionality of functional integration within decision making processes (e.g. Balakrishnan and Cheng, 2005, Moses and Ahlstrom, 2009) and to a very limited extent in procurement decisions (Moses and Ahlstrom, 2007, Trent and Monczka, 1994). Research on the necessity for collaboration and interaction in global sourcing and particularly in low-wage country sourcing ventures remains scarce. Giunipero and Monczka (1990) argue that, especially for international purchasing, decisions tend to be made independently of other units and at lower organizational levels. Thus, those

decisions tend to be more operational or tactical rather than integrated or coordinated.

Concluding the literature review, it can be stated that research results on the benefits of global sourcing still remain shallow. Various researchers have mentioned the importance of making a holistic sourcing decision in low-wage country and global sourcing activities. None of the papers analyzed above, however, gives further insight into the scope, degree and form of interaction necessary for global sourcing ventures. To a great extent research has been carried out in the field of new product development, and some insight can be gained from applying research structures from that particular field, as will be discussed in the section on the coding of integration.

4.3 Qualitative analysis

The field of global sourcing research and low-wage country sourcing success factors is still in the theory-building stage of research (Karlsson, 2009, Quintens et al., 2006b). Therefore the nature of this research is explorative in character and deduction is only feasible to a limited extent. Qualitative analysis with data gathered in the field enable the researcher to investigate deeply, understand constructs and expand existing theory (Eisenhardt, 1989, Pagell, 2004, Voss, 2009). Parts of the structure of the paper relate to the research structure from Pagell (2004) on the general integration of operations, purchasing and logistics. A case study research approach was chosen for various reasons. First, the research objective considers 'how' and 'why' questions (Yin, 2008), and this makes statistical analysis difficult. Secondly, the topic has a great impact socially, psychologically, organizationally and environmentally on the purchasing decision (Sheth, 1973). Thirdly, since research in this area is considered to be difficult in nature, (Boyer and Mc Dermott, 1999; Pagell and Krause, 1999), case research is the chosen method. In doing so, theoretic implications can be generated from the understanding gained by observing actual practice.

4.3.1 Sample selection and data collection

For this research, semi-structured interviews with six companies from the automotive supply chain were conducted among different functions of the firms. Data from the interviews were clustered and checked for within-case and cross-case patterns concerning cross-functional integration in the global sourcing environment.

Four main contextual variables have been identified in researching purchasing organizations, 1) external factors such as country of origin, the industry sector and environmental uncertainty; 2) the purchase situation, in particular time pressure, perceived risk purchase importance, buy-phase and buy-class; 3) product characteristics such as purchasing volume, purchase complexity and product type and 4) organizational characteristics, notably organizational strategy, buyer characteristics, size of the buying organization and structure of the organization (Glock and Hochrein, 2011).

The study takes the perspective of German (high-cost country) organizations engaging in global sourcing activities from the automotive industry surroundings. The automotive industry is particularly interesting due to two factors: first, it is of key importance for the world economy, which makes it an important field for operations management researchers (Taylor and Taylor, 2008). Secondly, the industry can be described as an “assembly industry” and cooperation with suppliers is particularly important (Kotabe, 1998). Finally, the industry can be described as having a trend anticipating character. Since the 1960s, Automotive Original Equipment Manufacturers (OEM) have come to a depth of value added of as low as 25% (VDA 2004) due to continuous outsourcing activities (von Corswant and Fredriksson, 2002).

Company	Purchasing	Logistics / Production	R&D /Quality	Marketing / Sales
OEM 1	√			
OEM 2	√		√	
OEM 3	√	√	√	√
Tier One Supplier 1	√	√		
Tier One Supplier 2	√	√		
Tier Two Supplier 1	√	√	√	√

Table 8: Companies and functions interviewed

Six companies to be interviewed were selected from member companies of the blue chip stock market index DAX (the index of the biggest German stock-listed companies), all operating truly global procurement and sales operations on a multi-billion scale (Table Eight details the sample). All companies selected operate in some echelon of the automotive supply chain. In all, managers from three automotive OEMs, two tier one companies and one company further downstream from the chemical industry were interviewed. Company-wide employment ranged from 13,500 to 450,000 employees. Only one industry was represented, albeit from different points in the value chain. By choosing the research design at hand (one country, one industry, multi-plant firms, multi-billion € turnover) we aim at limiting the amount of confounding influences from contextual variables. The interview with each respondent on average took about one hour.

Company	Number of employees	Turnover	Plant
OEM 1	50k.-100k	50 - 75 bn€	Multi, various continents
OEM 2	100k - 500k	>75bn€	Multi, various continents
OEM 3	100k - 500k	>75bn€	Multi, various continents
Tier 1 supplier 1	25k - 50k	0,5 - 25 bn€	Multi, various continents
Tier 1 supplier 2	100k - 500k	25 - 50 bn€	Multi, various continents
Tier 2 supplier 1	100k - 500k	25-50 bn€	Multi, various continents

Table 9: Classification of companies visited

It can be reasoned that questions regarding the scope and degree of internal functional integration cannot be answered by one key informant only, since *“the only way to truly assess the level of integration is by collecting data from respondents responsible for different value creating processes”* (Pagell, 2004, p. 464). Therefore, the *“persons who are best informed”* were interviewed (Voss et al. 2002, p. 206). Canbolat et al. (2005) and Webster and Wind (1972) suggest six key stakeholders in sourcing decisions: purchasing, logistics, quality, product development, material planning and logistics, manufacturing and finance. Since pilot interviews showed that finance would only add data to a very limited extent, marketing and sales was added according to the integrative character of global sourcing suggested by Trent and Monczka (2003b). Song et al. (1997) claim that research on cross-functionality requires that researchers gather opinions from members of all relevant functions, due to subjectivity and bias of the stakeholders. In order to reduce those influences, we aimed at having different respondents from different functions and plants, but from within one industry, located within one cultural background.

4.3.2 Interview protocol

Before the field visits, a research protocol was developed (Eisenhardt, 1989), in order to enhance the reliability and validity of the case study research (Yin, 2008). The protocol consists of two main parts and is related to the protocol structure of (Pagell, 2004). The first part of the protocol contains the procedures and general rules to be applied. The second part contains the questions to be asked during the interviews. According to Voss (2009), a funnel model was used, starting with broad and open-ended questions which become more specific as the interview progresses.

Before we engaged in the main part of the interviews, the case research protocol was checked with various researchers from the field, and also in two initial interviews in the firms visited.

Earlier research on teams has highlighted the influence from facility layout and geographic proximity on team performance (Pagell, 2004, Pagell and LePine, 2002, Pinto et al., 1993, van den Bulte and Moenaert, 1998). Therefore, the protocol part on procedures and general rules for this research contained a facility tour whenever this was possible in order to gain a deeper understanding of the company's processes (Pagell, 2004) and a feeling for the overall work environment and systems in place (Voss, 2009). Furthermore, we asked for structural characteristics of the firm such as size, number of plants, number of personnel, location, turnover etc., since those contextual elements can influence integration, even though not directly related (Pagell, 2004).

After the interviews were held, the content was immediately noted down in order to maximize recall and to facilitate the follow-up and filling-in of gaps (Voss, 2009). Open communication with managers interviewed was facilitated by assuring confidentiality of data and anonymity of respondents (Glaser and Strauss, 1967). After the content was fully written down, a summary of the interview was sent to the informant in the company for feedback and checking. Discrepancies between notes and intended content were then clarified.

Following an inductive approach, the coding of the data coding and building of the model was performed after the completion of data collection, in order to be open to other explanations raised in interview replications in other firms (Pagell, 2004) and to avoid concerns regarding confirmation bias (Nickerson, 1998). However, to a limited degree new or interesting aspects from the firm visits were added to the protocol.

By contrast to e.g. survey data collection, building theory from qualitative research theory building research is an iterative process (Eisenhardt, 1989, Miles and Huberman, 1994, Yin, 2008). Each case can be regarded as a replication (Yin, 2008). However, according to Yin (2008), some amendments to the protocol can be done between the replications, and important issues raised can be included in following interviews. The possibility of refining and improving the protocol between cases has been identified as a significant advantage of this type of research (Pagell, 2004). Therefore, to a limited extent, enhancements were made to the protocol after the replications.

Where applicable and available, theoretical underpinning from existing research was used for the questions and fields of interest. The protocol included the following question elements:

1) General company information such as structure, number of employees, single or multi-plant, turnover etc. Contextual elements such as structure (Stank et al., 1994), or size (Trent, 2004), have been proven to enable or mitigate integration within the supply chain (Pagell, 2004).

2) The second set of questions concerned the reason as to why firms engaged in global sourcing (Schiele et al., 2011a), and the perceived success of global sourcing activities. Questions concerned the impact on the single purchased item as well as on the organization as a whole and the share of global sourcing vs. traditional sourcing markets.

3) Thirdly, we asked for the structural operationalization of global sourcing in terms of centralized vs. decentralized decision-making, outsourcing purchasing model and integration mechanisms such as integration committees (Arnold, 1999, Cavinato, 1991, Corey, 1978, Germain et al., 2001).

4) Inhibitors and moderators of global sourcing success were inquired into (Ellram, 1991, Quintens et al., 2006b). Questions circled around the degree to which those factors changed in the global sourcing process compared to local sourcing.

5) Finally, questions were asked regarding the degree of integration and the alignment of functional goals in the visited plants. Questions were concerned with the level of integration and factors facilitating/aggravating integration. Earlier research has shown the importance of aligning business with internally consistent functional strategies (Hayes and Wheelwright, 1984). However, even clear strategies have been shown to be subject to misinterpretation by managers due to e.g. demographic differences and differing mental models (Knight et al., 1999). Therefore, as suggested by Pagell (2004) we asked about business and functional strategy together with measurement and reward system question items.

4.3.3 Coding of observations and data collected

Since this field of study (cross-functional integration and global sourcing success) is rather new and scarcely researched, literature review on functional integration will be embedded into extant management research from other social sciences that possess a higher degree of maturity, as suggested by Matthyssens (2007).

In contrast to global sourcing, new product development (NPD), and its cross-functional nature, have been subject to deeper scholarly research, and similar to NPD, the procurement process runs through the entire organization (Cousins, 2005).

Furthermore, since new product development and procurement lie within the same boundary of the value stream analysis (Porter, 1980), it has been argued that similar properties can be observed (Johnson and Leenders, 2006). Similarly to procurement, new product development has been referred to as a secondary activity, spanning across/above the primary functions (Porter, 1980, Weber et al., 2010). Therefore, research on cross-functional integration in NPD can be considered to be an adequate aspect to be included into the research on cross functional integration within procurement.

According to Kahn (1996), distinct forms of interaction-based and collaboration-based cross-functional integration in new product development can be observed. The first form of integration, i.e. interaction based collaboration, focuses on the use of communication in the form of meetings and information-flow pathways between the departments. The activities include formally coordinated flows of communication and documentation between departments such as routine meetings, conference calls etc. (Ruekert and O.C., 1987). As an overall appraisal, the interaction-based form of integration can be considered as a structural process, since a defined way to collaborate and interact is predefined.

The second form of integration can be described as collaboration, where functions work cooperatively to strive for common goals. Souder et al. (1977, p. i) define collaboration based integration as: *“a state of high degrees of shared values, mutual goal commitments and collaborative behavior”*. According to Ellinger (2000, p. 86), collaboration based integration is based on *“cooperation (willingness), rather than on compliance (requirement)”*, as would be the case with interaction based integration. Empirical studies that support the positive effect of integration on performance are scarce, particularly in the supply chain management (SCM) sector (Ellinger, 2000). Following empirical data from a mail survey with more than 500 participants, Kahn (1996) shows that collaboration based integration is indeed a major success factor for new product development processes, while the positive effects of interaction based collaboration tend to be somewhat insignificant.

Earlier research, particularly on NPD, has emphasized the importance of the integration of functional goals for project success (Moses and Ahlstrom, 2007). Functions tend to have differing market, time or scientific orientations (Sherman et al., 2000), and the NPD process has been shown to be constrained by conflicting

functional goals (Hill and Hill, 2009, Lonsdale and Watson, 2005). In many companies, strategy has been argued to be “a compilation of functional strategies and nothing more, derived independently both of one another and the company as a whole” (Moses and Ahlstrom, 2007, p. 90). A lack of alignment has been shown to complicate sourcing (Chen and Chen, 2006), leading to dissipated resources and missed opportunities (Birou et al., 1998). Particularly stronger functions can prioritize their own functional goals above overall strategy (Moses and Ahlstrom, 2007), seeking information in favor of their decision and ignoring other contrary evidence (Hutt et al., 1995).

Within the literature there have been various endeavors to operationalize and measure integration, such as for NPD (Dyer and Song, 1998, Kahn, 1996, Pinto and Pinto, 1990, Rodríguez et al., 2007, Sivadas and Dwyer, 2000), marketing (Kumar et al., 1994, Song et al., 2000), integration in inter-firm relationships (Skinner et al., 1992, Villena et al., 2011), global sourcing (Trent and Monczka, 2003b), purchasing (Pagell, 2004), and the utilization of integration committees (Germain et al., 2001). We follow the definition by Pagell (2004), expanded by constructs on trust from Rodriguez et al. (2007), as shown in Table Ten.

<i>Level of integration</i>	<i>Indicators</i>
3. Full internal integration	Most of the time, purchasing, logistics, R&D, quality and sales: Interact Collaborate Work to arrive at mutually acceptable outcomes Trust each other
2. Some internal integration *	Some of the time, purchasing, logistics, R&D, quality and sales: Interact Collaborate Work to arrive at mutually acceptable outcomes Trust each other
1. No internal integration	Most of the time, purchasing, logistics, R&D, quality and sales do not: Interact Collaborate Work to arrive at mutually acceptable outcomes Trust each other
* Level 2 contains organizations with either limited integration among different functions or full integration among two functions.	

Table 10: Coding the level of integration
(based on Pagell 2004 and Rodriguez et al. 2007)

The coding of observations has been identified as a central aspect for effective case study research (Glaser and Strauss, 1967, Miles and Huberman, 1994, Voss, 2009). The incidents of phenomena within the data are evaluated and coded into categories. The act of coding in itself can already be regarded as an actual form of data analysis (Miles and Huberman, 1994).

The classification of each firm’s level of integration was performed by the researchers (Pagell, 2004), by triangulating from all respondents (Patton, 2002, Silverman, 2006, Voss, 2009). Among research and practice there is a widely-spread appraisal about the benevolent effect of the integration of internal functions (Hayes and Wheelwright, 1984, Lawson et al., 2008, Watts et al., 1992). For example, the integration of

internal supply chain functions such as manufacturing and purchasing has been specifically proven to lead to higher performance (Narasimhan and Das, 2001). Therefore, assuming that the interviewees are aware of this relationship, it can be expected that answers are prone to social desirability biases (Fisher, 1993, Pagell, 2004).

Particularly among purchasing personnel we saw some kind of this respondent bias, with managers stating a higher degree of integration than respondents from other functions would claim.

Taking this into consideration, data were collected from various functions in order to overcome the single-informant bias for the measurement of the level of integration (Song et al., 1997, Voss, 2009). Respondents from the different functions were asked to give examples and anecdotes for their appraisal of company integration, and such information was used to gain an understanding about the level of integration present in the company.

