

A large, light brown rectangular graphic is positioned on the left side of the page. At the top left corner of this graphic is a small gold horizontal bar above a dark brown downward-pointing chevron shape. The text "ESMT MASTER'S THESIS" is written in a bold, white, sans-serif font, centered within the brown area.

**ESMT  
MASTER'S  
THESIS**

# E sourcing - Exploring barriers to carrier acceptance in German FTL truck transport markets

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## Abstract

E sourcing as a set of procurement tools becomes increasingly important. Contradictory findings in recent research became obvious and most of the work is centered on a buyer's perspective, whereas a supplier's point of view is still comparatively under-represented. Despite its theoretical power to improve procurement practices by increasing a company's productivity and decreasing costs, doubts were raised that e sourcing might be overrated to the extent of being counter-productive as cost efficient and as effective procurement practice by damaging valuable long-term buyer/supplier relationships. On the German full truck transport market electronic reverse auctions lack acceptance on supplier's side.

This paper explores those barriers to carrier acceptance by reviewing the current research and by approaching both sides of the table - buyers and suppliers - through available data from the leading market maker, interviews, and a survey. Finally, the findings will be compared within a real life scenario with the experiences of a single company to develop a simple framework to allow e sourcing adopters a pre-assessment whether and how the use of e sourcing can improve their overall procurement performance.

The results from this paper will show that e sourcing has its boundaries and pitfalls by producing negative attitudes on the supplier side, which reduces possible positive e sourcing outcomes. Especially negative influences on traditional buyer/supplier relationships foster opportunistic behavior on both sides resulting in minor service quality. The findings of this paper open opportunities to improve e sourcing performance for a reasonable use, but it can only provide a preliminary view on the yet relatively unknown mechanisms of electronic procurement on German truck transport markets, so further research is required.

# 1. Introduction

This thesis develops a framework for decision when to use e sourcing as a procurement source for truck transport capacities on German markets, and in the case of adopting how to successfully implement it as a sustainable procurement tool. E sourcing is thereby defined as a procurement process that uses Internet-based technologies and services to automate and/or streamline an organization's procurement action from identifying potential sources of supply to post payment review. We do that by exploring business environments, which allow a sensible use of e sourcing, by observing its boundaries and mainly its possibly negative impacts on e sourcing processes due to barriers to carrier acceptance by understanding stakeholder's objectives, motivations, concerns, and organizational limitations when confronted with e sourcing. As a result, we recommend measures to increase e sourcing outcomes through necessary flanking changes in traditional operational, organizational or cultural environments on both sides - demand and supply.

Procurement becomes more and more a strategic function. Successful business models based on mail-order business like Amazon or Dell highly depend on a functioning supply chain since customer have started determining quality among others in terms of delivery service reliability and unlimited product availability. Every failure within a supply chain is liable to cause costly production disruptions and in the end lead to unsatisfied customers. Consequently, a majority of manufacturers and traders assess a sufficient and cost effective supply of truck transport capacity as a vital factor for their business.

Until 1994, the German full truckload (FTL) transport market was regulated through prescribed price floors and accounting procedures. Since its liberalization, shippers (buyers) and carriers (suppliers) still have to deal with the fact that both an outstanding service quality and personal contacts are no longer the mainly decisive buying criteria for buyers' procurement departments as well as the crucial value proposition for suppliers' sales forces. With a focus on prices and cost pressures on the assumption of unchanged service quality requirements, the whole industry's culture had to change. Today the German FTL market is highly fragmented into a sufficient number of buyers, a vast number of mostly small local suppliers and a necessarily standardized, homogenous service. Although the conditions might be set for a functioning market, the high fragmentation especially on the supplier side with a majority of companies employing a maximum of five employees results in a limited scope for action. Local and organizational limitations prevent smaller players from gathering market information and gaining transparency, which leads to market failures. This is true also for buyers. To overcome the known market failures, freight forwarders with special

local expertise or a wider market reach act as a broker between shipper and carrier, thus creating a sub-market. Through charging a brokerage fee the costs of transport increase and constitute a burden on the financial performance for both sides.

The benefits of e sourcing seem obvious and much has been written since its introduction in the mid-nineties. However, with the wide use of electronic procurement tools yet in the early stages, there remain deficiencies in substantially empirical research and there is much more left to be explored. E- sourcing has the theoretical power not only to overcome limitations on the market by providing borderless market access or a comprehensive and timely information transfer without any limitations; it also enables buyers and sellers to pass over freight forwarders by providing a platform where demand meets supply.

Considering e sourcing as a set of tools creating opportunities in procurement for buyers, or simplifying purchases and supplier management, it provides benefits since it increases a company's productivity and decreases its costs, therefore improving the overall competitiveness and business ability compared to traditional vendor procurement approaches. Consequently, more and more companies use e sourcing tools or have plans to adopt them in the near future. On the other side, suppliers are in a position to widen their sales reach and to select transport with the highest degree appropriate to their particular transport structures, thus increasing the capacity utilization and cutting the overall costs within the whole industry compared to traditional business models. Additionally, other stakeholders could benefit as well. Due to a better use of resources through the mechanisms of an Internet-based functioning market the total number of formerly necessary business trips could be reduced in total, with the result that energy could be saved, environmental pollution could be diminished, and traffic jams could be avoided.

Since the days of French PTT's Minitel system in 1985, daily Internet-based market platforms such as "Teleroute", where single transports are brokered among transport companies exclusively, are accepted and integrated dispatching tools in most transport companies. Away from spot markets is e tendering on B2B platforms, like "Ticontract" and "Cargoclix", where shippers place tenders, searching for freight charges for a greater number of transports within a pre-defined time window, mainly in form of electronic reverse auctions (eRAs). Surprisingly here, buyers undergo barriers of supplier acceptance due to supplier resistance to participate in e-tendering events in a business, which fulfills all the necessary requirements to generate greater benefits from e sourcing than most other industries.

Based on the experience of Becker & Co. GmbH, Neuwied, a mid-sized logistics service provider and subsidiary of ThyssenKrupp Steel Europe, which introduced e tendering in 2012, current suppliers developed a negative attitude towards the tool, whereas potentially new suppliers showed a low level of tender participation. Those barriers of acceptance were not obvious in earlier non-internet based tenders. Across all industries, market participants are faced with the issue of how to use Internet technology effectively. While in recent research some argue that e sourcing is no longer detrimental to buyer/supplier relationships, others report resistance of suppliers to participate in e tenders, which they consider as an unethical business practice. Until now, no research describes whether known mechanisms of e sourcing - mainly eRAs - are useful to explain the phenomena on German FTL markets and there is still poor evidence of actual implementation and effectiveness of e-business practices in this particular branch of industry. Since supplier participation is crucial for e sourcing success, a lack of acceptance could lead to a shrinking pool of suppliers willing to bid for transports in an eRA event and therefore could have a negative impact on the possibly positive outcome in the form of mutual benefits for all stakeholders.