4.4 Analysis

Within case research analysis, a two-step analysis process has been suggested: First, the analysis within the case data and secondly the search for cross-case patterns (Eisenhardt, 1989, Pagell, 2004, Voss, 2009). Within case analysis facilitates examining the researched constructs in a single context. Across case analysis, in contrast, serves as a form of replication (Yin, 2008). Interesting findings in one setting are verified and reassessed in other settings and information is derived from that comparison.

4.4.1 Data analysis within cases

As a starting point, the integration construct was clustered into an array in order to present the information systematically (Voss, 2009). Having performed the analysis, the researcher is given the depth of understanding needed for cross-case analysis (Miles and Huberman, 1994, Voss, 2009). From the data gathered, the elements affecting the level of integration were identified. The foundations of the constructs, whenever possible, were based on earlier research, for instance dependence between functions (Rodríguez et al., 2007, Thompson, 2003), the uncertainty the organization faces (Chen and Paulraj, 2004), communication frequency (Becerra and Gupta, 2003), functional layout (Pinto et al., 1993), as well as the reward and bonus structure (Chaudron, 1995, Takaki, 2005). The results concerning the integration of the different firms are displayed in Table Eleven. Coming from the individual classification, the next step is to advance to a model that is generalizable across cases (Pagell, 2004).

4.4.2 Data analysis cross-case patterns

The systematic search for cross-case patterns has been identified as the key step in case research (Voss, 2009). As a result, various tools and methods have been developed to facilitate the identification of cross case patterns (Miles and Huberman,

1994, Voss, 2009). Furthermore, cross case analysis mitigates effects such as being overly influenced by individuals e.g. elite respondents, or the inadvertent dropping of conflicting evidence (Eisenhardt, 1989). For the research at hand, a large array of data was constructed. After the data were gathered, single categories were picked and checked for within-group similarities or differences. In order to do so, elements recognized in an individual case were taken from the within case by case analysis and inserted into displays centered on construct to construct format (Miles and Huberman, 1994).

4.5 Results

4.5.1 Degree of functional integration (involvement) in the global sourcing process

The key goal of this research lies in the identification as to which degree integration patterns play a role, particularly in the global sourcing process. In a first step, factors from the global sourcing surroundings mitigating and/or supporting integration with regards to interaction and collaboration were identified within each case. Following Voss (2009) the factors were first put in tabular form, in order to understand the core elements of the cases. From this research, factors related to the integration concept within the global sourcing surroundings were identified and transferred to the cross-case analysis. The within case analysis provides an extensive data set regarding the role of integration in the global sourcing process. Having performed the analysis on the independent cases, the subsequent step is to derive a generalizable model across the cases.

Two plants were classified as level one, three plants as level two and only one plant was classified as level three, i.e. the highest integration level. Despite one OEM operating a procurement team with an at least partial collaboration structure, interaction-based cooperation with fixed and structured communication patterns prevail. In most companies, however, following a classical procurement setup, decisions are taken by procurement, often overruling other functions' constraints. Cross-functional teams with cooperation patterns including shared goals were not, or to a very limited extent, implemented in the companies interviewed.

4.5.2 Integration in the global sourcing context

Two main patterns can be observed concerning integration: First, among managers interviewed within the different departments, a widespread understanding was observed that the functional entities had engaged in operational and tactical optimization decoupled from the rest of the functions from within the supply chain. Managers reported that purchasing organizations strongly engaged in e-procurement and electronic supplier integration activities, logistics invested in "just in time/sequence" (JIT/JIS) and quality departments optimized their operations in line with ISO-standards, often detached from the other functions.

<i>Company</i>	<i>Level of integration</i>	<i>Integration mechanisms</i>	<i>Number of employees</i>	<i>Turnover</i>	<i>Plant</i>
OEM 1	1	Interaction based cooperation patterns. Central decision making premium including purchasing, quality, and logistics	50k - 100k	50 - 75 bn€	Multi, various continents
OEM 2	3	Collaboration based cooperation patterns. No central decision making premium, cross-functional teams work on mutually acceptable outcomes, conflict resolved via a balanced score-card approach	100k - 500k	>75bn€	Multi, various continents
OEM 3	2	Interaction based cooperation patterns. Central decision making premium including purchasing, quality, logistics, finance and controlling	100k - 500k	>75bn€	Multi, various continents
Tier 1 supplier 1	2	Interaction based cooperation patterns. Central decision making premium, participants depending on importance of part sourced.	25k - 50k	0,5 - 25 bn€	Multi, various continents
Tier 1 supplier 2	2	Interaction based cooperation patterns. Purchasing leads the decision making, no central decision making premium, conflict between functional entities is resolved by executive board.	100k - 500k	25 - 50 bn€	Multi, various continents
Tier 2 supplier 1	1	Very limited cooperation patterns. No central decision making premium, purchasing has the lead for procurement decisions.	100k - 500k	25-50 bn€	Multi, various continents

Table 11: Breakdown of the plants based on their level of integration

Many managers mentioned conflicting goals within the departments of the organization, particularly between logistics, procurement, quality and sales. Similar information comes from a study conducted by Boston Consulting (2007) which identifies one of the major constraints for global sourcing success as lying within the lack of appropriate cooperation within the company.

Many managers, particularly from logistics, emphasized their frustration at having to go along with decisions they considered sub-optimal for the firm as a whole but beneficial for individual departments or managers of the company. Particularly managers from logistics mentioned that decisions were being taken by purchasing which led to dramatic challenges for the logistic operations. Under a total cost long-term perspective, managers assumed that the neglecting of a long-term perspective had negative effects on sustainable competitive advantage. This view is in line with research from various scholars such as Petersen et al. (2000), Murray (2001) and Trent and Monczka (2003b).

Some managers interviewed even mentioned the assumption that other managers and functions acted in favor of their own (functional) advantage rather than the organization's advantage as a whole. Some procurement managers argued that benefits of sourcing come to the organization as a whole, but are not evenly distributed, and the parties with less gain will most probably oppose the global sourcing strategy

The internal problems often result from plant dispatching and quality managers who either do not order the products against the contract or who block deliveries due to alleged or real quality issues. In particular, plant and quality managers fear that products from low-wage countries will cause problems within the production process, since their performance is evaluated on stable production numbers and smoothly running supply chains. Therefore, reaping the identified savings from global sourcing to those parts of the company only offers potentially negative effects due to increased threats from quality and delivery safety. In this case the optimal setup for

individual functions is opposed to the optimum for the company as a whole, again quite well explaining internal resistance (Horn et al., 2012).

As one manager responsible for global sourcing projects explained, project failings often follow a line of incidents beforehand. Since many of the suppliers, particularly from China, are comparatively new in doing international business, those suppliers tend to underestimate the difficulties explained beforehand, such as the importance of raw material and currency hedging, customs issues, or logistic challenges. Too little communication within the decision making process often hinders the organization from anticipating those issues. Having closed the contract, many suppliers become aware of the fact that they will actually not be able to hold prices since not all cost aspects are included. For example, many low-wage country suppliers have insufficient structures concerning raw material and currency hedging in place.

As explained above, to a limited extent, marketing and sales managers were interviewed. In particular, respondents operating in markets with strong demand volatility and large customer specificity argued that optimized upstream functions had led to a difficult situation for their sales operations in terms of meeting customer demands in a timely manner. One manager from a multinational car company explained that, at any given time, the company holds an average inventory of about 15% of a year's production volume in finished vehicles. The manager quoted attributed this massive inventory mainly to the upstream setup of the firm, and quoted an ICDP "International Car Distribution Programme" survey (an initiative in collaborative research in car distribution, retailing and after-sales 2003) which clearly shows similar patterns compared to those of other OEMs in terms of vehicle inventory.

In conclusion, it can be said that purchasing organizations tend to take decisions which are hard to cope with for the rest of the organization.

4.5.3 Formalization and (de-) centralization in the global sourcing process

Apart from integration, formalization (Germain and Droge, 1998, Robbins, 1990) and centralization have been identified as major issues for firms engaging in global sourcing (Arnold, 1999, Faes et al., 2000, Hult and Ferrell, 1997, Hult et al., 2007). Within the OEMs analyzed by us, two companies have mainly centralized organizations and one company operates a hybrid procurement structure. In all OEMs, structures with high degrees of formalization were found. Within the hybrid system, the regional business units send a representative to a central decision committee. All larger decisions exceeding a certain value threshold are taken centrally, leading to strong coordination without having too strong a hierarchy.

<i>Company</i>	<i>Centralization and formalization</i>	<i>Purchasing Model (central purchasing, coordination model, outsourcing model)</i>
OEM 1	Strong centralization, mid to strong formalization	Central Purchasing Model
OEM 2	Strong centralization, very little influence of worldwide plants, strong formalization	Central Purchasing Model
OEM 3	Centralized decision making structure, strong formalization	Coordination Model
Tier 1 supplier 1	Strong centralization, lead buyer structure in place, medium formalization	Central Purchasing Model
Tier 1 supplier 2	Very decentralized structure, some leading teams to coordinate key material groups, medium to low formalization	Outsourcing Model
Tier 2 supplier 1	Medium degree of centralization, lead buyer structure in place for global contracts, partially local decisions for smaller product groups or only locally purchased goods, medium to low formalization	Central Purchasing Model

Table 12: Formalization and (de-)centralization

The two OEMs with a lower global sourcing ratio had centralized procurement structures in place, in order to exploit fully economies of scale from bundling and economies of scope by central processes.

Among the tier one and tier two companies, the degree of centralization differed, while in general the companies had lower levels of formalization for their global procurement operations. Each of the organizations had a lead-buyer structure in place, in which the predominant buyer of goods or services negotiates and manages contracts for the organization as a whole. In most cases, the majority of the lead-buyers were situated in the headquarters of the company.

Particularly OEMs and tier one suppliers tend to have a purchasing system in place which to a certain extent at least formally includes R&D, the quality function and logistics. Downstream companies tend to integrate less, and particularly tier two suppliers often arrive a purchasing decision at procurement level only.

Regarding the different structural integration patterns, questioned managers replied differently. There seemed to be a widespread understanding regarding the increased necessity of integrating various functions into the sourcing decision. The importance of integration is fully agreed within the differing functions. Apart from one purchasing manager from an automotive OEM, all other managers consistently underlined the importance of cross-functional integration within the global sourcing process.

4.5.4 Reasons for the initiation of global sourcing projects

As described above, four main reasons for global sourcing have been identified from the literature analyzed: 1) cost savings; 2) the procurement of innovative goods which firms would otherwise not get hold of; 3) the support of sales activities within the region sourced from and 4) institutional issues, e.g. from mimetic isomorphism.

Within our sample from the automotive industry, three partially differing main points emerge. First, all managers highlight the cost savings goal of global sourcing. Managers mentioned the goal as taking advantage of low factor costs in emerging markets, particularly from cheap labor. One manager mentioned the fact that a

worker in one of the plants would have to work more than 20 years to be able to afford a vehicle from the plant.

Secondly, hedging against currency fluctuations was revealed as a major goal. Above all, purchasing managers mentioned a strategy to match as far as possible the purchasing with the sales footprint.

Thirdly, predominantly the OEMs mentioned the promotion of sales activities as a main reason for global sourcing. Emerging countries such as Russia or Brazil require OEMs to source a large proportion of their vehicle parts in the country they are planning to sell vehicles to. Since often (as e.g. in the case of Russia) only very few products are competitive in terms of quality or technology, purchasing managers mentioned that they source those components for their worldwide operations in order to meet those requirements.

<i>Company</i>	<i>Level of integration</i>	<i>Reasons for global sourcing</i>	<i>Satisfaction with global sourcing results</i>
OEM 1	1	Cost savings / Currency hedging	Unsatisfactory Effects
OEM 2	3	Cost savings / Local content requirements/Total cost of ownership reduction	Neutral Effects in terms of savings, positive for local content effects.
OEM 3	2	Cost Savings / Local content requirements	Positive appraisal from purchasing in terms of cost savings, negative appraisal from quality and logistics, neutral from marketing
Tier 1 supplier 1	2	Cost savings / synchronal purchasing and sales footprint	Neutral - in an early stage of global sourcing, global sourcing only used to a limited extend
Tier 1 supplier 2	2	Cost savings and currency hedging / synchronal purchasing and sales footprint	Neutral to positive for cost savings, positive for hedging. Saving projects only started when they exceed 10% TCO savings
Tier 2 supplier 1	1	Cost savings	Positive effects from purchasing, neutral from logistics and neutral to negative from quality,

Table 13: Reasons for and results of global sourcing

Following on the idea of global sourcing as an industry recipe, it was observed that, particularly among procurement managers, a widespread, rather anecdotally based estimation about the benevolent effects of global sourcing exists. Managers mentioned the strategic directive from top-management increasingly to engage in global sourcing. Therefore there is some support for the assumption of the fourth reason for global sourcing, namely leader follower – bandwagon tendencies among purchasing managers.

4.5.5 Satisfaction with global sourcing results

Regarding the results of global sourcing, ambivalence among the different functions was observed. Particularly among purchasing managers, results from global sourcing were seen to be positive for the company, however lagging behind the best practices they had heard of. One manager mentioned the feeling that especially sourcing

ventures with high savings expectations had a higher tendency to fail. Those projects are often fired by strong top procurement management support, and therefore executed rather hastily, not having taken into account all the possible pitfalls of a project.

Among managers from other functions, a negative preconception regarding the effects of global sourcing was observed. In only one company, purchasing mentioned primarily negative effects from global sourcing in terms of operative and financial performance. When data on average savings were disclosed, the savings ranged from three to five percent savings for eastern European countries, to 8% to 14 % for Asian countries such as Korea or China. However, projects from Asia had a higher tendency to fail with less than 50% of projects running fully successfully. Furthermore, many managers mentioned the cost of failed global sourcing projects. It was argued that failed sourcing projects caused higher replacement costs, e.g. for ad hoc transport costs such as airfreights, and high replacement costs with suppliers which were meant to be replaced.

4.5.6 Share of global- and low-wage country sourcing and internationalization in general

Internationalization has been described as having two dimensions, the general internationalization and the internationalization of procurement (Arnold, 1999).

Following the above definition, we consider the share/amount of products sourced globally as an indicator of importance for this topic within the respective firms, and we bring it into relationship with the general degree of internationalization of the firm.

Firms in the automotive industry analyzed by us, despite being international in terms of production share and sales, still largely rely on a domestic supplier base for their local production. The OEMs interviewed produce a large proportion of their vehicles outside the country in which their headquarters reside. However, procurement operations are still largely domestic, with a purchasing share of components sourced from the country housing the headquarters of between 55% and 65% of the total purchasing turnover. Many managers mentioned the feeling that, according to their appraisal, the level of global to local sourcing was low compared to the best practices they had been told about, e.g. by management consultants and. Particularly the tier one and tier two suppliers had a larger share of their sourcing for their global production from outside their headquarters company.

<i>Company</i>	<i>Level of integration</i>	<i>Turnover</i>	<i>Internationalization</i>	<i>Reasons for global sourcing</i>
OEM 1	1	50 - 75 bn€	<75 %	Cost savings / Currency hedging
OEM 2	3	>75bn€	< 75 %	Cost savings / Local content requirements/Total cost of ownership reduction
OEM 3	2	>75bn€	< 75 %	Cost Savings / Local content requirements
Tier 1 supplier 1	2	0,5 - 25 bn€	not disclosed	Cost savings / synchronal purchasing and sales footprint
Tier 1 supplier 2	2	25 - 50 bn€	75%	Cost savings and currency hedging / synchronal purchasing and sales footprint
Tier 2 supplier 1	1	25-50 bn€	50 - 75 %	Cost savings

Table 14: Share of global sourcing for production

Since some of the data were not disclosed by the firms, or that internal calculation methods made a comparison difficult, data from the German federal statistical office were analyzed. The data support the estimations by managers, indicating a total turnover of the German automotive of about 200 billion Euro and a turnover of the tier one supplier industry of about 125 billion Euro (German Federal Statistical Office, 2011). Results are rather low compared to other industries, such as the garment industry (e.g. Fisher, 1997) or the toy industry (e.g. Lardy, 2002), in which firms manage to purchase a large proportion of the goods from low-wage countries.

4.5.7 Changing influencing factors for global sourcing compared to local sourcing

Several of the managers interviewed mentioned that there seems to be a dynamic change of influence factors when a company sources farther away in terms of cultural and/or geographical distance. While some of the influencing factors are rather general in relation to all procurement decisions, other aspects of global sourcing such as ethical standards (e.g. prevention of child labor or environmental issues) are influencing factors which arise particularly when sourcing in low-wage countries.

From the fieldwork, the following picture concerning the influencing factors emerged (Figure Eight). The Y axis comprises the influencing factors on the sourcing decision and their relative importance depending on the sourcing distance, the distance itself is scattered along the X axis.

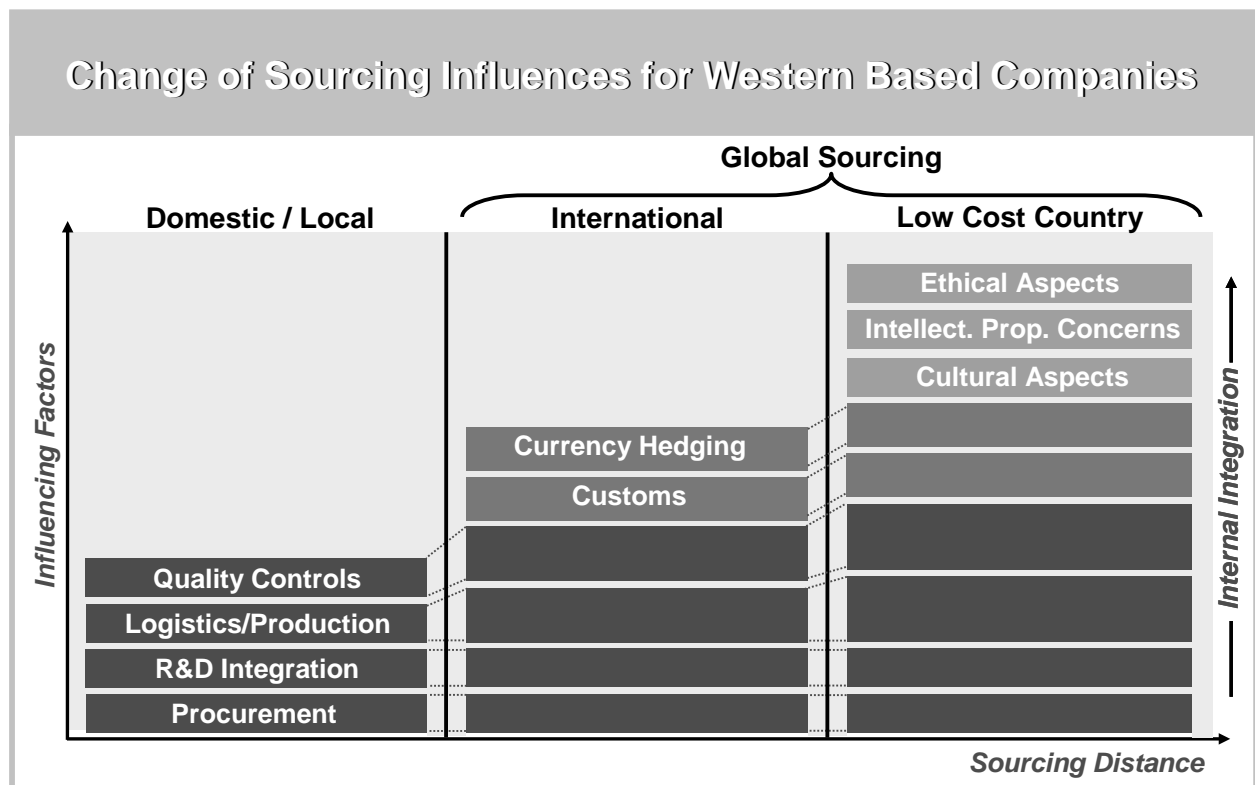


Figure 8: Change of global sourcing influencing factors with distance

We differentiate between local domestic sourcing, standing for established sources of supply from the home area of the purchasing organization and the close economic surroundings.

As explained, a rough distinction between three sourcing regions is made, based on the following definitions for the sourcing regions: Domestic sourcing (same currency or fixed exchange rates, cultural proximity, similar level of factor costs, no tariff or trade barriers), traditional procurement markets (different currencies between purchaser and seller, existing tariffs and trade barriers, cultural proximity -at least to a certain degree-, similar level of factor costs) and low-cost-country sourcing (different currencies between purchaser and seller, existing tariffs and trade barriers, cultural distance, differing levels of factor costs).

Despite a rather simplified illustration, Figure Eight shows that domestic and local sourcing projects only have to take a few organizational factors into account in terms of decision-making. The further a company goes with its sourcing operations, however, the more influencing factors from outside classic procurement setups enter the stage. Other factors such as logistics or quality control become more important with the distance sourced from. Many of the factors which are central to the success of the procurement decision, particularly when sourcing from distant countries, come from departments outside procurement. Several of those factors are subject to permanently strong changes, particularly currency or sometimes tariffs and customs. Therefore any attempt to include them into the decision-making will imply close cooperation within the organization

4.6 Discussion

The data were gathered and analyzed with a focus on the role of structural variables, in particular the integration of the different functional entities of a firm in the global sourcing process. Data from this exploratory research gives various propositions for future research

Following the field research two main points emerge, first the ambiguous performance results of global sourcing and, secondly, the lack of integration of various functional entities, leading to lower global sourcing performance. In line with the first finding, it can be reasoned that companies have reached a point where further sourcing and particularly global/low-cost country sourcing success will not come from increased efficiency within the single parts of the organization, but from the clear integration of larger parts of the organization into the procurement decision making process (Trent and Monczka, 2003b, Weber et al., 2010), since a different set of influencing factors will tend to affect the sourcing project. Procurement organizations which have evolved over time and have primarily dealt with domestic sourcing needs will appear to be a suboptimal structure to cope with global sourcing needs. However, increased integration has been shown to tend to make decisions slower and broaden the human resource base, making the organization more complex and expensive (Das et al., 2006).

We therefore offer **proposition 1**:

The cross-functional integration of purchasing, logistics, R&D, and quality is positively related to global sourcing success.

Many aspects of integration and collaboration seem to be beneficial to the organization when sourcing from low-wage countries. However, there are also negative effects to be expected, since increased integration will slow down an organization's response to change since it will imply an increased level of inflexibility and uncertainty following increased coordination among the functional units.

Our research showed that interaction-based collaboration approaches with structured information pathways and routine prevail over collaboration-based integration patterns. Managers mentioned that technically they were connected to each other, but in many cases trust and mutual commitment were on a rather low level. Earlier research on complex forms of project collaboration has emphasized the importance of the integration of functional goals for 1) project success (Moses and Ahlstrom, 2007, Sherman et al., 2000), and 2) the willingness to cooperate rather than the necessity from job descriptions (Ellinger, 2000), leading us to **proposition 2**:

Collaboration-based integration patterns will lead to better global sourcing results compared to interaction-based collaboration patterns.

One strategic procurement director from an OEM who was interviewed, stated that procurement should be the dominant player in the sourcing decision, interacting to a certain degree with quality and logistics. Interestingly, this particular company is the one with the lowest global sourcing quota from the sample.

The cases have shown that well-functioning low-wage sourcing activities, according to our information, will tend to reap moderate savings of between four and five percent. Global- and particularly low-wage country sourcing is still a major issue both within business practice as in research, and results have been shown to be positive (Frear et al., 1992, Petersen et al., 2000, Trent and Monczka, 2003b), case specific or neutral (Bozarth et al., 1998, Kotabe and Omura, 1989, Murray et al., 1995) or even negative (Callahan, 2000, Homburg et al., 2002, Kotabe, 1998, Nellore et al., 2001). We therefore offer **proposition 3**:

Within the automotive supply chain, sourcing from low-wage countries will yield cost savings that are higher than industry average annual cost savings.

Many factors have been shown to influence negatively global sourcing performance, e.g. low-skilled work force and different understandings or concepts of quality (Meixell and Gargeya, 2005), volatile currency exchange rates, economic and political instability, and changes in the regulatory environment e.g. customs (Carter and Vickery, 1989, Dornier et al., 1998) Therefore, we offer **proposition 4**:

Sourcing from low-wage countries will yield lower operational performance compared to sourcing from high-wage countries.

Finally, research has shown a quasi-dogmatic expectation about the positive results of global sourcing (Steinle and Schiele, 2008). Global sourcing has been described as a strategic imperative (Mol et al., 2002). The initiation of global sourcing projects

has furthermore been attributed to so-called “leader-follower effects” (Kotabe and Mol, 2006), which can be described as the tendency to copy other industry’s players’ behavior (Lacity and Hirschheim, 1995). Indeed, also in our sample, the great majority, particularly of purchasing managers, mentioned that they expected strong cost savings from global sourcing.

We therefore offer **proposition 5a**:

Global sourcing can be seen as an industry recipe.

We furthermore offer **proposition 5b**:

Effects from industry recipes negatively affect global sourcing performance.

4.7 Limitations and further research

We employed a multiple case study approach involving various companies along the automotive supply chain with in-depth interviews on a rather high management level as our method of choice, since research required very precise details together with a broader process understanding. The focus does not depend on actual sourcing projects at product or item level, since the primary purpose of this research did not lie within measuring quantitative aspects, but rather in illustrating the dynamics of the system and the implications following from it.

Global sourcing spans both unique processes such as supplier selection and repetitive/routine tasks such as quality controls, it has been argued that insights from NPD as a seemingly special/unique case therefore might not be applicable to a full extent since they do not cover repetitive tasks (Pagell, 2004).

Research should be undertaken into how to adjust the optimal scope and form of integration throughout the procurement process. Bearing in mind the apparent importance of product complexity, some projects work out well, despite the general difficulty of the topic. Since the exploratory character of the study and the focus on the automotive industry might set a limit to the possibility of generalizing the findings, a two directional future research approach is suggested, using an in-depth multiple case analysis within one company sourcing. Following a closer understanding about moderators inhibiting global sourcing success and the functional connection, quantitative data from industries within and outside the automotive industry should validate the findings.

The study is subject to various limitations. The findings were obtained from only one industry surrounding, potentially limiting the external validity. Furthermore, the limitation to the automotive industry, with materials falling typically into the categories of metal, plastic and electronic components (Schiele et al., 2011a), might add to the limitations.

4.8 Abstract for journal / keywords

Purpose

This paper aims at identifying reasons why companies fail to harvest expected benefits from global sourcing and how to enhance global- and particularly low-wage country sourcing performance. Cross functional integration will be analyzed as a prerequisite for global sourcing success.

Design/methodology/approach

Semi-structured interviews with six companies from the automotive supply chain were conducted along different functions of the firms. The data gathered was arranged into an integration factor framework giving insight on an organizational level.

Findings

The findings highlight how well-established procurement organizations will eventually have to employ collaboration based integration patterns with other functions of the firm in order optimally to exploit price advantages provided by low-wage countries.

Originality/value

This study shows that a large proportion of global sourcing difficulties seemingly stemming from dyadic issues between companies, such as lacking communication, in fact have their root cause within the procuring organization itself. Cross-functional integration seems to be the crucial way to overcome these problems and to get a correct appraisal about the ultimate effects of global and particularly low-wage country sourcing.

Abstract

Over the last few years, increased global sourcing has been the top priority on the agenda of most chief procurement officers (CPOs). Results from global and low-wage country sourcing ventures, however, according to scholarly research remain ambiguous.

We identify integration challenges encountered in a cross-functional sourcing process, based on a multi-respondent case study from various companies along the automotive supply chain.

This paper seeks to give insight on why companies fail to harvest the benefits from global sourcing. Results suggest that, in order to draw full advantage from global sourcing prospects, companies will need to pursue a clear integration, information and target setting strategy across various functions within a company for the procurement decision-making. The research contribution lies in an extended understanding of the organizational importance for global sourcing and a narrowing of the research gap of the reasons for ambivalent global sourcing success. We conclude with a framework providing guidance on an organizational level.

5 Internal Integration as a Pre-Condition for External Integration in Global Sourcing: a Social Capital Perspective

5.1 Introduction

Following the idea of lower factor costs in certain supply markets, there seems to be a strong consensus, in particular from practitioners, that international sourcing is either inevitable and/or beneficial for firms (Kotabe and Mudambi, 2009, Schiele et al., 2011a, Steinle and Schiele, 2008). Global sourcing has been called “*an automatic expectation to respond to competition*” (Carter et al., 2008, p. 225). However, previous findings are somewhat contradictory concerning the results of global sourcing initiatives, ranging from negative or neutral effects (Kotabe and Omura, 1989, Murray et al., 1995) (Schiele et al., 2011a) to 20 percent savings (Petersen et al., 2000, Trent and Monczka, 2003b, Weber et al., 2010). Some scholars argue that global sourcing is more a way to generate short-term cost advantages on a unit price level (Petersen et al., 2000, Schiele et al., 2011a), omitting a longer term total cost perspective (Murray, 2001, Trent and Monczka, 2003b). Global sourcing success has been argued to be based on the “*worldwide integration of engineering, operations, and procurement centers within the upstream portion of a firm's supply chain*” (Trent and Monczka, 2003b, p. 608). Organizations face the challenge to integrate both, internal functions as well as the entire supply chain (Pagell, 2004). So, apart from internal integration, recent research has investigated the link between external supplier integration and performance, suggesting a positive effect of supplier integration for the buying firm's performance (Lawson et al., 2008, Leana and Pil, 2006, Villena et al., 2011, Zhao et al., 2011), and also in the global sourcing context (Zhao et al., 2011). Dyadic success factors for global sourcing between companies have been widely researched e.g. under a transaction cost economics view (Kotabe, 1994, Murray, 2001, Murray et al., 1995) or the resource based view (Espino-Rodríguez and Padrón-Robaina, 2006), employing case studies (Forza, 2009), surveys (Frohlich and Westbrook, 2001), and simulations. Despite a call for research from various scholars, (Petersen et al., 2000, Trent and Monczka, 2003b, Weber et al., 2010), a firm's internal prerequisites for global sourcing success have been largely left under-researched (Hartmann et al., 2008). The importance of integration of various functions within the firm has been shown to be important as well for the general performance of the firm (Maltz and Kohli, 1996), as well as for various subsets such as new product development (Kahn, 1996), make-or-buy decisions (Moses and Ahlstrom, 2009), and organizational learning (Huber, 1991).