### 1.1. Research objectives

In the early days, expensive and complicated IT systems were often identified as a reasonable barrier to e sourcing adopters. Nowadays the technology is web based and has finally arrived in the web 2.0, so that even small companies are able to use e sourcing as long as they have access to the Internet. The research will mainly examine e sourcing in form of transportation market places provided by market makers that enable the sale of truck transport capacity based mainly on price. ERA events used in tenders are the most popular form of e sourcing use on German FTL markets in which buyers post loads and trigger supplier offers up today. For the purpose of simplification, we will use the terms e sourcing, e procurement, eRA or e tender as interchangeable definitions. Technical issues or specific forms of auctions such as Dutch auction, English, open, or sealed auction and their particular influence on possible eRA outcomes are not covered by this research.

Despite an obvious e sourcing hype which emphasizes a huge potential for business improvements, especially in early research, doubts were raised that e sourcing might be overrated and that it would never keep its promise to generate benefits on either the buyer's or the supplier's side (Tassabehji (2003), Emiliani (2004)).

To develop a framework enabling buyers and suppliers to assess whether the use of e sourcing can improve their overall business performance, the first research objective is focused on the appropriateness of e sourcing tools as a new way to procure goods or services in general.

- Does e sourcing provide a benefit compared to traditional vendor models?

Up today, truck transports have an ambiguous relevance as a supporting service within a buyer's value chain. Its category of spend reaches from a non-critical service to a strategic part of the supply chain, depending on a buyer's particular business strategy. The result is that buyers might as a consequence be confronted with a trade-off between possibly positively tangible outcomes in financial terms through realized cost cuttings in the short run and possibly negatively intangible impacts on existing buyer/supplier relationships (De Wit and Meyer (1998), Tulder and Mol (2002)). Additionally and in particular with respect to the truck transport market, the demanded service or the buyer and supplier structure might not allow an effective use of e sourcing tools. Previous studies show that purchase lots must be large enough to justify the seller's participation in e-auctions (Smeltzer and Carr (2002), Tassabehji et al. (2006)), but in a world with technical abilities to administrate even large numbers of suppliers and on a fragmented market with diseconomies of scales dominated by small companies, this approach might not be useful.

- Is e sourcing an appropriate instrument to buy truck transport services for full truck loads (FTL service) on German truck transport markets?

Even in the case of a theoretical power emanating from e sourcing to improve performance of truck transport markets by fostering direct businesses and replacing brokerage, criticism is often expressed by carriers, accusing e sourcing, especially eRA of being a tool to drive down prices, rather more than other criteria and of allocating possible benefits exclusively to the demand's side (Tulder and Mol (2002), Smeltzer and Carr (2002), Jap (2003), Emiliani and Stec (2004)). To evaluate the true performance of e sourcing tools a deeper investigation into the motivation and expectations of buyers and suppliers is necessary to compare the outcomes of e sourcing proceedings with the desired achievement of objectives regarding different stakeholders. Only on this condition, possibly negative impacts on the use of e sourcing in German FTL markets can be identified completely, to determine appropriate measures to improve the overall performance.

- To what degree is e sourcing adopted on German FTL service markets and what is its performance?
- Does supplier participation in e sourcing degrade over time, where are possible barriers concerning carrier acceptance and how can e sourcing be improved?



## 1.2. Methodology

The methodology is mainly based on interviews with market participants from both sides i.e. buyers and suppliers. To achieve a first assessment of current e sourcing use and e sourcing performance in particular the German FTL service market, we will use confidential data from Ticontract [www.ticontract.com](http://www.ticontract.com), Germany's market leader and, according to their own declarations, the global leader for both logistics sourcing and the management of freight rates. With an international presence in eight countries, Ticontract serves 650 shipper companies across all industries and provides a supplier base of 40,000 carriers, which should be sufficient to collect first insights by possibly setting up a key performance indicator (KPI) 'returned offers/invited suppliers' (RO) comprising eight companies from six different industries. A simple use of KPI to measure the participation rate of suppliers in an eRA event may provide first indications about the performance, but KPIs are unlikely to ever reflect the comprehensive performance, since the particular conditions of different eRAs are unclear. To gain a deeper understanding of the objectives, motivations and expectations on behalf of buyers and suppliers, interviews with both parties are conducted. The interviews are split up into two categories - expert interviews to gain as much information as possible and structured questions, to produce comparable results. Both categories are used in a mixed interrogation. All questioned companies currently use e sourcing tools of different types from professional e sourcing platforms to daily spot markets.

Once the interviews have been conducted, a survey will be launched among suppliers regarding their attitudes towards e sourcing, drivers of attitudes and the impact of e sourcing on buyer/supplier relationships to obtain statistical relevance referring to the assumed main drivers for e sourcing acceptance as an intermediate result from the interviews. Finally, to compare our findings with the background of a real life scenario we use the introduction of e sourcing at Becker & Co. (BeCo) as a case study. BeCo is a mid-sized logistics service provider and subsidiary of ThyssenKrupp Steel Europe, which introduced e tendering in 2012.

## 2. Literature Review

Up to date, academic research focuses on the impact of e sourcing and procurement in the perspective of buyers, whereas literature review shows only limited research on the supplier side. Results and conclusions are available across different industries in general, but not for the industry segment of truck transport services in Germany in particular and it seems as if researchers have lost interest in electronic procurement during the last five years. The first aim is to provide the reader with a coherent background on the importance of procurement as a business function and the impact of e sourcing on traditional procurement procedures with a focus on eRAs as a predominant tool for electronic FTL service procurement. The second aim is to inform the reader about the general market conditions of FTL in Germany and the appropriateness of e sourcing in this particular business context. Both aims will particularly support the first two research objectives of this thesis ‘does e sourcing deliver a benefit compared to traditional vendor models?’ and ‘is e sourcing an appropriate instrument to buy truck transport services for full truck loads (FTL service) on German truck transport markets?’.