This paper investigates the effect of internal cross-functional integration on global sourcing success. The core question of our work can be summarized as follows: is internal integration of the functions within the buying firm a pre-requisite for external integration with the supplier? The conceptual framework is tested using a sample of 82 global sourcing purchasing projects. Our findings indicate a positive influence of social capital on integration, a mediating role of social capital on external integration, and a positive influence of external integration on global sourcing success.

The paper is structured as follows. After a brief literature review, our hypotheses regarding the relationship between social capital and internal and external integration, as well as the role of integration on global sourcing success, will be built up. The chosen method of empirical analysis will be explained, and the results of our survey discussed. The paper is ended by referring to limitations to the research setting together with suggestions for further research.

5.2 Theoretical considerations

5.2.1 Global Sourcing and the internal – external integration link

Since the 1990s, global trade has been growing considerably faster than domestic trade (Bowersox and Calantone, 1998), and the field of research increasingly receives attention (Schiele et al., 2011a). The clear focus for firms residing in traditional western purchasing markets has been shown to lie in the cost-saving aspects of global sourcing (Alguire et al., 1994, Monczka and Giunipero, 1985, Spekman, 1991). Many terms have been used to describe global sourcing which have partly been delineated and partially been used interchangeably (Schiele et al., 2011a). Just like Lockström (2007), we employ the term “global sourcing” as an umbrella term for cross-border sourcing aiming at cost savings. In order to generate a sound understanding of the body of literature on integration in the global sourcing field, we engaged in a content-based literature review (Mayring, 2003). The material collection was done by formulating a search query in Scopus, based on two literature reviews from the global sourcing (Quintens et al., 2006b) and the integration field (Fabbe-Costes and Jahre, 2007), resulting in a total of 25 papers. Each of the papers’ abstracts was screened for appropriateness by two researchers, leading to a total of 12 papers.

The methodological results can be summarized as follows: All papers date from the year 2001 or later, with seven papers alone from the year 2011, indicating the increased attention in the global sourcing context. Research was based on eight surveys, four case studies, one combined paper (survey and case study) and one review paper. A clear dominance of the resource based view (RBV) (Barney, 1991) and transaction cost economics (TCE) (Williamson, 1979) was observed. Of the twelve papers analyzed, four use the RBV as a single theoretical foundation, three papers employ the RBV in combination with TCE, two papers employ TCE in combination with another theory, one paper is based on the information processing theory, one paper on the power– relationship commitment theory, and one paper was written without a theoretic foundation. Four papers focus on Europe, three on China, one on Taiwan, one on the U.S., and five on multiple countries. Six of the papers analyzed relied on data from various industries, the rest were based on a single industry.

The contextual results can be summarized as follows: Of the set of papers, four papers consider internal as well as external integration, seven papers focus on external integration alone, one paper focuses solely on internal integration, and two papers on vertical integration. Information on mediators regarding integration in the global sourcing context is relatively shallow, since only four papers mention mediating factors such as IT integration or governance mechanisms. Five papers offer moderating factors. Schoenherr and Swink (2012) provide evidence concerning the moderating effect of internal integration on external integration, whereas Zhao et al. (2011) show a moderating role of supplier integration for customer integration. To a limited extent, Gimenez and Ventura (2005), Ragatz et al. (2002) and Zhao et al. (2011) have researched the interconnection between internal and external integration. Gimenez & Ventura (2005) investigated Spanish companies and found evidence for the existence of a positive relationship between internal integration of the logistics function with other departments such as marketing and production, and

external inter-organizational integration. However, Gimenez & Ventura (2005) assumed a bidirectional effect, meaning that internal integration facilitates external integration and vice versa. Furthermore, they explicitly focused on the logistics function, whereas we investigate the integration of the purchasing function with other departments. In contrast to the previous arguments, Schoenherr & Swink highlighted the positive effect that internal integration exerts on the relationship between external integration and delivery/ flexibility performance. Finally, in order to extend the still limited understanding of the relationship between internal and external integration, it has been argued by Zhao et al. (2011) that external integration with market partners is positively influenced by internal functional integration and relationship commitment. These results indicate that internal integration indeed exerts an influence on external integration and different performance measures. However, the results are still ambiguous concerning the relationship between internal and external integration in purchasing and the underlying mechanisms. In order to close this gap, the present paper focuses on the link between the two types of integration and hypothesizes a mediating role of the three social capital dimensions.

5.2.2 Social capital theory

Within the supply chain management context, the importance of integration is emphasized in the literature (e.g. Fabbe-Costes and Jahre, 2007, Hamprecht et al., 2005, Pagell, 2004). The view of the positive effects of integration is not limited to an internal perspective (Pagell, 2004) but also covers the external integration with suppliers (Krause et al., 2007, Lawson et al., 2008). Since integration refers to the process of interaction and collaboration in order to achieve mutually acceptable outcomes (Pagell 2004), we posit a close linkage between social interaction and consequently social capital and integration. The underlying idea is that buyer–supplier relationships represent multi-organization social processes, forcing the partners to interact, exchange information, and to form relationships based on interdependencies, exchanges, and mutual problem-solving (Hughes and Perrons, 2011). The positive conditions necessary for the exchange of such resources depends upon the development of social capital within these relationships (Hughes and Perrons, 2011).

The concept of social capital has gained increasing attention in the last decade (Krause et al., 2007, Lawson et al., 2008, Tsai and Ghoshal, 1998), and has been investigated in the context of relationships between individuals and organizations (Ahuja, 2000, Tsai, 2000, Tsai and Ghoshal, 1998). Scholars within the supply chain management field have also used this theory as a theoretic lens (e.g. Krause et al., 2007, Lawson et al., 2008, Min et al., 2008). Despite these scientific efforts, the picture of social capital and its role in a firm's value creation has remained to a large extent unclear (Hughes and Perrons, 2011). According to Coleman's (1994) broadly shared view, social capital covers any aspect of social structure, facilitating the creation of value and supporting the actions of individuals that belong to the social structure under investigation (Seibert et al., 2001). Based on this understanding, social capital can be defined as *"the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit"* (Nahapiet and Ghoshal, 1998, p. 243). Put in another way, the guiding idea of social capital is the recognition of another's goodwill towards a certain entity as a valuable resource (Adler and Kwon, 2002).

Nahapiet & Ghoshal (1998) identify and delineate three dimensions of social capital, namely cognitive-, structural- and relational capital. The cognitive dimension includes shared interpretations, comparable to codes or paradigms that facilitate the understanding of the social system and its respective goals in terms of norms, values, attitudes, and beliefs (Tsai and Ghoshal, 1998, Uphoff and Wijayarathna, 2000).

As emphasized by Inkpen and Tsang (2005), particularly shared culture and congruent goals are substantive dimensions of cognitive capital (Villena et al., 2011). In this context, *“shared culture refers to the degree to which norms of behavior govern relationships, whereas congruent goals represent the degree to which parties share a common understanding and approach to the achievement of common tasks and outcomes”* (Villena et al., 2011, p. 562). Hence it can be expected that the similarity of organizational cultures and also cultural differences on an individual level influence the corporate success of alliances (Parkhe, 1993). The reasons for this relationship are manifold. Among others, often mentioned are constraints of undesirable behavior in favor of collective interests (Coleman, 1994), improved harmony, and the reduction of opportunistic behavior (Ouchi, 1980).

The common understanding of structural social capital is that of a certain pattern of connections between entities, i.e. which connections an individual or an organization has and how these can be used (Burt, 1997, Villena et al., 2011). Hence, the presence or absence of network-ties between participants is an important facet of this dimension (Nahapiet and Ghoshal, 1998). Depending upon structural configurations, valuable resources that can lead to competitive advantages (Barney 1991) can be accessed. For this reason, closure and density within the social structures are of main interest, since they facilitate the exchange of resources (Zaheer and Bell, 2005). Besides this, various scholars have suggested that partnering entities can foster the exchange of reliable and diverse information (Capaldo et al., 2006, Koka and Prescott, 2002, Villena et al., 2011). As a result, particularly dense structures are assumed to be beneficial in so far as they allow the reception of the right information at the right time (Zaheer and Bell, 2005). Another potential benefit of dense relationship structures is the possibility of validating information and therefore increasing its reliability, as well as its diversity (Chen et al., 2009, Villena et al., 2011). For this reason, social capital theory argues that structural social capital is a valuable resource both for relationships within organizations, as well as between them.

The relational dimension of social capital is finally based on the notion of Granovetter and Swedberg (1992) concerning embeddedness, and refers to the relationships that people have developed with each other through interactions over time (Nahapiet and Ghoshal, 1998). Thus, relational social capital reflects the view that sources of competitive advantage can be based on relationships, extending the boundaries of the resource-based view of the firm (Koufteros et al., 2010). In this regard, the basis for learning and know-how transfer within a relationship is based on mutual trust and interaction (Kale et al., 2000). Furthermore, mutual trust and commitment play a major role in the relational component (e.g. Lee and Cavusgil, 2006), so the relational dimension is delineated into trust and commitment. As a result of relational capital, the risk of opportunistic behavior as well as the possible leakage of critical knowledge

is reduced (Kale et al., 2000). Hence, relational capital can improve corporate performance (Lawson et al., 2008).

Taking all aspects into consideration, we conclude that social capital and its respective dimensions (structural, relational, and cognitive) can be seen as beneficial for an organization's performance. We take this as the point of departure in order to investigate the applicability of the social capital theory in the domain of supply chain integration. Furthermore, in line with Murray (2001), we assume that companies which possess a higher level of external integration with suppliers in their global sourcing activities, are particularly successful. Similarly, internal integration is also expected to be beneficial for the performance of global sourcing organizations (Trautmann et al., 2009b). Thus, we extend the research on integration and firm performance (e.g. Schoenherr & Swink 2012) by explicitly linking different forms of integration to global sourcing success.

5.3 Hypotheses

Internal integration, often also called cross-functional integration, refers to *"the magnitude of interaction and communication, the level of information sharing, the degree of coordination, and the extent of joint involvement across functions"* (Montoya-Weiss et al., 2001, p. 65). Thus cross-functional integration can be beneficial for communication, interaction, information sharing and coordination between functions, leading to a collaborative and interactive forum for different functions within a firm (Hirunyawipada et al., 2010, Kahn, 1996, Montoya-Weiss et al., 2001). This collaborative environment is likely to be facilitated by the existence and accumulation of social capital (Leana and Pil, 2006, Sparrowe et al., 2001). For a deeper understanding of the roles of the single social capital dimensions, and in line with prior research, we argue that the build-up of relational capital within a firm is fostered by the accumulation of cognitive and structural capital (Carey et al., 2011, Tsai and Ghoshal, 1998). The underlying rationale is that common values and a shared vision may encourage the development of trust, reducing the tendencies to opportunistic behavior, and leading to the build-up of relational capital (Tsai & Ghoshal 1998). Thus, the availability of common cognitive capital, meaning the ability of participants to make sense of their joint experiences, is seen as a precondition for the build-up of relational capital (Carey et al., 2011, Nahapiet and Ghoshal, 1998). Similarly, the network of relationships, which is labeled structural capital, allows the flow of information and knowledge, paving the way for the benefits of relational capital (Carey et al., 2011). Previous research has shown that trust stems from social interaction ties, particularly those developed over time, which leads to the assumption that structural capital is beneficial for the accumulation of relational capital (Tsai & Ghoshal 1998). To sum up, we assume that there is a positive relationship between cognitive as well as structural capital and the development of relational capital. Relational capital, in turn, is likely to be positively related to successful internal integration. In this regard, Tsai & Ghoshal (1998, p. 467) state: *"When two parties begin to trust each other, they become more willing to share their resources without worrying that they will be taken advantage of by the other party."* Given the above-explained connection between relational capital and internal integration, we hypothesize a positive relationship between relational capital and internal integration.

As a result, the hypotheses H1 and H2 have been formulated:

H1a) The existence of internal cognitive capital is positively related to the accumulation of internal relational capital

H1b) The existence of internal structural capital is positively related to the accumulation of internal relational capital

H2) Internal relational capital is positively related to internal integration

Once a cooperative environment within the organization has been developed, different beneficial effects can be the result. Accordingly, it can be expected that if a firm's structures and processes are fragmented, it is less likely to possess the relevant capabilities to resolve potential conflicts and actively support integration with external market partners (Zhao et al., 2011). Hence, it is not surprising that Gimenez and Ventura (2005) found a connection between a firm's ability to plan and work internally across functions, and its planning and working performance with external supply chain partners. Some scholars argue that the establishment of a good relationship in terms of information sharing with the supplier and other functions can be seen as a precondition for successful supplier integration, since the coordination of internal functions can also facilitate the coordination with external market partners (e.g. Hughes and Perrons, 2011, Ragatz et al., 2002, Zhao et al., 2011). As a result, we hypothesize a positive and direct relationship between internal cross-functional integration and external supplier integration which is reflected in H3:

H3) Cross-functional integration is positively related to external supplier integration

Next to the direct relationship, we also expect the existence of an indirect path between cross-functional integration and supplier integration. Comparable to integration within the organization, social capital is likely to exert a significant influence. Beyond the purely functional perspective, social aspects of the buyer-supplier relationship also receive increasing attention from practitioners, as well as from scholars (e.g. Adler and Kwon, 2002, Krause et al., 2007, Lawson et al., 2008). The internal communication and application of shared norms and common understandings, i.e. internal cognitive capital (Villena et al., 2011), is also likely to stimulate the development of similar goals and values in the suppliers' organization (Krause et al. 2007), resulting in the formulation of H4a. Furthermore, internal integration, which also includes the structural connection of individuals or functions in an organization, could facilitate the build-up of structural capital with the supplier. This happens because members of the suppliers' organization can gain access to a dense network, and build-up multiple connections (Burt, 1997). Therefore, it is hypothesized in H4b:

H4a) Internal cross-functional integration is positively related to the accumulation of cognitive capital with suppliers

H4b) Internal cross-functional integration is positively related to the accumulation of structural capital with suppliers

There is evidence that social capital strengthens supplier relationships (e.g. Gerlach, 1992, Helper, 1990, Smitka, 1991, Uzzi, 1997), and research has shown that investments in supplier development can lead to the build-up of social capital between the buyer and the supplier (Krause et al., 2007, Villena et al., 2011). The development of cognitive capital with the supplier creates the potential of aligning the business philosophies and of fostering the negotiation of congruent goals (Villena et al., 2011). On the other hand, the existence of structural capital with the supplier makes it possible for the buying firm to benefit greatly from the extent and diversity of information as well as the emergence of social ties (Leana and Pil, 2006). We further argue that the kind of personal relationships developed with the suppliers' organization, i.e. the external relational capital (Villena et al., 2011), mediates the relationship between cognitive/ structural capital and external integration (Carey et al., 2011, Tsai and Ghoshal, 1998). To conclude, we hypothesize that apart from the direct link between internal cross-functional integration and external integration with suppliers, there is also a path consisting of the three dimensions of social capital. As a result, H5 and H6 were developed:

H5a) External cognitive capital with suppliers is positively related to the build-up of external relational capital with suppliers

H5b) External structural capital is positively related to the build-up of external relational capital with suppliers

H6) External relational capital with suppliers is positively related to external supplier integration

In recent years, various scholars have investigated the link between external supplier integration and performance (e.g. Lawson et al., 2008, Leana and Pil, 2006). Most of this research suggests that supplier integration is beneficial for the buying firm's performance on project or firm level (van der Vaart and van Donk, 2008). Furthermore, internal purchasing capabilities such as the alignment of purchasing strategy with other functional strategies have been shown to be beneficial for global sourcing success (Hartmann et al., 2008). This supports the view that global sourcing is *"an advanced approach to sourcing and supply management that involves integrating and coordinating common materials, processes, designs, technologies and suppliers across worldwide buying, design and operating locations"* (Trent and Monczka, 2005, p. 24). We also expect a positive relationship due to the assumption that the buying company can gain access to and leverage resources through collaborative relationships with its suppliers (Villena et al., 2011), by benefiting from the existence of social capital between the organizations, leading to Hypothesis 7:

H7) External supplier integration is positively related to global sourcing success

5.4 Methods and results

5.4.1 Data collection

The aim of this paper is to investigate internal and external supply chain integration and global sourcing performance. Therefore, for the data collection, purchasers from

the central purchasing department of a multinational automotive original equipment manufacturer (OEM) located in Germany were surveyed. An inductive research setting within a single firm reduces confounding factors from industry and firm differences. The automotive industry was chosen, since it is of major importance for the world economy (Taylor and Taylor, 2008) and of trend-anticipating character (Schiele et al., 2011a). The sampling method applied for the research setting at hand is the purposive judgment sampling, which is a form of non-probability sampling, insuring that the surveyed individuals are selected when they conform to a predetermined criterion, in this case the purchaser being responsible for a part in a global sourcing context and the purchaser's affiliation to the buying company (Blumberg et al., 2008). By so doing, a population of 186 purchasers involved in global sourcing activities within the focal company was identified. Purchasing projects were chosen at random and come from various countries and a variety of industries.

For reasons of anonymity, two emails were sent to the purchasers. The first email contained information about a certain item purchased by the person referred to. The second mail contained an automatically generated code number as well as a link to an online survey. If after ten days the system did not register an answer, an automatically generated reminder email was sent to the purchaser. If there was still no reaction within the next ten days, we made follow-up calls in order to increase the response rate. Finally, we achieved a sample size of N=82, which translates to a high response rate of approximately 44.1%. Response rates in the field have generally been low (x-30%) (Forza, 2009, van der Vaart and van Donk, 2008). Higher response rates have been linked to close relationships of the researcher with the surveyed company (e.g. Vickery et al., 2003). Since the questionnaire was sent out in German, items were translated into German and then translated back into English by a different researcher in order to check for translation accuracy (Harkness et al., 2004). Pre-testing with selected purchasers (Forza, 2009) resulted in minor adjustments.

5.4.2 Measures

Our measure generation process followed Churchill Jr (1979). As a first step, the domain of each construct was defined, stating what to include or exclude. The second step consisted of the search for appropriate scales (Roth et al., 2007). Within the survey design, we employed proven measures for all latent variables, measuring the items by means of five-point Likert-type scales. Apart from the commitment measure, we used similar measures for all social capital constructs for internal and external social capital in order to maximize comparability. Cognitive capital was measured by items designed by Mohr and Spekman (1994). Structural capital was measured according to Rindfleisch and Moorman (2001).

As introduced by Lee and Cavusgil (2006), relational capital included items concerning trust and commitment. For commitment on the supplier side, Kumar et al. (1994) measures were used, while commitment on the internal side was measured by using items by Rodríguez et al. (2007). Trust was measured taking items from (Kaufman et al., 2006). We further used a general integration construct introduced by Monczka et al. (1998) for supplier integration and (Rodríguez et al., 2007) for internal integration.

According to van der Vaart and van Donk (2008, p. 51), performance was measured on project level in order to *“acquire reliable, less subjective, performance measures*

for the performance of a single relationship”, following measures by Hoegl and Gemuenden (2001) in combination with Tatikonda and Montoya-Weiss (2001), as an alternative to overall and financial performance measures which have been shown to be essential in many surveys (van der Vaart and van Donk, 2008). We include relationship length with the supplier for external social capital and external integration and job tenure for internal social capital and internal integration as control variables (Subramani, 2004).

5.4.3 Analysis approach and psychometric properties

The parameter estimates in the measurement and structural model were obtained by partial least square (PLS) path modeling with latent variables (Fornell and Cha, 1994, Ringle et al., 2005, Wold, 1982). For this paper, the software package SmartPLS (Ringle et al., 2005) was used. SmartPLS uses a series of interdependent ordinary least squares (OLS) regressions to minimize residual variances (Chin, 1998), and has been shown to be suitable to estimate complex structural equation models, particularly to predict dependent endogenous variables (Chin, 1998, Henseler et al., 2009). We used bootstrap re-sampling (Nevitt and Hancock, 2001) with replacement using 1000 rounds in order to assign measures of accuracy to our sample (Schiele et al., 2011b). Missing values were dealt with by mean replacement. The standardized path coefficients associated in our structural model are shown in Figure Nine.

The psychometric properties of the measurement instruments were measured using Smart PLS and SPSS and included reliability, convergent validity and discriminant validity (Burton et al., 2002, Tenenhaus et al., 2005). Since all of our constructs are of reflective nature (Edwards and Bagozzi, 2000), we assessed the internal consistency and reliability with composite reliability (CR) (Fornell and Larcker, 1981, Wetzels et al., 2009), with average variance extracted (AVE), and with factor loadings (Edwards and Bagozzi, 2000, Hair et al., 2006). In order to assess the indicator reliability of the model, the individual item loadings with their respective constructs were analyzed as a first step. In all, seven items were dropped due to insufficient factor loadings. In line with Hulland (1999) we left one external commitment item (0.631) and one external commitment item (0.688) in their respective latent variable, since relational capital was operationalized by adding trust and commitment. All other items well exceeded the 0.7 threshold (Chin, 1998, Henseler et al., 2009).

Concerning the convergent validity, each item strongly correlates with the construct it is related to. Thus, convergent validity is satisfactory because all items load positively and with a significant t-value on their respective constructs ($t > 3.211$). As we show in Table Fifteen, all values exceed the recommended thresholds of 0.5 for AVE, 0.7 for CR (Edwards and Bagozzi, 2000, Fornell and Larcker, 1981, Nunnally and Bernstein, 1994) and 0.7 for Cronbach's alpha (Nunnally and Bernstein, 1994).

	AVE ^b	CR ^b	Cronb. α ^b	1. Ext_Cog	2. Ext_Integr	3. Ext_Rel	4. Ext_Str	5. GS_Suc	6. Int_Cog	7. Int_Integr	8. Int_Rel	9. Int_Str
1. Ext_Cog	0,701	0,875	0,784	0,837	-	-	-	-	-	-	-	-
2. Ext_Integr	0,741	0,895	0,825	0,537	0,861	-	-	-	-	-	-	-
3. Ext_Rel	0,607	0,915	0,890	0,533	0,763	0,779	-	-	-	-	-	-
4. Ext_Str	0,720	0,885	0,806	0,481	0,627	0,708	0,849	-	-	-	-	-
5. GS_Suc	0,604	0,924	0,909	0,274	0,447	0,375	0,227	0,777	-	-	-	-
6. Int_Cog	0,773	0,932	0,902	0,526	0,305	0,270	0,283	0,237	0,879	-	-	-
7. Int_Integr	0,647	0,901	0,861	0,418	0,271	0,233	0,326	-0,063	0,543	0,804	-	-
8. Int_Rel	0,551	0,916	0,896	0,565	0,231	0,321	0,256	0,096	0,664	0,651	0,742	-
9. Int_Str	0,746	0,898	0,829	0,461	0,317	0,355	0,534	0,108	0,472	0,591	0,514	0,864

^a Square root of AVE on the diagonal in bold

^b AVE = average variance extracted; CR = composite reliability; Cronb. α = Cronbach's α

Table 15: Convergent validity, reliability assessment and inter-correlations

To assess discriminant validity for the constructs, we used the Fornell-Larcker Criterion (Fornell and Larcker, 1981), suggesting that the AVE of a latent variable should be higher than the squared correlations between this latent variable and the other latent variables. In this way, the latent variables better explain the variance of their own indicators compared to the variance of other latent variables. Table Fifteen shows that the square roots of the AVE scores (in bold on the diagonal) are all larger than the cross-correlation scores. Since data were collected by using a questionnaire, Harman's one factor test (Podsakoff and Organ, 1986) was used to check for common method variance (CMV) which could influence the modeled relationships. All items were loaded into a principal components factor analysis (PCA) with an unrotated solution. If one general factor were to account for most of the variance, CMV would pose a threat (Podsakoff and Organ, 1986). In our study, the first factor explained 32.53% of the variance. Therefore, CMV is not a concern.

5.4.4 Findings

Predictive validity within the model is medium to high. Approximately half of the variance in relational capital within the firm (50.3%) and in relational capital with the supplier (54.1%) can be explained by cognitive and structural capital. The existence of relational capital accounts for 42.7% of internal integration and for 59.2% of external integration. 20% of global sourcing project success is explained by external integration with the supplier. All estimates have high statistical power exceeding t-values of 1.960.

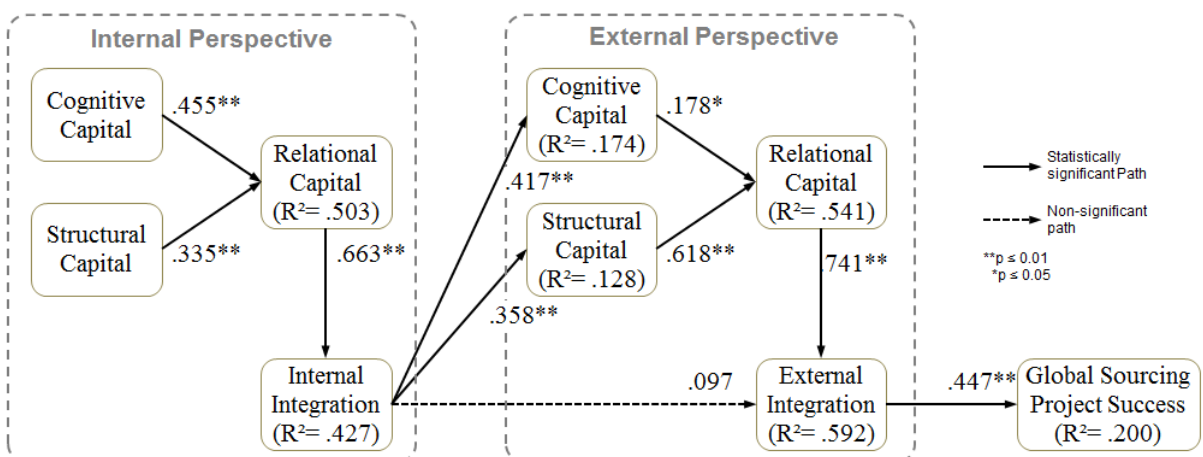


Figure 9: PLS results of the structural model

Path/ Hypothesis	Path Coefficient	t-value
Internal cognitive capital → internal relational capital (H1a)	0.455	5.140**
Internal structural capital → internal relational capital (H1b)	0.335	3.354**
Internal relational capital → internal cross-functional integration (H2)	0.663	9.999**
Internal cross-functional integration → external integration with suppliers (H3)	0.097	1.405 n.s.
Internal cross-functional integration → cognitive capital with suppliers (H4a)	0.417	4.092**
Internal cross-functional integration → structural capital with suppliers (H4b)	0.358	3.265**
Cognitive capital with suppliers → relational capital with suppliers (H5a)	0.178	2.125*
Structural capital with suppliers → relational capital with suppliers (H5b)	0.618	7.420**
Relational capital with suppliers → external integration with suppliers (H6)	0.741	13.651**
External integration with suppliers → global sourcing success (H5)	0.447	4.450**

*p<.05, **p<.01, two-tailed tests. n.s. = not significant

Table 16: Path coefficients

Hypothesis 1 stated that cognitive (1a) and structural (1b) capital have a positive influence on relational capital. These hypotheses are strongly supported: both paths are positive and significant (β 0.455; $t = 5.140$ / β 0.335; $t = 3.354$). In Hypothesis 2, we stated that relational capital has a positive effect on supplier integration. Again, the effect was positive and statistically significant (β 0.663; $t = 9.999$). No empirical support could be found for Hypothesis 3, which was based on the assumption that internal cross-functional integration would lead to external integration with the supplier. The effect was small and not statistically significant in the two-tailed test we performed (β 0.097; $t = 1.405$). We furthermore hypothesized a positive relationship between internal cross-functional integration and cognitive capital with the suppliers (H4a), and internal cross-functional integration and structural capital with the suppliers (H4b). We find support for Hypothesis 4a (β 0.417; $t = 4.092$) as well as for Hypothesis 4b (β 0.358; $t = 3.255$). Similar to internal social capital, cognitive as well as structural capital lead to relational capital with the supplier as suggested in Hypothesis 5a (β 0.178; $t = 2.125$) and Hypothesis 5b (β 0.618; $t = 7.420$), and both are statistically significant and positive. We found strong support for Hypothesis 6, stating that relational capital with the suppliers leads to external integration with the suppliers (β 0.741; $t = 13.651$), and the data suggest that external integration is indeed positively related to global sourcing success as stated in Hypothesis 7 (β 0.447; $t = 4.450$). Our two control variables 1) length of relationship with the supplier and 2) tenure within the job, did not have any statistically relevant effect on our findings.

5.5 Discussion

The accumulation of cognitive and structural capital within an organization has been shown to facilitate the build-up of relational capital (Carey et al. 2011). Thus, the results of Tsai and Ghoshal (1998) as well as Carey et al. (2011) concerning the relationships between the social capital dimensions have been confirmed.

Additionally, the study presents empirical evidence for the existence of a positive relationship between cross-functional integration and the build-up of social capital with suppliers. An insight gained from the results of the research at hand is that internal cross-functional integration does not directly lead to successful external integration with suppliers.

This is somewhat surprising, since, in a recent study, Zhao et al. (2011) found a significant relationship between internal and supplier integration. Our results, instead, indicate the need for an accumulation of social capital with the partnering organization (Villena et al., 2011) as a precondition for successful external integration. Thus, external integration with suppliers is present as a consequence of internal cross-functional integration and, is influenced by social capital between both organizations. Hence, social capital plays a mediating role, suggesting that shared norms and values in connection with social ties pave the way for accessing resources which lie in the relationships and, by so doing, facilitating external integration. The apparently simple link between internal integration and external integration is revealed to be more complicated than expected. The external social capital dimensions and their relationships between each other are congruent to those social capital relationships within the company. Interestingly, the strength of the relationships differs. Whereas, within the company, the cognitive dimension of social capital exerts a stronger positive influence on the relational capital dimension, in the inter-organizational perspective it is the other way around, i.e. for the build-up of relational capital with suppliers, external structural capital is more beneficial than external cognitive capital.