### 2.1. Procurement as a business function

According to Webster and Wind (1972), Rink and Fox (1999), Segev and Gebauer (2001), and Hartley, Lane, and Duplaga (2006), procurement includes collection of information, supplier management, contracting, requisitioning, and analysis, that means, all business practices from the identification of needs to post payment reviews.

For a long time most purchasing professionals have considered themselves as managers of a service function for operations, marketing, engineering, R&D and other business procedures (Leenders, Nollet, and Ellram, 1994). Porter (1980) defined procurement as a function of strategic importance, including the supplier power as one of five critical determinants for a firm’s competitiveness. He noted that purchasing is an essential part of the firm, which affects the firm’s ability to achieve its strategic plans. Since then the strategic importance of procurement has been reiterated frequently (Ellram and Carr (1994), Ordanini and Rubera (2008)).

Segev and Gebauer (2001) described the development of procurement as clerical function in the 1970s and earlier, which became a commercial activity in the 1980s, later developed into a strategic function and resulted then in the expected transition of the meaning of procurement as a network business function. A network business function has a strategic significance and concentrates on multiple cross-functional objectives achieved by a high

electronic based collaborative relationship among a variety of stakeholders as a strategic alliance, in contrast to previous traditional arm lengths relationships. Lamming and Johnsen (2000) and Knudsen (2003) confirmed this statement by defining procurement as a core function with major strategic importance involving management of partnerships, alliances, and supply networks. Procurement as a service function - a clerical or commercial one - is low in organization, reporting to management, dealing with number of orders, savings, negotiating, contracting, and sourcing policy with a focus on efficiency. As a strategic function, procurement is integrated into strategic planning, dealing with supplier development, value chain analysis, make or buy decisions, e-procurement and outsourcing with the stress on effectiveness and efficiency (Lysons, 2000).

## 2.2. Impact of e sourcing on traditional procurement practices

E sourcing is a B2B purchasing practice that utilizes electronic commerce to identify potential sources of supply, to purchase goods and services, to transfer payment, and to interact with suppliers (Min and Galle, 2003).

E-tendering defines a process of sending requests for information or price (RFx) to suppliers via the Internet or B2B market places.

ERAs enable purchasing companies to buy goods and services that have the lowest price or combination of lowest price and other conditions via Internet technology or B2B market places.

E-procurement tools improve procurement practices and therefore procurement performance (Quesada and González, 2010). Monczka and Morgan (2000) declared that one of the key competitive priorities for the 21<sup>st</sup> century would be the maximization of Internet-based technologies such as e-procurement. In the previous years, a number of studies appeared in the literature, trying to describe and better understand e-business, mainly exploring the potential advantages or the changes required in current organizations or business models.

The reduction of purchasing costs has always been identified as one of the most significant aims in procurement since the average manufacturing firm spends about half of its sales revenue on activities related to the purchase of materials and services (Collis and Montgomery, 1995). Cost reductions in the procurement domain allow the firm to pursue price competition strategies in downstream markets and sustain growth (Christopher and Gattorna, 2005). If a firm has a 20% gross margin, every \$1 saved in procurement equals additional \$5 in revenues (Jap, 2002). Savings of between 5-40% either directly through

product price reduction or transaction costs are reported (Tully (2000), Tassabehji et al. (2006)), with a more typically gross saving average of 15-20% (Cohn, 2000). At first sight, e-procurement can generate multiple benefits compared to traditional procurement practices (Talluri, Chung, and Narasimhan (2006), Wu, Zsidisin, and Ross (2007)) due to better coordination with suppliers, quicker transaction times, higher flexibility, lower costs, improved value for money, and a more efficient resource allocation.

Despite these remarkable benefits, the overall adoption rates of e sourcing are still relatively unknown and the integration of e-procurement seems to be much slower than expected - (Tulder and Mol (2002), Davila, Gupta, and Palmer (2003), Percy, Parker, and Giunipero 2008)). Less than forty percent of participants in a British research by Croom (2005) with 92 participants considered e procurement as a strategic issue. Eighty percent of industry respondents in Hong Kong judged the use of e-procurement as important, but only twenty percent had actually adopted e-procurement (Gunasekaran and Ngai, 2008).

Critics have also declared, that although gross savings might appear beneficial, net savings and benefits are overrated by buyers (Emiliani and Stec, 2002). Tulder and Mol (2002) identified possible problems due to a shift in strategy from long-term collaboration to short-term collaboration. Giampietro and Emiliani (2007) blamed market makers for promoting e sourcing tools as a mean to determine most competitive suppliers, for once the switch is made from existent to new suppliers, the buyer can work with the supplier to jointly develop a long-term relationship - an obvious inconsistency that many involved parties apparently fail to see.

Malone, Yates, and Benjamin (1987) stated already in 1987 that rapid developments in electronic markets would lead to both an increased outsourcing of activities and a shift from hierarchies and longer-term cooperative relations to markets and shorter-term price-based relations as the preferred coordinating mechanism in buyer-supplier relationships. Difficulties appeared in the integration of a rather short term focused tool into the needs of a long-term supplier management policy because of a strategic orientation or the establishment of a particular supply chain (Roberts (2001), Mullane, Peters, and Bullington (2001)). De Wit and Meyer (1998) reflected on necessary trade-offs while using e-procurement, especially e-auctions.

- Trade-off 1 strategy: short term considerations versus long term fit  
Establish true market prices; identify immediate savings and substantial returns on investment, vs. long-term cooperation with the opportunity to benefit from developing a supplier chain based on long-term buyer/ supplier relationships.

- Trade-off 2 - controls: public vs. private  
Collectively bundling procurement for lots of various buyers for market placing, such as Covisint (automotive) or Transora (consumer-packaged goods)
- trade-off 3 Geography: global versus local  
High quality global suppliers vs. local experts

Holland and Lockett (1997) formulated the 'mixed-mode' hypothesis, which states that firms operate on a continuum between markets and hierarchies and increasingly use combinations of both in their relationships.

Dealing with the mentioned trade-offs and a permanent shift between two continuums might be true for every purchasing process not necessarily limited to e sourcing. E sourcing allows overcoming past market limitations through quickly available price information and contacts on a global scope. Therefore, it is possibly attractive to change a former strategy, which could have been determined to act in the best possible way on markets defined by a lack of transparency that is why former procurement practices could have been rather a result of a pragmatic procurement than a strategic consideration. The benefits under short-term considerations are obvious and well documented.