One possible interpretation could be that within a company, cognitive capital in terms of shared values, attitudes, norms etc. (Tsai and Ghoshal, 1998, Uphoff and Wijayaratna, 2000), is more important than the pattern of relationships between individuals or functions (Burt, 1997). In contrast to that, between organizations, the structural dimension of social capital seems to be of higher value than the cognitive one. A potential explanation could be that the membership of an individual in an organization is already equivalent to an initial endowment of structural capital in terms of ties to other organizational members. On the other hand, the existence of shared goals and visions (cognitive capital) might act as a framework for the alignment of actions and initiatives, facilitating the exchange of and access to information that lies in the relationships (relational capital). By contrast, in buyer-supplier relationships shared norms and values are indeed of interest but not as important as the presence of certain contact points in the partnering company, which are the precondition for an exchange of resources, such as information and knowledge. This interesting finding could potentially provide a new avenue for future research on social capital in buyer-supplier relationships. Furthermore, in line with scholars such as Lawson et al. (2008) and Carey et al. (2011), it was confirmed that external integration with suppliers has a significantly positive impact on performance, which we operationalized as global sourcing success.

Taking all aspects into consideration, we have made a significant contribution to operations management literature in so far as we investigated internal as well as external organizational integration under a social capital lens. Additionally, integration was linked to global sourcing performance and new avenues for future research have

been identified. By doing so, the knowledge base of global sourcing has been extended.

According to our data, we were not able to find evidence for the existence of “the dark side of buyer-supplier relationships”, meaning that cognitive structural and relational capital can impede the value-creation in buyer-supplier relationships as proposed by Villena et al. (2011). The main reasons for the presumed negative effects of too much social capital were the reduced ability to make effective decisions as well as increased opportunistic behavior by suppliers (Villena et al. 2011). On the contrary, the overall results of the study underpin the high relevance of integration (internal and external) as well as social capital in buyer-supplier relationships.

To conclude, the study expands the body of knowledge with the following three points. First, social capital theory has been used to explain internal as well as external integration in the global sourcing context. Secondly, we discovered that the strength of the relationships between the social capital dimensions within the buying company differs from those between the buyer and the supplier. Thirdly, it has been shown that there was no direct and significant link between internal cross-functional integration and external integration with suppliers.

Consequently, by investigating the internal perspective as well as the external perspective of social capital and integration, we have made valuable contributions and have paved the way for further research in this domain, e.g. dealing with the differing effect strengths of the social capital dimensions. The results of the study also have implications for management practice. Since social capital accumulation and integration have been shown to be beneficial for global sourcing success, managers should facilitate integrative efforts. To do so, it could make sense to communicate clearly common goals and norms within and between organizations in order to increase the amount of cognitive capital. Furthermore, clear paths among functions and individuals should be defined, in order to create possible contact points and foster the build-up of structural capital. This approach might support the emergence of relational capital and thus allow benefiting from the resources (e.g. knowledge and information) that lie within the relationships, leading to increased integration.

Since global sourcing by definition already involves various aspects of internal as well as external coordination and integration (Trent and Monczka, 2005), the existence of a positive relationship between external integration with suppliers and global sourcing success has been confirmed. Taking this evidence seriously, firms may want to draw their attention more to internal cross-functional integration when facing problems in global sourcing. Some firms may lack maturity for global sourcing – not in terms of language or cultural skills, but in a deficit in internal integration.

Knowing about this positive relationship can support organizations in carefully developing their global sourcing and integration strategies, in order to realize improvement opportunities and to shift toward globally integrated and coordinated sourcing strategies (Salmi et al., 1998, Trent and Monczka, 2005). Consequently, integration is stimulated, potentially leading to improved global sourcing success.

5.6 Conclusion and limitations

Based on the results of our survey, we conclude that internal cross-functional integration can be seen to be a precondition for external integration with suppliers and global sourcing success. Surprisingly, the direct relationship between internal and external integration was not significant, indicating a mediating role of the three dimensions of social capital within this relationship. This highlights the importance of social capital within the firm as facilitator for the development of social capital with external market partners such as suppliers. Put in another way, internal integration is indeed beneficial for external integration under the condition of the presence of social capital. Despite the contributions of this study to the body of knowledge, there are also some limitations. First, only subjective measures have been used to investigate the proposed model, which, however, is a common approach in social sciences (Dess and Robinson Jr, 1984). Secondly, a relatively small sample size (N=82) was used to obtain our data. Despite these limitations, the results are still meaningful, due to the fact that we did structural equation modeling in connection with PLS, which has minimal requirements on sample size, measurement scales, as well as residual distributions (Chin, 1998). Furthermore, van der Vaart and van Donk (2008) argue that high response rates as in our case should increase generalizability. Thirdly, data were collected from within only one German automotive OEM. Thus there might be a bias stemming from idiosyncratic characteristics of the chosen industry, reducing to some extent the generalizability of the results. On the other hand, the industry bias has been alleviated to some extent by surveying the purchasers regarding purchased items from a variety of industries such as plastics, metal or electronics from different countries.

5.7 Abstract for journal / keywords

Abstract

This quantitative research paper aims at identifying the role of the buying companies' internal and external integration with suppliers under a social capital lens. Survey data suggest that internal integration is a precondition for external integration with suppliers, which accordingly has a strong positive influence on global sourcing success. Surprisingly, the direct relationship between internal and external integration was not significant, indicating a mediating role of social capital within this relationship. The originality lies in the use of the social capital theory and its three dimensions: cognitive, structural and relational capital for both internal and external integration, and in the connection between integration and global sourcing success.

Keywords: Global Sourcing, Integration, Social Capital

5.8 Appendix – measures

Construct	Item	Load	CR	AVE
Internal Cognitive Capital (Mohr and Spekman, 1994)	Other departments participate in goal setting	0.914	0.932	0.773
	Other departments participate in planning activities.	0.901		
	We encourage other departments to come with suggestions for improvements.	0.825		
	Other departments participate in forecasting activities.	0.875		
Internal Structural Capital (Friedleisch & Maccran, 2001)	Our employees share close social relationships with the employees from other departments.	0.833	0.856	0.665
	We like to spend time with employees from the other departments	0.865		
	We spent a long time working together with other departments.	0.743		
Internal Relational Capital Trust (Kaufman et al., 2006; Rodriguez et al. 2007) Commitment (Rodriguez et al. 2007)	We can count on other departments to follow through on their promises.	0.755	0.917	0.581
	When making decisions, other departments consider our business interest as well as their own.	0.756		
	We trust that other departments keep our best interest in mind.	0.762		
	Other departments are sincere and honest with us.	0.850		
	We believe the information, other departments provide.	0.819		
	My department is committed to the relationship with other departments.	0.675		
We consider other departments as part of ours.	0.820			
My department cares for the working relationship with other departments.	0.688			
Internal Integration (Rodriguez et al. 2007)	Our departments help each other to accomplish their tasks in the most effective way.	0.822	0.901	0.647
	The departments try to achieve goals jointly.	0.817		
	The departments share ideas, information and/or resources.	0.768		
	The departments work together as a team.	0.802		
	The departments take the project's technical and operative decisions together.	0.888		
External Cognitive Capital (Mohr and Spekman, 1994)	We let the supplier participate in goal setting.	0.872	0.875	0.701
	We let the supplier participate in planning activities.	0.885		
	We encourage the supplier to come with suggestions with improvements.	0.747		
External Structural Capital (Friedleisch and Maccran, 2001; Choi and Hartley, 1996)	Our employees share close social relationships with the employees from the supplier.	0.826	0.849	0.653
	We like to spend time with employees from the supplier	0.823		
	The after sales support is good	0.774		
External Relational Capital Trust (Kaufman et al., 2006; Rodriguez et al. 2007) Commitment (Kumar et al. 1994)	When making decisions, the supplier considers our business interest as well as its own.	0.803	0.915	0.608
	We trust that the supplier keeps our best interest in mind.	0.823		
	The supplier is sincere and honest with us.	0.851		
	We believe the information, the supplier provide.	0.768		
	It is pleasant working with the supplier that is why we continue the relationship.	0.863		
	We want to remain a customer of the supplier.	0.688		
Our decision to remain customer of the supplier is also based on the attraction to the things that the supplier represents as a company.	0.631			
External Integration (Menczka et al., 1998)	The supplier makes an effort to help us during emergencies.	0.840	0.895	0.741
	When an agreement is made, we can always rely on the supplier to fulfill requirements.	0.850		
	Please indicate the overall degree of results satisfaction in comparison to your most successful global sourcing project.	0.891		
Sourcing Success (Hoegl and Gemuenden, 2001; Tatikonda and Montoya-Weiss, 2001)	From the departments perspective one could be satisfied with how the project progressed.	0.845	0.924	0.604
	Overall, the project was done in a cost-efficient way.	0.717		
	From the companies perspective, the project goals were achieved.	0.889		
	The project was within schedule.	0.702		
	The original product performance objectives were met.	0.802		
	The original product unit-cost objectives were met.	0.748		
	The original time to market objectives were met.	0.754		
	We received the planned and budgeted amount of goods.	0.743		

Table 17: Measures

6 Discussion

6.1 Introduction

The management consultant and business historian Peter Drucker claims sourcing and logistics to be *“the darkest continent of business - the least exploited area of business for competitive advantage”*.

This research targeted two major goals. The first aim was to understand the degree of truth in the notion of global sourcing as a purchasing panacea, as often argued by practice and theory. Secondly, factors enabling or inhibiting global sourcing success were to be identified and researched.

In this concluding chapter of the thesis, the key findings of the four research chapters will be discussed and contributions for research and managerial practice will be presented. After some elaborations on methodology and sample, the limitations of the thesis at hand, together with avenues for future research, will be discussed.

6.2 Main findings

In the second chapter, a content-based literature review on global sourcing was carried out, and provided a point of departure for the research at hand. Among the papers analyzed, the claimed effects of global sourcing on a company's performance vary strongly, ranging from high cost-savings to even negative performance impacts, despite similar research setups. Furthermore, the analysis showed that global sourcing success is mostly analyzed in isolation, rather than in comparison with other potential sourcing tactics. Therefore the saving potential offered through global sourcing is being compared to six other important sourcing levers, derived from the literature.

As a consequence, the analysis of ex-ante secondary data showed that global sourcing indeed can result in meaningful expected cost savings, although some other investigated sourcing levers, such as pooling of demand, provided higher saving potentials. Moreover, certain sourcing tactics impede others, e.g. global sourcing has been shown to affect negatively the success of pooling of demand.

The data indicated the existence of two coherent sourcing strategies, namely innovation-oriented and cost-oriented sourcing strategies.

Since global sourcing is an essential part of cost-oriented sourcing strategies, it was worth carrying on investigating global sourcing. As a result, the guiding objective of the subsequent chapters was first to execute an ex-post global sourcing analysis in order to clarify the ambivalent picture. Subsequently it was analyzed what can be done in order to achieve the largest benefits from global sourcing, i.e. an investigation of global sourcing success factors.

In the third chapter, descriptive statistics together with single linear regression reveal that more than three quarters of the analyzed global sourcing projects do not reap the expected benefits. Moreover, we show a negative correlation between expected

cost savings and operational performance. This leads to the emergence of direct-turbulence and opportunity costs. Furthermore, purchased projects are back-sourced to established suppliers from highly industrialized countries – a phenomenon that we call the birth of an “ugly twin”.

Having shown that poor evaluations of global sourcing opportunities can deflate the intended beneficial effects, in the fourth chapter the role of internal cross-functional integration for global sourcing success has been evaluated. This was done because missing integration is often described as a main reason as to why companies struggle to harvest the benefits of global sourcing. Based on reviewing both the literature and interviewing experts from various plants, it is concluded that clear integration-, information-, and target setting strategies are important success factors and could strengthen the positive effects of global sourcing.

Finally, the fifth chapter further elaborated on integration as the driver of success. In order to develop a more detailed picture, internal cross-functional-, as well as external integration with suppliers has been empirically investigated under a social capital lens. By applying the social capital theory as a framework, we furthermore reacted to the call of scholars, asking for a stronger reliance on theories in a supply chain management context. The results of the study reveal that external supplier integration is a significant success factor of global sourcing, whereas internal integration is particularly conducive to global sourcing success under the precondition that social capital exists between the different functions and between the organizations.

In conclusion, the thesis at hand explored the effects, the success factors, as well as the threats of global sourcing, by stepwise diving deeper into the facets of global sourcing. By so doing, the ambivalent picture became clearer through the quantitative and qualitative research performed throughout this dissertation.

6.3 Implications and contributions

The work has been written in close collaboration with a German automotive OEM, and the research framework follows the structure for scholarly research in a business context as suggested by Ulrich (1981), intertwining research and feedback loops. Many of the findings have by now found their way into business practice and are being embedded in the business intelligence sector and in new purchasing system concepts of the focal company, providing data for chapters three and five. Given the close connection of the researcher to practice as well as to the scientific community, apart from the managerial contribution, the dissertation at hand has various relevant implications for theory as well.

6.3.1 Implications from chapter two

Estimating cost-saving potential from international sourcing and other sourcing levers: relative importance and trade-offs

Core Elements:

- Clarification of the ambiguous picture of international sourcing prevailing in the literature
- Investigation of diverse sourcing levers
- Comparison of the respective cost-saving potentials offered by each lever
- Identification of trade-offs between the levers
- Derivation of consistent sourcing strategies that benefit from synergies between the selected levers
- Comparison of cost- vs. innovation oriented sourcing strategies

Theoretical contribution

Chapter two - to the best of our knowledge- is the first empirical analysis to compare a comprehensive 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, based on empirical findings from a wide array of workshop participant opinions. In this way, this chapter contributes to the design and validation of a holistic sourcing approach.

Apart from contributions to the somewhat tactical field of sourcing levers, 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.

This 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 (Bozarth et al., 1998, Kotabe and Omura, 1989, Murray et al., 1995). Data from the workshops suggest that international sourcing is responsible for no more than a fifth of the total potential savings. Therefore, the difficulties in establishing a link between the level of international sourcing activities and a firm’s success become clear.

Managerial contribution

From a managerial perspective, the data suggest that it is advisable to engage in a balanced sourcing approach rather than solely to focus on international sourcing. Managers should decide on which sourcing tactic to choose after a case-by-case consideration depending inter alia on the nature of the product or the relationship

types typically found in an industry, and under cross-functional integration of all relevant partners.

Furthermore, the existence of two coherent sets of sourcing strategies emerges, first a cost oriented and second an innovation oriented sourcing strategy.

The first set entails a cost leadership focus, employing a mix of international sourcing, price evaluation and (if applicable) pooling with other business units from the same group of firms. The second strategy is one of differentiation and involving the product optimization and supplier integration levers, supported by process improvement strategies.