### 2.3. Electronic reverse auctions as part of e sourcing

Auctions have been researched extensively in economics and have been defined as market institutions with an explicit set of rules determining resource allocation and prices based on bids from the market participants (Vickrey (1961), Engelbrecht-Wiggans (1980), McAfee and McMillian (1987)). The relatively new phenomenon of eRA has been subjected to a more intensive research since the beginning of the new millennium.

According to Hartley, Lane, and Duplaga (2006) the use of eRA represents only an incremental innovation in the area of procurement and much of what is required to conduct an eRA does not differ essentially from the activities enterprises undertake every day as a part of non-Internet sourcing (Mabert and Skeels, 2002). ERAs play a prominent role in e sourcing because they have remained so far one of the most simple and most familiar instruments of price determination (Jap, 2002). The buyer takes on the role of a supplier by advertising his intent to purchase a specific quantity of an item or service and subsequently suppliers of these items or services act as buyers through bidding for the business, offering prices and terms (Mabert and Skeels, 2002).

B2B eRAs are downward pricing or reverse auctions via the internet or a private network. They form mostly a multi-stage process - sourcing the suppliers, inviting them to participate, having the supplier's acceptance and finally bidding (Millet et al., 2004). The formats of online auctions range between two extremes: open versus sealed-bid formats. Open auctions are mostly real time auctions where suppliers can watch their competitors' bidding behavior and react accordingly. Sealed bid auctions require a bid mostly within a set period. Tenders are a classical form of sealed bid auctions and by far the most popular auction used on German FTL service markets. On auction markets, prices are not negotiated. They are fixed as the outcome of bids and a predefined set of rules (Figliozzi, Mahmassani, and Jaillet, 2003), so the buyer controls the market. Auctions are a useful tool for procurement assuring that the following conditions are fulfilled (Mabert and Skeels, 2002):

- Item
  - Easy to group into attractive bid lots
  - Easy to define item/service specifications
  - Buyer must be able to express his needs and to specify the desired item or service meanwhile the supplier must be able to interpret the information in the same way as the buyer
- suppliers
  - many suppliers with available capacity
  - excess capacity in supply base
  - supply base electronically enabled
- buying firm
  - incurred low vendor qualification costs
  - incurred low vendor switching costs
  - no contract barriers
  - few or no plant supplier preferences

### 2.3.1. Electronic reverse auctions benefits & risks

ERAs are able to deliver positive outcomes in many ways. An often-neglected benefit resides - apart from cost saving or productivity improvements - in the fact that eRAs have the potential to initiate a transparent and incorruptible procurement process. In times with an increasing importance of compliant business processes, compliance became a standard response when buyers were asked about their motivation to use eRAs. Emiliani and Stec (2004) stated that eRAs improve transparency and provide thus a fairer process of rewarding business than traditional negotiations. Additionally the use of a single platform enables the

buyer to explain or communicate the same standardized rules to suppliers, so that everyone works on the same level of knowledge, which means a further improvement of fairness in competition. Consequently, buyers and suppliers avoid unethical behavior and harming their reputation vis-à-vis a greater number of suppliers or competitors (Carter et al., 2004).

Going along with a classic procurement process, benefits can be achieved in all particular process parts, from information gathering to intelligence and analysis. Often market makers provide specialized e sourcing platforms with a critical mass of prequalified suppliers, widening a buyer's supply base capable to create a network effect. Since a wider supplier-pool offers a greater choice of different products or services, buyers will be likely to find a suitable supply that increases buyer's product or service satisfaction (Emiliani and Stec (2004), Emiliani (2005)). Theory and empirical analysis of traditional auctions support the thesis that increasing the number of bidders improves the winning bid (Brannman, Klein, and Weiss, 1987). The same should be true for eRAs since the difference from traditional auctions is not significant (Mabert and Skeels, 2002). The supplier contact also is often just a click on a keyboard to send standardized information or RFx to a great number of suppliers and the evaluation of bids is often automated and nowadays a common part of market makers' service offer as well as additional services due to market intelligence. All in all eRAs simplify transactions and lower the overall transaction costs and purchase prices (Smeltzer and Carr (2002), (2003), Carter et al. (2004), Emiliani 2005)). One of the most important benefits is an eRA's ability to overcome market limitations in form of time or local restraints and to create a higher transparency and information equality (Klein (1997), Turban (1997), Jap (2002)). An improved resource allocation additionally decreases cost and improves the financial performance on both sides as well as other stakeholders' needs due to reduced waste of time and resources.

From a supplier's point of view, ERAs can help to become more competitive by elucidating process inefficiencies or local limitations (Standing, Stockdale, and Love, 2007). ERAs can even be used to build up relationships, because buyers might prefer working closely with their suppliers to ensure they can use the e-auctions effectively (Schoenherr and Mabert, 2007). In general, eRAs provide new sale channels to suppliers and reduce their selling costs (Smart and Harrison, 2002).

Among the eRA critics, the idea evoked that in general, buyers and sellers do not realize the benefits, but instead often have to be content with unfavorable and costly results. In most cases, reverse auctions over-promise and under-deliver, whether for complex customer or

simple standard goods or services. Many manufacturing and service sector businesses continue to use reverse auctions because managers are not aware of the many pitfalls or simply do ignore them (Emiliani (2005), (2006), Tassabehji et al. 2006)). As a consequence, American market makers faced hard times and poor financial performances which ended in liquidation, merger, or sale of market makers such as CommerceOne, Cordiem, Covisint, eScouts, FreeMarkets and Purchase Pro (Kisiel (2002), Ryan (2003)).

Beall et al. (2003) states that reversed auctions are typically used for less than 15% of total corporate purchases. A focus on prices and bidding wars signals a return to arm lengths, competitive supplier relationships that may prevent information sharing cooperation, and joint supplier improvements. The buyer considers all bidders as equal in any respect except for price, and excludes other criteria from his considerations such as service, quality, or future potentials (Richards (2000), Bartholomew (2001)). The lack of a total cost of ownership approach which includes switching costs from one supplier to another including travel, qualification, tooling, training, aligning information systems or aligning processes (Emiliani, 2000), or in the worst case switching to suppliers who are not capable of delivering the necessary good or service may reduce additionally possible benefits (Smeltzer and Carr (2002), Tulder and Mol (2002), Emiliani and Stec (2004)).