Managers should be careful to combine and blend the two general strategic directions. While some levers form powerful combinations, other combinations of levers may lead to trade-offs which might, at worst, neutralize the effects of the selected sourcing lever. Following this logic, we question the effectiveness of global sourcing quotas due to their potentially negative effect because of trade-offs.

In conclusion, we show that expected savings from global sourcing tend to be moderate, also in comparison to other levers, and this can dampen managerial expectations from global sourcing. Furthermore, we show that an innovation-oriented strategy focusing on joint product optimization and supplier integration e.g. in a domestic environment, can be a sound alternative to a mere global sourcing strategy.

6.3.2 Implications from chapter three

The “Ugly Twins”: Failed Low-Wage-Country Sourcing Projects and Their Expensive Replacements

Core Elements:

- Investigation focusing on the real effects of cost-oriented sourcing from China
- Showing how savings from LCC's are often overrated
- Analysis of operational and financial implications from failed sourcing projects
- Sourcing from low-wage countries – particularly from China – can result in high costs due to back-sourcing
- Coining of the term “ugly twins”
- Identification of potentially negative influences of industry recipes
- Suggestion as how to extend calculation methods for the profitability assessment of global sourcing projects

Theoretical contribution

The third chapter has various implications for sourcing theory in general and low-wage-country sourcing in particular.

Within the field of performance measurement in the sourcing context, the chapter is one of the few works to analyze global sourcing success with ex-post real data from a company data warehouse.

The study introduces the ratio of budgeted vs. received volumes as a novel measurement – call-offs – as a reliable proxy for a series of operational issues involved in low-wage country sourcing, mainly relating to quality, production and logistics.

The approach of considering “one part - multiple suppliers” combinations and not just a single project reveals the novel concept of the “ugly twins”. This concept expands the perspective of research on low-wage-country sourcing, by drawing attention to failed projects and their substitutes, suggesting the need for a re-evaluation of low-wage country sourcing success assessments.

Concerning the “ugly twins”, this study expands the theory on the *total cost of ownership* approach. We demonstrate the need to include the turbulence and opportunity costs of failed projects which so far have been neglected in the literature. In that sense, the data suggests the need for a re-evaluation of low-wage country sourcing success assessments of the past.

Finally, the “ugly twins” concept has implications beyond the sourcing context. One might well imagine that the same phenomenon applies to other types of projects, for instance, failed collaborative new product developments.

Managerial contribution

The first managerial contribution concerns the way in which managers may benefit from employing extended calculation methods when engaging in an ex-post global sourcing analysis. Call-off rates are offered as a relevant and simple proxy measure for overall operational performance. Furthermore, in such an analysis, sourcing projects should not be evaluated in isolation, but in the context of possible effects on the existing supply situation.

Our study also sheds light on the real effects of China-sourcing, as a popular example of low-wage-country sourcing. We show that, in our sample, the results are ambivalent at best. Similarly to the managerial implications of chapter two this may alert management to the need to examine thoroughly alternatives before engaging in risky low-wage-country sourcing activities. Projects should be evaluated individually, following a realistic balanced sourcing approach, including an ex-post controlling – for “ugly twins”.

Finally, due caution is suggested in proceeding with low-wage-country or global sourcing, in particular when such projects seem very promising. The initiators of such projects might not have considered all barriers and moderators and might be merely following a standard industry recipe, i.e. imitating successful firms’ business practices.

6.3.3 Implications from chapter four

Integration in the Buying Centre for Global Sourcing Ventures: an Exploratory Study within the Automotive Supply Chain

Core Elements:

- Identification of integration challenges in a cross-functional integration process
- Presentation of reasons why companies are often not able to benefit from global sourcing practices
- Highlighting the importance of clear and consistent integration-, information-, and target setting strategies for successful decision making
- Elaborations on the essential role of cross-functional integration for global sourcing

Theoretical contribution

Apart from a few examples which warn about too intensive integration (Villena et al., 2011), the literature is clear about the importance and positive effects of integration (Fabbe-Costes and Jahre, 2007). Also in the global sourcing surroundings, integration has been argued to be of crucial importance (Trent and Monczka, 2003b). However, the literature has been rather nondescript regarding suggestions as to how the different functions should integrate. In this context, this research takes an early step in changing integration research in the global sourcing context from descriptive to prescriptive. Furthermore, the chapter raises questions for future research, of which some have been tackled in other parts of this dissertation.

Managerial contribution

The firms analyzed seem have reached a point where further sourcing and particularly global/low-cost country sourcing success will not come from increased efficiency within the single parts of the organization, but from the clear integration of larger parts of the organization into the procurement decision making. Particularly in the global sourcing context, different sets of influencing factors will tend to affect the sourcing project, and these have not been tackled by traditional purchasing organizations. In that sense, we suggest in particular that purchasing managers closely integrate their operations with other functions. However, increased integration has been shown to make decisions slower, broaden the human resource base, and make an organization more complex and expensive (Das et al., 2006). Therefore we suggest the extensive use of IT based tools and the utilization of modern electronic communication methods.

6.3.4 Implications from chapter five

Internal integration as a pre-condition for external integration in global sourcing: a social capital perspective

Core Elements:

- Empirical investigation, how internal and external integration facilitate global sourcing success
- SCT as theoretical framework
- Mediating role of the social capital dimensions between internal and external integration
- Internal integration is a prerequisite for external integration under the condition that social capital is present
- Surprising: There is no significant direct link between internal and external integration
- Within organizations, cognitive capital seems to be particularly beneficial; between organizations structural capital has a stronger impact

Theoretical contribution

The study has three core theoretical contributions. First, the study, to the best of our knowledge, is the first to employ the social capital theory to explain internal as well as external integration in the global sourcing context. Furthermore, integration was linked to global sourcing performance.

By extending research on cross-functional internal and dyadic integration with the social capital perspective, it can be shown that the strength of the relationships between the social capital dimensions within the buying company differs from those between the buyer and the supplier. Whereas, from an internal perspective, cognitive capital seems to be most important for the build-up of relational capital and hence integration, from an external perspective structural capital seems to be more important for the build-up of relational capital and eventually an integration across the boundaries of the firm. Surprisingly, it has been shown that there was no direct and significant link between internal cross-functional integration and external integration with suppliers, calling for further research.

Finally, since global sourcing by definition already involves various aspects of internal as well as external coordination and integration (Trent and Monczka, 2005), the existence of a positive relationship between external integration with suppliers and global sourcing success has been confirmed. We were not able to find evidence for the existence of “the dark side of buyer-supplier relationships”, meaning that cognitive structural and relational capital can impede the value-creation in buyer-supplier relationships as proposed by Villena et al. (2011) due to e.g. lock-in effects. Quite the contrary, the overall results of the study underpin the high relevance of integration (internal and external) as well as social capital in buyer-supplier relationships.

Managerial contribution

The results of the study also have implications for management practice. Since social capital accumulation and integration have been shown to correlate positively with global sourcing success, managers should facilitate integrative efforts.

However, as data from the survey show, the path coefficients of social capital differ between internal and external social capital accumulation. Regarding the internal perspective, managers should be advised to communicate clearly common goals and norms, particularly within the organization, in order to increase the amount of cognitive capital. Between organizations, clear paths between functions and individuals should be defined, in order to create possible contact points and foster the build-up of structural capital. According to the data of the research at hand, this approach might support the emergence of relational capital and thus allow benefiting from the resources (e.g. knowledge and information) that lie within the relationships, leading to increased integration.

Finally, it can be concluded that some firms may lack the organizational maturity for global sourcing – not in terms of IT-system support, language or cultural skills, but in terms of a deficit in internal integration. Knowing about this positive relationship can support organizations in carefully developing their global sourcing and integration strategies, in order to realize improvement opportunities and to shift toward globally integrated and coordinated sourcing strategies (Salmi et al., 1998, Trent and Monczka, 2005).

6.4 Methodology and sample

At the beginning of this thesis the question about the appropriate method to be employed was extensively debated.

Coming from a growing interest in the field, researchers such as Matthysens (2007) or Karlsson (2009) have called for operations management (OM) research to incorporate paradigmatic tolerance and pluralism. Furthermore, there has been the call to use mixed methods and to intertwine theory, data and interpretation. Matthysens states (2007, p. 221): “...it is our conviction that triangulation of methodology will be the best for the development of P&SM theory”.

The overall framework of the research at hand follows this call and is based on a triangulation of methods, notably findings from qualitative and quantitative research with data stemming from primary and secondary channels.

Despite the fact that quantitative and qualitative methods are different, they are not incommensurate with each other (Burrell and Morgan, 1979). The thesis contains three quantitative chapters (two, three and five) and one qualitative chapter (four). Whereas the term qualitative research means different things to different people (Denzin and Lincoln, 1994), qualitative research is more concerned with interpretation and perception of structures than with a rational objective truth (Croom, 2009). Quantitative research in contrast will generally be based upon a natural

science model (Bryman and Bell, 2007), “*setting out to test hypotheses in order to build upon an existing body of knowledge*” (Croom, 2009, p. 66).

Data serving as the basis for scientific research can be gathered from both primary and secondary channels (Cooper, 1998). Whereas primary data are specifically gathered for the research, secondary data are originally gathered for other reasons and analyzed by the researcher. Using both types of data however, will eventually lead to richer constructs and conclusions (Cooper, 1998, Cowton, 1998, Matthyssens, 2007). This thesis contains two chapters using primary data (chapters four and five) and two chapters using secondary data (chapters two and three).

Since chapters two and three deal with performance implications of global sourcing, the use of secondary data could be considered as advantageous in the respective research settings. As has been suggested in chapter two, research about the actual success of global sourcing might be prone to social desirability biases (Fisher, 1993, Pagell, 2004), and the perceptual measure of performance has been shown to be difficult (Ketokivi and Schroeder, 2004). Furthermore, survey respondents could have had different ways of understanding performance questions, and questionnaires would require extensive explanations.

Data for chapters four and five can be considered as primary data since they were gathered specifically for the research at hand. The research was concerned with institutional implications to global sourcing stemming from interactions between people and organizations, also described as the human element in operations management research (Hayes and Wheelwright, 1984). Furthermore, difficult to observe latent constructs such as trust and commitment were analyzed, calling for primary data.

Moreover, it has been largely argued that business management research should not only be rigorous but also relevant to practice (see for instance Hoffmann, 2011, Matthyssens, 2007, Starkey et al., 2009, Van de Ven, 2007). Using data gathered in a business context reduces the likelihood of the results being considered irrelevant by practitioners. Karlsson (2009, p. 13) writes: “*the connection to practice makes relevance a major criterion for good operations management research*”. All data used in this thesis were directly gathered “on-site” with the primary researcher permanently present. All findings were intensively discussed with purchasing managers and many of the findings were incorporated directly into the business strategy, showing the relevance of the findings to practice.

Chapter two is a quantitative analysis of data from a consultancy database, designed as the basis for sourcing lever workshops. In those workshops, cross-functional participants decide on an appropriate strategy for a commodity group. Data were gathered from 134 workshops in the German manufacturing industry, representing 7,000 workshop hours. Data can be considered relevant and unbiased due to several facts. First, the rigid setup of the workshops ensured that respondents had a consistent understanding about the various sourcing levers analyzed. Furthermore, the workshop design prevents answers from being subjected to social

desirability issues resulting from global sourcing being seen as a universal approach to respond to competition (Steinle and Schiele, 2008). Since the data were primarily collected for different reasons, they can be considered as secondary data (Cowton, 1998).

The **third chapter** is a quantitative analysis of data from a multi-billion Euro turnover automotive OEM data warehouse. Data were extracted in a data mining process from data related primarily to administration, contracts, billing procedures and consumption recordings. In total, 214 sourcing projects from China to Germany were analyzed. Based on existing measures, a new measure was introduced, “call-off rate” as a global success performance measurement tool. Data stem from one buyer (an automotive OEM), and refer to one country (China) and one industry (automotive parts). This research setup offers benefits in terms of the reduction of confounding factors, but might pose limitations in terms of external validity. Furthermore, by utilizing direct business data, reliability issues associated with survey responses are reduced.

Chapter four is a qualitative field-based analysis (Lewis, 1998). The research approach was chosen due to three main reasons (Meredith, 1998). First, the research field of internal and external integration in the global sourcing context is still in an early stage, so that variables are still unknown and the phenomena are not totally understood. Secondly, questions circled around how and why, aiming at a general understanding (Yin, 2008). Thirdly, the phenomenon was to be studied in the natural setting through the observation of actual practice. The study was based on extensive interviews with six companies from the German automotive supply chain. In total, 15 respondents from various functions were interviewed in order to reduce single informant bias and social desirability issues (Kotabe and Murray, 2004, Lockström, 2007, Murray, 2001). Data from the interviews were inserted into an array which was then scrutinized from the point of view of case and cross-case patterns (Eisenhardt, 1989, Pagell, 2004, Voss, 2009).

The last research **chapter (five)** is a quantitative study, based on survey data gathered within a German automotive OEM. 82 purchasing managers in Germany were interviewed in an online survey. The analysis consisted of items regarding relationships within and outside the boundaries of the firm. Only proven measures were used, and whenever possible the same measures were used for the internal and the external perspectives. Structural Equation Modeling (SEM) was used to investigate the relationships between the latent variables. The Partial Least Squares (PLS) method was used due to minimal requirements on sample size, measurement scales, and residual distributions. Internal consistency and reliability were assessed through Composite Reliability (CR), Average Variance Extracted (AVE) and factor loadings. The discriminant validity was assessed through the roots of AVEs and Harman’s one factor test (Bass et al., 2003, Fornell and Larcker, 1981, Henseler et al., 2009, Hulland, 1999). A content based literature review conducted in the course of the study showed a strong dominance of the “Resource Based View” (RBV) and “Transaction Cost Economics” (TCE) within similar research settings. However, since it has been argued that integration in itself is a social process (Hughes and Perrons, 2011) the “Social Capital Theory” has been chosen as the backing theory for this chapter.

6.5 Limitations and further research

The study has several general limitations. First, in all chapters, only large firms were considered. It has been argued that large sized firms should be equipped with the resources required to engage in successful global sourcing, enabling them to overcome the barriers associated with global sourcing (Lockström, 2007, Quintens et al., 2006b). Therefore, considering small and medium-sized enterprises (SMEs) in a similar research setting would open up a window of opportunity regarding differences. Furthermore, it would be interesting to understand in what way close proximity and uncomplicated access to information and managers from other functions in SMEs could contribute to global sourcing success, and thus compensate for shortcomings such as missing local sales and purchasing representations, and having less experience.

Apart from chapter three, which observes data from three consecutive years, the study is cross sectional and the results only provide a picture at a given instant. Engaging in a longitudinal study, particularly for chapter five as a quantitative study, would also strengthen the argumentation about causality.

Apart from chapter two, all data were gathered in the automotive industry; therefore one has to be cautious about the external validity of the study. It has, however, been argued that the automotive industry can be described as having a trend anticipating character. Furthermore, automotive components stem from various kinds of material clusters, such as plastics, metal or electronics, increasing external validity to some extent.

Despite some general limitations, the respective chapters are subject to particular limitations as described below. Data for **chapter two**, regarding the different sourcing levers in comparison, stem 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 particularly cautious procedure. It should be emphasized that specific firm characteristics must be considered in developing a sourcing strategy (Akesson et al., 2007).