Again, eRAs were seen as possibly helpful in the short run but of limited use in the long run. Mabert and Skeels (2002) showed that auctions help to fix a correct price, but once the correct price has been established, further savings in repeated auctions are hard to achieve. This finding is supported by Bartholomew (2001) who stated that it is inherently difficult to maintain price reductions for a product through successive auction cycles. In spite of overcoming market failures, eRAs have the inherent potential to produce market failures on their own by negatively influencing the supply market in the long run by driving out qualified suppliers (Tulder and Mol (2002), Emiliani and Stec (2004)), and by demoralizing remaining suppliers. Disappointed suppliers will not perform at their best in quality nor will they participate in future eRA events (Emiliani and Stec, 2004).

### 2.3.2. Known barriers to electronic reverse auction adoption

Starting from the critics in the previous chapter, concerns may be allowed whether e sourcing produces a benefit compared to traditional vendor models at all, or whether known barriers to its adoption may prevent it from unfolding its potential.



Eighteen months after its initiation Covisint, the automotive market which used to be a joint venture between General Motors, Ford, DaimlerChrysler, Renault, and Nissan, had enrolled only five percent of the industry's suppliers (Joachim and Moozakis, 2001). Tulder and Mol (2002) reported visible participation erosion at Covisint, Transora a procurement platform for consumer packaged goods, and other e-procurement consortia, which faced huge behavioral barriers to incite former competitors to collaborate. This observation was supported by the work of Carter et al. (2004), which proved that supplier resistance in eRA events is evident.

If we combine the works from Chwelos, Benbasat, and Dexter (2001) and Soliman and Janz (2004), we can define three elements and nine critical factors which influence the process in which innovations such as e sourcing are adopted. The use of those findings as a framework to examine possible barriers to eRA adoption will provide a first overview of already known and described barriers to supplier acceptance that is in the focus of this paper.

- The first element is the technological element with the critical factors costs, network reliability, data security, scalability and complexity.

Tassabehji (2003) reported a lag in terms of organizations learning to implement and assimilate any new technology into organizational processes and culture since technology is fast moving. A lack of eRA knowledge according to Grewal, Comer, and Mehta (2001) or Hartley, Lane, and Duplaga (2006) is more likely to be an obstacle to the adoption of eRA; both concluded that suppliers must be comfortable with the technology and knowledge to participate.

We can assume that in times of broadband networks and readily available market platforms with pay on use pricing models, which in addition can be tailored to own needs, costs, network reliability or scalability lost their importance as barriers to e-RA adoption. Data security may only play a minor role on the buyers' side since buyers communicate their transport request to a great number of suppliers, no matter whether they use electronic communication channels or traditional mail-based tenders. However, suppliers may fear providing intelligence to competitors; open bid eRAs show prices to competitors and may create a bidding war which is moreover considered as unethical (Davila, Gupta, and Palmer, 2003). Consequently, the acceptance on the supplier side decreases rather than it increases for auction types that reveal bidding information (Millet et al., 2004). This type of eRA only plays a minor role in FTL service procurement in Germany. Since the use of Internet-based,

application is no nerd domain anymore, a technological element will be unlikely to play a role in barriers to supplier acceptance, but will have to be taken into consideration in a deeper investigation into the German FTL service market.

- The second element contains environmental or inter-organizational aspects with the two critical factors pressure from trading partners and competitors.

Reverse auctions will be esteemed more favorably by buyers than by suppliers (Carter et al., 2004). Especially service suppliers can be expected to try to resist to the commoditization of their offerings and are expected to be more critical of eRAs than manufacturing companies (Caniëls and van Raaij, 2009). Successful eRAs require proper supplier motivation and suppliers will accept invitations to participate only if they have something to gain while past success influences favorable opinions (Grewal, Comer, and Mehta (2001), Roberts (2001), Caniëls and van Raaij (2009)). Suppliers might not want to set themselves at risk in terms of investing time and effort in auctions without a real chance to win the bid (Smeltzer and Carr, 2002). Consequently, a common supplier response to reverse auctions is “We are declining to participate in online auctions unless forced to by an existing customer” (Giampietro and Emiliani (2007), Caniëls and van Raaij (2009)).

Giampietro and Emiliani (2007) reported that it is common for buyers to force existent suppliers into participating in reverse auctions. Emiliani (2000) stated earlier that eRAs work best where the buyer has the control or dominates the relationship otherwise. Domination is thereby defined by the buyer’s capacity to overcome the supplier’s resistance which is affected by the relative dependence that is, a firm’s perceived difference between its own and its partner firms’ dependence on the working partnership (Anderson and Narus, 1990).

Often an existing perception gap between buyer and supplier becomes apparent. Buyers and suppliers want to make profits - buyers want to reduce the prices and suppliers want to maximize sales, particularly through long-term relationships that emphasize quality and reliability (Jap, 2003). ERAs signal a return to arms-length relationship, which stays in contrast to the suppliers’ perceptions. It is likely to cause suppliers to hold back in future dealings with buyers who are focused on short-term cost savings, rather than long-term collaborations (Tassabehji et al., 2006). Supplier behavior is affected by its misunderstandings concerning the buyer’s character and when the supplier suspects the buyer of opportunistic behavior the supplier usually withdraws from the relationship to avoid vulnerability and further opportunistic decisions - (Williamson (1985), (1993), Ping and Dwyer

(1992), Rusbult and Van Lange (1996)). The erosion of suppliers' trust is a serious barrier to the adoption of auctions (Howard, Vidgen, and Powell, 2006).

The simple fact that eRAs have become a widespread procurement tool within an industry forces suppliers to follow the competitors and participate in eRAs as form of bandwagon-effect. It seems to be a contradiction that acceptance rates decline significantly while the number of invited suppliers increases (Millet et al., 2004). Grewal, Comer, and Mehta (2001) however state, that the overall participation rate may increase, but suppliers who enter electronic markets on an experimental basis or just wish to mimic others will most probably become passive participants.

- The third element is an organizational element with the two critical factors: top management support and trust.

The adoption of e sourcing, especially the use of eRA is a significant organizational change likely to face resistance in every organization. The specific skills of sales managers are oriented towards relationship building and management as defined by Caniëls and van Raaij (2009) and the same should be true on the opposite for purchasers.

In summary, the three elements describe different areas as potential sources of barriers to e sourcing acceptance not only among suppliers, but also among buyers, when it comes to resistance to changes within organizations. The focus of possible detriments to e sourcing use resides primarily in supplier attitudes towards a tool, which has the power to change the rules of the game by affecting traditional buyer/supplier relationships and business models.