The much emphasized 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.

The 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.

Chapter two paves the way for various new research endeavors. The data were gathered ex-ante. An ex-post analysis could provide interesting insight, particular under the “ugly twin” perspective from chapter three.

A further interesting research stream lies in the operationalization of the choice of the various levers. Within the material groups, differing tactics are used simultaneously. Data from the workshops, however, indicate that not all tactics can be applied simultaneously. Therefore the question arises under which contingencies which

tactics should be used, such as industry surroundings, part idiosyncrasies, leading to an empirically validated decision.

The main limitation for **chapter three** regarding performance measurement for global sourcing and the “ugly twins” lies in the fact that data are obtained from one buyer (the focal firm), refer to one country (China) and one industry (automotive parts). This research setup offers benefits in terms of the reduction of confounding factors influencing the results of our analyses. However, there are also limitations due to the research setup, particularly in terms of external validity. Apparently, some of the findings might be owing to the research setup of a single firm case study. In this structure, the unique peculiarities in the focal firm’s strategy or corporate culture may influence the results.

Furthermore, the data analyzed consist of ex-works prices. Logistics and duty costs are included in the decision-making stage, but the data warehouse does not yield reliable information which can be allocated to individual projects. Further studies should consider such costs in an ex-post review of savings potential. Despite a small, but statistically significant negative correlation between call-off rate and cost saving, the number of cases sets some limitations to the study and gives it a rather explorative character. The question arises as to whether the findings in the context of the sourcing market of China can be generalized to all low-wage-country sourcing projects, also regarding the magnitude of savings. Given the above mentioned constraints, a multi-industry multi-country research setup covering a sample from various industries seems advisable.

Given the negative correlation between financial and operational performance, another interesting avenue of research would be to analyze the impact of the various factors known to constrain global sourcing. According to a classification by Quintens et al. (2006b), five major blocks of influencing factors can be identified. First, product related barriers such as product complexity, quality issues or regular design changes; second, firm/management related influences such as lack of resources needed or foreign supplier image; third, network aspects such as JIT requirements, fourth, industry/competition aspects, and finally and fifth, environmental aspects such as import quotas or the country of origin image. Future research should engage in a factor analysis in order to identify contingencies for global sourcing on a country and product level and also take supplier idiosyncrasies into account.

Throughout the course of the dissertation project many managers were interviewed and findings were widely discussed. Particularly among purchasing personnel the majority of managers were convinced about the benevolent effects of global sourcing despite considerable evidence to be prudent. Within recent years the field of behavioral operations has been evolving into a recognized domain of research (Bendoly et al., 2010). In particular, aspects from cognitive dynamics such as heuristics and biases would be an interesting path to follow. In this respect, the initiation of global sourcing projects has been argued to be based on mimetic and normative isomorphisms (Di Maggio and Powell, 1983), also referred to as psychological leader-follower (Kotabe and Mol, 2006) and bandwagon effects (Schweller, 1994). The concept originates from the sociological notion of isomorphism. When isomorphism occurs in a process of cognitive simplification (Reger and Huff, 1993), market actors copy an industry “recipe” (e.g. international or

global sourcing), expecting to make beneficial, rational and safe decisions (Spender, 1989).

Data from interviews with purchasing managers and the negative correlation between call-offs and savings indicate the existence of such phenomena. However, an empirical verification would be an interesting path for further research.

To sum up, the results reveal somewhat negative effects of low-wage-country sourcing on the focal firm. However, particularly among practitioners, it has been argued that low-wage country sourcing is a successful means of introducing increased competition to the supply base of high-wage countries. The implementation of low-wage-country sourcing initiatives may lead to positive long-term effects not reflected in our study.

This particular aspect would be interesting to analyze from a competitive dynamic and competitive rivalry perspective (Hitt et al., 2012), under the assumption that firms are mutually interdependent and that a firm's competitive actions have noticeable effects on its competitors. In that respect an analysis regarding the different market cycles would be most valuable since effects have been shown to be contingent upon market cycle speed.

Chapter four is subject to various limitations due to the method chosen and the research setup. A researcher entering the field will almost certainly bring a certain bias with him (Leonard-Barton, 1990), and personal biases will shape what the researcher sees or hears (Voss, 2009). In order to counter this, interviews were transcribed directly and written summaries were sent out to the managers interviewed after the interviews. Furthermore, this research draws on a very limited number of cases. Therefore, drawing generalizable conclusions can be difficult. Finally, the exploratory character of the study and the focus on the automotive industry might set a limit to the possibility of generalizing the findings. The choice of companies from various parts of the supply chain echelon, including second and first tier suppliers together with automotive OEMs however, shall increase external validity.

Chapter five is subject to various limitations and offers a number of possibilities for further research. First, only subjective measures have been used to investigate the proposed model, which, however, is a common approach in social sciences (Dess and Robinson Jr, 1984). Secondly, a relatively small sample size (N=82) was used to obtain our data. Despite these limitations, the results are still meaningful, due to the fact that we did structural equation modeling in connection with PLS, which has minimal requirements on sample size, measurement scales, as well as residual distributions (Chin, 1998). Furthermore, van der Vaart and van Donk (2008) argue that high response rates, as in our case, should increase generalizability. Thirdly, data were collected from within only one German automotive OEM. Thus there might be a bias stemming from idiosyncratic characteristics of the chosen industry, reducing to some extent the generalizability of the results. On the other hand, the industry bias has been alleviated to some extent by surveying the purchasers regarding purchased items from a variety of industries such as plastics, metal or electronics from different countries.

The chapter opens a wide field for further research. First it would be interesting to analyze reasons for the “missing (direct) link” between internal integration and external integration. Whereas existing research is based on a positive assumption about the effects of integration, we could not establish that link in our analysis.

Further research potential lies in the differing effect strengths between the dimensions of social capital, particularly between the internal and external perspectives. Furthermore there seems to be a rather large research gap concerning the tools and possibilities specifically to improve cognitive or structural capital.

7 Academic Output per Chapter

Chapter two

This chapter is based on: Schiele, H.; Horn; P.; Vos, B. (2011).

“Estimating cost-saving potential from international sourcing and other sourcing levers: relative importance and trade-offs”

- The paper has been published in the “International Journal of Physical Distribution & Logistics Management” 41 (3), 315-336.
- ISI impact factor 2011: 1.038; Scopus impact factor: 2, 689

An earlier version has been presented at:

- 16th EurOMA Conference in Göteborg (Sweden), 2009

Chapter three

This chapter is based on: Horn, P.; Schiele, H.; Werner, W. (2012).

“The “Ugly Twins”: Failed Low-Wage-Country Sourcing Projects and Their Expensive Replacements”

- The paper has been accepted for publication in the: Journal of Purchasing and Supply Management
- ISI impact factor 2011: 1.061; Scopus impact factor: 2,192

Earlier Versions have been presented at::

- 16th EurOMA Conference in Göteborg (Sweden), 2009
- Scientific Symposium in Wolfsburg (Germany), 2010
- 26th IMP conference in Budapest (Hungary), 2010
- 17th EurOMA conference in Porto (Portugal), 2010

Chapter four

This chapter is based on: Horn, P. (2012).

“Integration in the Buying Centre for Global Sourcing Ventures: an Exploratory Study within the Automotive Supply Chain”

Earlier Versions have been presented at::

- Research Colloquium, School of Humanities & Social Sciences - Jacobs University Bremen (Germany), 2009
- 18th IPSERA Conference - doctoral workshop in Wiesbaden, (Germany) 2009
- 2nd EIASM – EurOMA workshop on journal publishing for non-native English-speaking researchers in OM and NPDM in Nice (France), 2009
- 17th IPSERA - IFPSM Summer School in Salzburg (Austria), 2010
- Autouni Research Colloquium 2010, Wolfsburg (Germany)

Chapter five

This chapter is based on: Horn, P.; Schiele, H.; Scheffler, P. (2012).

“Internal integration as a pre-condition for external integration in global sourcing: a social capital perspective”

- The paper is in the second round for the: International Journal of Production Economics
- ISI impact factor 2011: 1.760; Scopus impact factor: 2, 278

Earlier Versions have been presented at::

- Autouni Research Colloquium 2011, Wolfsburg, Germany
- IPSERA node meeting 2012, Twente Enschede, the Netherlands

19th EurOMA conference 2012 Amsterdam (the Netherlands)

8 Samenvatting (Summary in Dutch)

Ondanks het feit dat bedrijven en individuen al sinds de oudheid globaal inkopen en aankopen, heeft dit onderwerp de afgelopen jaren steeds meer aandacht van managers en onderzoekers gekregen. Onderzoekers beweren dat globale business transacties tijdens de afgelopen decade drie keer sterker zijn gegroeid dan landelijke transacties en dat deze trend blijft aanhouden. (Bowersox and Calantone, 1998, Kusaba et al., 2011)

Het onderzoek gebruikt een triangulatie van methodes, in het bijzonder een mix uit kwantitatief en kwalitatief onderzoek dat op primaire en secundaire data is gebaseerd. Het bestaat uit vier zelfstandige wetenschappelijke verslagen die door een coherente en wetenschappelijke rode draad met elkaar verbonden zijn. Voornamelijk werpt dit onderzoek licht op het ambivalente beeld, dat global sourcing in de supply chain management literatuur oplevert.

In hoofdstuk twee (international sourcing and other sourcing levers) worden de kostenbesparende potentialen van globale aankoop (global sourcing) met zes andere, al bekende primaire sourcing hefboomen (levers) vergeleken. Het behandelt de perceptie van global sourcing als een panacee voor aankoop en de daadwerkelijke resultaten van global sourcing. Bovendien worden voor- en nadelen tussen sourcing levers analyseert en aanbevelingen gegeven. Dit hoofdstuk bevat ook gefocusseerde literatuur herziening (content based literature review) welke de overall resultaten van global sourcing in kaart brengt. Het onderzoek maakt gebruik van secundaire data van een aankoop consultancy bedrijf, namelijk van 134 workshops en over 7.000 uren materiaal van workshop discussies. De uitkomsten van workshops werden in een gestandaardiseerde wijze opgenomen en in een database opgeslagen. Het verslag is de eerste empirische analyse om een uitgebreid aantal van sourcing levers met elkaar te vergelijken. Meer gespecificeerd is dit het eerste verslag die internationaal aankoop in een ruimere context, dan alleen kostenbesparende initiatieven van bedrijven opvat en op empirisch bevinding afkomstig van een groot aantal ervaringen van workshop deelnemers gebaseerd is. Voor management aanbevelingen suggereert de data dat het beter is een balanceerde aankoop strategie te hebben, dan een eenzijdige focus op internationaal aankoop en kostenbesparing.

Hoofdstuk drie (the ugly twins) benadert global sourcing succes vanuit een kwantitatief perspectief en werpt licht op de ambivalente en vaak overschatte resultaten van global sourcing. Descriptieve statistieken samen met single lineaire regressie openbaren dat meer dan drie kwartier van de analyseerde global sourcing projecten niet de verwachte positieve resultaten opleverden. Bovendien bevatten aankoop projecten van laag-inkomen-landen (low-wage-countries) zogenaamde lelijke tweelingen (ugly twins). Ugly twins bedoelt het terugvallen naar leveranciers van landen met hoog-inkomen en dus hogere kosten. Het hoofdstuk is gebaseerd op secundaire data, in dit geval op data van leveranciers uit een datawarehouse van een automobiele OEM. Binnen het gebied van performance metingen in de aankoop is dit hoofdstuk een van de weinige verslagen, die global sourcing succes met echte ex-post data van een bedrijf analyseert. Verder expandeert deze studie de theorie die op het gebied van “total cost of ownership” gebaseerd is. Wij demonstreren de effecten van de turbulentie en opportunitiekosten van mislukte projecten die tot nu toe van de literatuur genegeerd werden. Vanuit het perspectief van het management werpt dit onderzoek licht op de daadwerkelijke aankoop effecten van China sourcing

en niet alleen theoretische effecten. Aankoop vanuit China is in dit verslag bedoeld als een populair voorbeeld van aankoop in low-wage-countries.

Hoofdstuk vier (integration in the buying centre) benadert integratie patronen in global sourcing organisaties samen met de verwachtingen en resultaten van global sourcing. Het is gebaseerd op data van semigestructureerde veldinterviews met zes bedrijven uit de automobiele supply chain. Managers met verschillende functies binnen de bedrijven werden geïnterviewd. De data werd in een “integration factor framework” gearrangeerd, welk door toepassing inzicht op het organisatieniveau geeft. Dit onderzoek is de eerste studie die onderzoek naar integratie in de global sourcing context van descriptief naar prescriptief verschuift. Daarenboven creëert dit onderzoek vragen voor verder onderzoek. Sommige van deze vragen worden ook in delen van deze dissertatie benaderd. Voor het management bevelen wij een uitgebreid gebruik van ICT gebaseerde instrumenten en moderne elektronische communicatie methodes aan, om te weinig crossfunctionele integratie te voorkomen.

Hoofdstuk vijf (internal / external integration) benadert de rol van interne en externe integratie van een kopend bedrijf met zijn leveranciers onder een social capital lens en geeft inzicht in de performance implicaties van integratie. De data suggereert dat interne integratie een voorwaarde voor externe integratie met leveranciers is, en externe integratie blijkt een sterk positief effect op global sourcing succes te hebben. De directe relatie tussen interne en externe integratie was niet significant, maar een mediterende rol van social capital werd aangetoond. De Data werd met behulp van een vragenlijst met 82 inkopers van een automobiele OEM verzameld en door middel van structural equation modelling met partial least squares analyseert. Deze studie is de eerste die de social capital theorie gebruikt om interne en externe integratie met global sourcing in verband te brengen. Verder werd ook integratie met global sourcing performance geassocieerd. De resultaten van dit onderzoek hebben ook implicaties voor het management. Sinds accumulatie van social capital en integratie positief met global sourcing succes gerelateerd bleken, kunnen managers met activiteiten die op integratie gericht zijn, hun global sourcing succes verhogen.

Samengevat heeft deze thesis de effecten, de succes factoren en de gevaren van global sourcing in kaart gebracht en is steeds dieper in de facetten van global sourcing ingedoken. Door behulp van deze dissertatie is het ambivalente beeld van global sourcing door middel van kwantitatief en kwalitatief onderzoek helder geworden.

9 Bibliography

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Despite the fact that firms and individuals have been sourcing on a global basis since ancient times, global sourcing as a topic has received considerable attention from managers and scholars in recent years. Global business has been reported to be growing considerably during the last decades and the trend continues; hence a scientific examination of global sourcing performance and success factors is timely and appropriate.

This dissertation explores some of the effects, the success factors, as well as the threats of global sourcing. Particular attention is paid to performance evaluation and integration as a prerequisite for successful global sourcing. It consists of four independent scientific papers connected by means of a coherent thematical bracket. The first two papers address the perception of global sourcing as a purchasing panacea, and compare it to real results from global sourcing. The last two chapters explore the role of the buying companies' internal and external integration with suppliers, giving insight into performance results from integration.

The research was performed with a triangulation of methods, notably findings from qualitative and quantitative research, based on primary and secondary data.

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