### 2.3.3. Impact of electronic reverse auctions on buyer/supplier relationships

The majority of available works reflects a remarkable variety of negative aspects of eRAs with the potential to negatively influence traditional buyer/supplier relationships. Jap (2001), (2003), Beall et al. (2003), and Emiliani and Stec (2004) came to the conclusion, that ERAs damage a buyer's long-term performance by creating distrust among its existent suppliers and that even a long-term use would not improve the buyer/supplier relationship.

Trust is regarded as a fundamental element in successful relationships and defined as one party's confidence in the other party not to take advantage from their vulnerabilities in the mutual relationship (Morgan and Hunt (1994), Dyer and Chu (2003)). Indeed, suppliers often feel vulnerable and exploited when participating in eRA events according to Tassabehji et

al. (2006). A lack of trust might not per se be a detriment to a successful FTL service procurement, but current research shows that trustworthiness lowers transaction costs, and correlates with increased information sharing and improved value creation (Ring and Van de Ven (1992), Barney and Hansen (1994)). In addition suppliers may be less open, less responsive, and may be unwilling to make buyer specific investments (Smeltzer and Carr (2002), Jap (2003)). Distrust therefore would cause the opposite effect of increased transaction costs, decreased information sharing and lower value creation.

ERAs with a focus on prices and pre-described bidding conditions signal a return to arm lengths relationships which are characterized by predominant buyer power and an opportunistic behavior due to buyer's will to maximize his value exclusively (Thompson and Hastie, 1990). Opportunism is defined as self-interest seeking with guile. It is synonymous with misrepresentation, cheating, and deception and subsumes a range of misbehavior, such as adverse selection, moral hazard, shirking, sub-goal pursuit, agency costs, and free riding (Williamson, 1996).

Here it does not matter whether the buyer is actually behaving in an opportunistic and unethical way, the perception of suppliers about buyer's behavior exclusively is sufficient to damage buyer/supplier behavior (Jap (2002), Beall et al. (2003), Emiliani and Stec (2004)). Tassabehji et al. (2006) and Giampietro and Emiliani (2007) state that suppliers actually perceive buyers as behaving opportunistically while using eRAs and seeking to profit from the benefits of reduced costs and increased competition while accepting a destruction of long-term cooperative relationships. Incumbent suppliers are especially concerned since they have more to lose and question buyer's motives and processes (Jap (2002), (2003), Emiliani and Stec (2004)).

E-auctions can be abused by buyers through - among others - phantom/shill bidding or the use of unqualified rogue bidders and suppliers through - among others - collusion or changing specs after winning the bid. Since eRAs reinforce buyer power, a possible abuse from buyers outweighs possible suppliers' misbehavior (Beall et al. (2003), Emiliani (2005), Tassabehji et al. (2006)).

In conclusion, studies show that effective buyer-supplier relationships can improve the buyer's performance and become a source of competitive advantage because of cooperative activities such as quality improvements, cost reductions, and joint product or service design (Carr and Pearson, 1999). Opportunistic behavior and/or the use of pressure in influence

strategies in both transactional and relational situations, reduce trust, commitment, and satisfaction among trading partners (Simpson and Mayo, 1997). Suppliers are likely to respond with similar behavior, negatively affecting supplier performance (Jap, 2003). Negative attitudes towards e-auctions often result in reluctance on behalf of suppliers to share cost savings and innovations with buyers and in a 'you get what you pay for' behavior (Tassabehji et al., 2006) with a reduced willingness to help the buyer in any potential future crisis (Presutti Jr (2003), Emiliani (2004), Tassabehji et al. (2006)).

#### 2.3.4. Differences between traditional face-to-face negotiations and electronic reverse auctions

Assuming eRA as a procurement practice with the theoretical ability to influence negatively buyer/supplier relationships, how does this relatively new type of procurement differ from traditional, well-established, accepted and functioning face-to-face negotiations (F2F)?

Some of those differences are obvious. The variety in communication between the buyer and supplier is wider in F2F communications (Drolet and Morris, 2000). It allows negotiators to simultaneously observe not only oral communication but also body language, facial expressions, and the tone of voice. Suppliers participating in eRAs are stressed by time pressure and feel forced to make decisions without reasonable time to calculate and thereby losing money on the contract as well as possibly causing permanent damage to the business (winners curse)(Kern, Willcocks, and Heck, 2002). Traditional F2F negotiations are "all senses" negotiations and as such, the outcome can highly depend on the human factor and not the offered product or service or environmental pressure. However, this type of rewarding business could be seen as unfair by competition, so that eRAs are liable to increase fairness in rewarding business to the optimal offer and not to personal preferences. From a purchaser's and sales person's point of view, eRAs replace the core skill of negotiation possessed by human workers, a fact which is likely to cause resistance on both sides.

In general, buyers are able to establish a wide range of cooperation forms with suppliers according to their strategic meaning for a particular organization as discussed above in this paper. Cooperative buyer-supplier relationship is more desirable for the buying firm when purchased items are high in priority and the sources of supply are limited to a few suppliers (Carr and Pearson, 1999). They can be either transactional at arm's length, where buying is focused on pre-established contracts and a specific transaction on a win-lose basis or they can be cooperative, involving suppliers to co-participate in arrangements to create a win-win situation.

Traditional negotiations foster collaborative problem solving, development of trusting long-term business relationships, and joint capability-building (Womack, Jones, and Roos (1990), Liker and Choi (2004)), whereas reverse auctions undermine these benefits (Giampietro and Emiliani, 2007). Thompson and Hastie (1990) and Fisher, Ury, and Patton (1991) used a “pie” approach to illustrate fundamental differences.

A cooperative relationship refers to the process of working together, over an extended period, for the benefit of both firms (Ring and Van de Ven, 1992). Traditional face-to-face negotiations can create benefits on both sides - seller and buyer through “integrated” negotiations that is, creating a win-win situation (Thompson and Hastie, 1990). Integrative negotiations means that the pie is not considered as static - creative opportunities are exploited to increase the overall pie so that both sides of the negotiation are better off (Fisher, Ury, and Patton, 1991).

The use of eRA represents an aggressive expansion of buyer power that re-casts supplies from long-term business partners to instruments the purpose of which is to help the buyers to achieve short-term cost reductions (Giampietro and Emiliani, 2007). During an eRA event, the number of negotiation parameters is usually very limited - price plus a very limited number of other financial parameters - whereas the number of negotiating parameters in F2F negotiations is in principle not restricted (Kaufmann and Carter, 2004). Suppliers from developed countries mainly compete on quality and innovation capabilities (Caniëls and van Raaij, 2009). The missing option to negotiate in a tender or auction or to bring in other than price criteria, defines them as fixed-pie events. With a distributive or “fixed pie” approach, negotiators consider their interests as completely opposed to those of the other party and focus on dividing the pie in a way that is the most advantageous for themselves (Thompson and Hastie, 1990). We therefore can assume that in an event with an increased buyer power, suppliers might expect the pie to be assigned to the buyer.

Negotiations become increasingly important the more a supplier base defines its competitive advantage by other than price criteria. Turning it the other way round means that eRA’s use gets more appropriate the more the supplier base works on pricing strategies as the main value proposition in the particular industry. Furthermore, a “reduction” of purchasing or sales forces to “simple” eRA users seem to be a limitation of human core functions in the respective business areas and are likely to cause opposition to eRA on both sides.

## 2.4. German truck transport markets

Detailed figures on market participants, road transport activities and available capacities only are published every four years. We have to work on a database from 2010/2011, since the numbers from 2014/2015 have not yet been published at the time of this research preparation. Assuming a slight growth within the last four years, the used numbers are appropriate to describe the current market in detail.

As published by the Bundesverband Güterkraftverkehr Logistik und Entsorgung (BGL) e.V. (2014) the truck transport business in Germany is highly diversified and consists mainly of small and micro enterprises. From 49.676 companies in total in 2010, 57% of companies had no more than 5 employees, 29% employed 6-19 people, 10% employed 20-49 people and only 4% of all companies were medium sized companies or bigger corporations with more than 50 employees.

In terms of truck capacity allocation among the companies, 82.2% of the available capacity is held by small companies with no more 10 trucks.

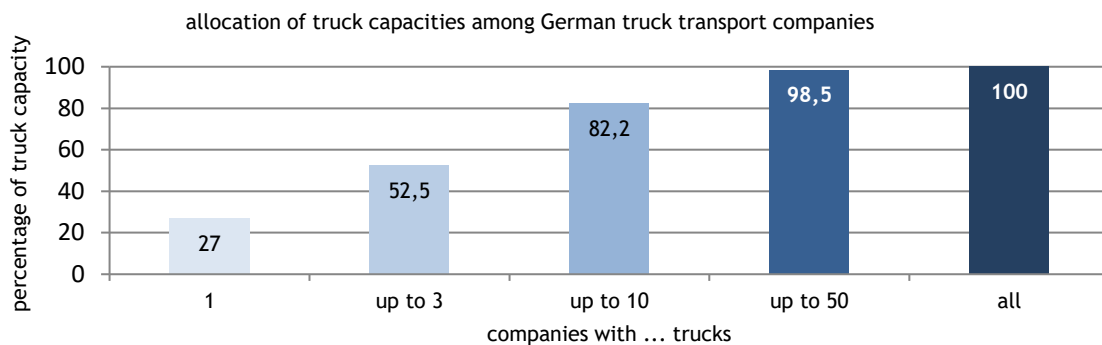


Figure 2.4 1 allocation of truck capacities among German truck transport companies

In 2011, those companies shipped in total 2,149 million tons of goods over a distance of 247.7 billion freight kilometers with 366,915 tractor units, thereby generating total revenues of 37,670 million Euros.

To offer competitive services, truck transport suppliers have to work cost efficiently and to focus on the optimal capacity utilization by lowering empty runs. The published freight kilometers are in relation with shipments. Since a greater number of shipments - typically in classical distribution rounds - can be transported on one truck, this type of kilometer data contains no information about the actual kilometer performance of the industry that is, kilometers driven by all trucks in one year. Starting with 366,915 tractor units with an average driving performance of 80,000 Kilometers per year according to data of VDA (2012)

the actual kilometer performance of the industry is approximately 29 billion kilometers, from which 20.7% or 6 billion kilometers are counted for empty runs as shown in the figure below.

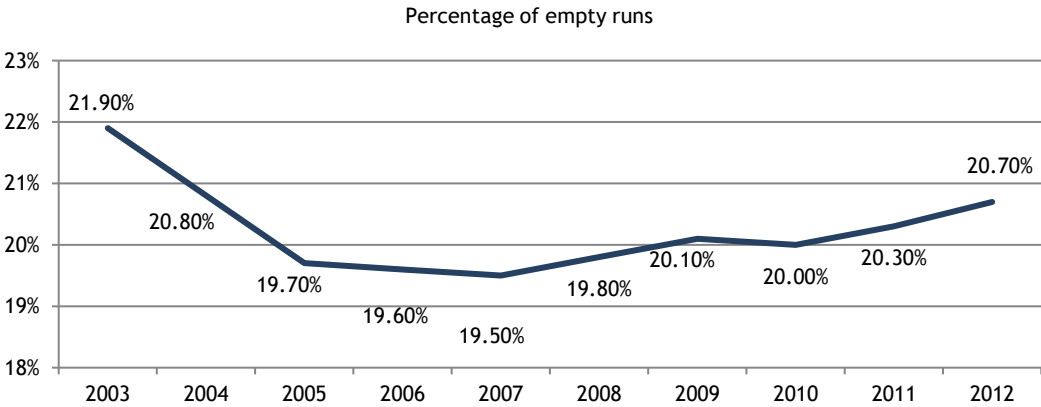


Figure 2.4 2 Percentage of empty runs in the German truck transport industry

The high fragmentation of the market limits the scope for action for a majority of the firms. Consequently, freight forwarders with special local expertise or a higher market scope act as a broker between shipper and carrier bridging the gap between local limitations of both - buyer and supplier.

The demand for truck transports shows seasonality since transport service supply is a reaction to derived demand. In contrast to most markets, FTL service markets are characterized by diseconomies of scales, since the effort to bring a truck to a particular loading place gets higher by increased journey kilometers from different unloading places with each additional truck, thereby increasing the marginal costs, assuming that the nearest truck to a loading place takes the first load, the second nearest truck the second load and so on. In general, truck transports are a well describable service in the majority provided by standard equipment such as 13,6m euro-trailers for standard goods. Even in market niches such as dry silo, tank or tipping trucks a sufficient number of suppliers is available.

### 2.5. Appropriateness and use of e sourcing in German truck transport markets

In 2014, according to Bogaschewsky (2014) 41.3% of all German companies use e-tendering tools, 19.5% are in a phase of adoption, 8.5% plan an adoption within the next years, and 30.7% assess e-tendering as irrelevant compared to 38% in 2013 (Bogaschewsky, 2013). We can assume that those numbers can be applied to the transport industry in general and the



truck transport services in particular, with a further increasing number of e-tenders, the reduction of tender cycles and a wider spread of participants (Otto 2013). Despite this notable trend towards an increasing importance and the use of e sourcing tools, user numbers are only available across industrial firms and the service industry in general in Germany.

The previous chapters delivered first indications of market conditions, which could foster or hinder a sensible use of e sourcing tools in different markets. Jap (2002) identified four essential issues in the use of e sourcing, which was partly refined by Smeltzer and Carr (2002) and Hawkins, Gravier, and Wittmann (2010). This combined model is helpful to assess the adequacy with the German FTL service market to eRA use.

1. Conditions, or when to use eRA
  - Attractiveness in terms of purchase volume
  - Descriptiveness of the goods
  - Category of spend - non-critical, leverage, bottleneck or strategic
  - Competition - sufficient number of suppliers
2. Structure, or how to use the auctions
3. Evaluation, or why to use auctions
  - Expected savings

Conditions, or when to use eRA - attractiveness in terms of purchase volume.

Jap (2002) stated that the size and value of the contract should be sufficiently large to attract suppliers to the auction and in this regard, buyers often aggregate smaller contracts or families of products into one lot. Smeltzer and Carr (2002) and Tassabehji (2003) support this statement. With a majority of small firms and reverse economies of scales, large lots might prevent most market participants on supplier side from bidding due to a lack of capacity. On the other side, the bundling of load offers from several buyers to create cost efficient round trips could be a useful mean to attract suppliers to bid.

Conditions, or when to use eRA - descriptiveness of the goods.

When the value of a product is easily expressed qualitatively and quantitatively, online auctions provide an efficient mechanism by which to evaluate all suppliers rapidly - when products or services are commoditized, the capabilities of Internet-based technologies are particularly valuable (Jap (2002), Smeltzer and Carr (2002)). Reverse e-auctions are thought to be the most appropriate for products with low asset specification or low product

complexity, for which there are at least four or five potential suppliers (Garcia-Dastugue and Lambert, 2003). Although the service can be perfectly described, a trip from A to B at a given time for a given volume, a dynamic environment such as seasonality, waiting times at loading and unloading places, or re-loading availability makes it hard for suppliers to assess the true costs upfront. Knowing the costs is vital for bidding in e-auctions (Emiliani, 2000).

Conditions, or when to use eRA - Category of spend - non-critical, leverage, bottleneck or strategic.

Firms that do long-term planning and consider purchasing strategies are likely to build long-term cooperative relationships with their key suppliers (Carr and Pearson, 1999). Barney (1991) defines a resource that provides competitive advantages to a firm as difficult to imitate with no direct substitutes and as a tool to pursue opportunities or avoid threats. Emiliani (2000) defines truck transports as a commodity. The service itself is homogenous provided by standardized equipment. Whether truck transports have a strategic importance or a non-critical one depends on the particular business strategy of a buyer.

Conditions or when to use eRA - competition - sufficient number of suppliers

Supplier competition is vital for success (Mabert and Skeels (2002), Jap (2003), Kaufmann and Carter (2004)). With a vast number of suppliers, competition should be taken for granted.

Structure, or how to use the auctions

Market Makers provide platforms to match buyers and sellers in German tender or daily spot markets. While daily spot markets represent platforms on which suppliers or freight forwarders exclusively buy or sell loadings mostly without an auction event among themselves, tender platforms provide the classic eRA events where buyers place tenders, which request freight charges for a greater number of transports within a pre-defined time limit. Furthermore, market makers provide the software, technical support and guidance to handle the auctions. More importantly, they offer prequalified suppliers, which mainly means saving labor for buyers by avoiding costly and time consuming supplier management.

Evaluation, or why to use auctions - expected savings

Any auction is theoretically an attempt to create a pure market with perfect information among buyers and sellers (McAfee and McMillian, 1987). In this regard, e-auctions should be a perfect tool for an imperfect market of transportation, characterized by a high portion of

brokerage to overcome market limitations in terms of local scope and imperfect information. As long as purchasing is focused on selecting the best value option from a number of different bidders, presumably any other purchaser has exactly the same right and opportunity. This statement from Leenders, Nollet, and Ellram (1994) demonstrates an inherent dilemma of eRAs as described above. Savings will probably never create a procurement advantage of any buyer. Based on the findings in German FTL service markets we still see a high portion of empty runs and brokerage, which could be lowered through a tool with the potential to improve resource allocation and to erase brokerage, therefore taking cost out of the market. Besides savings, some more benefits developed obviously from compliance to streamlined procurement processes. To assess the true motivations of eRA use further research is needed among buyers.

### 3. Research Methods

The methods of this research are determined to develop a framework in order to decide when to use e sourcing and how to successfully implement it as a procurement source for FTL services on German markets (in case of an adoption) or how to improve its performance (when already adopted). The focus is hereby on barriers to supplier acceptance, as a possible detriment to e sourcing.

To gain a first overview on the actual use of e sourcing within the industry, participation rates of suppliers in the particular FTL services and a comparison with other eRA performances, the use of key performance indicators, especially the rate of supplier participation in terms of returned offers per invited suppliers is appropriate to show first trends in participation. It will also provide us with a first indication answering the question whether provided data show a decline in participation. However, due to a dynamic business environment and not available numbers about the recent market penetration of e sourcing tools, this type of data alone will not be sufficient to support the research objectives comprehensively. To gain a deeper understanding of stakeholder´s objectives, motivations, concerns, and organizational limitations while confronted with e sourcing, interviews and a survey will be conducted with all stakeholders to clarify environmental and organizational influencing factors on the adoption or sensible use of e sourcing besides the given KPIs. Lastly, the observations from one company and its use of e sourcing will provide more quantitative and qualitative data.

Starting from the literature review, we can develop a first draft of a decision framework for the use of e sourcing which still shows uncertain factors and open questions. Filling those factors with information gathered by the applied research methods will lead to a precise picture of do´s and don´t s and boundaries of e sourcing use. The decision framework is an adapted combination of the already discussed models of Chwelos, Benbasat, and Dexter (2001) and Soliman and Janz (2004) - see table 3 1.

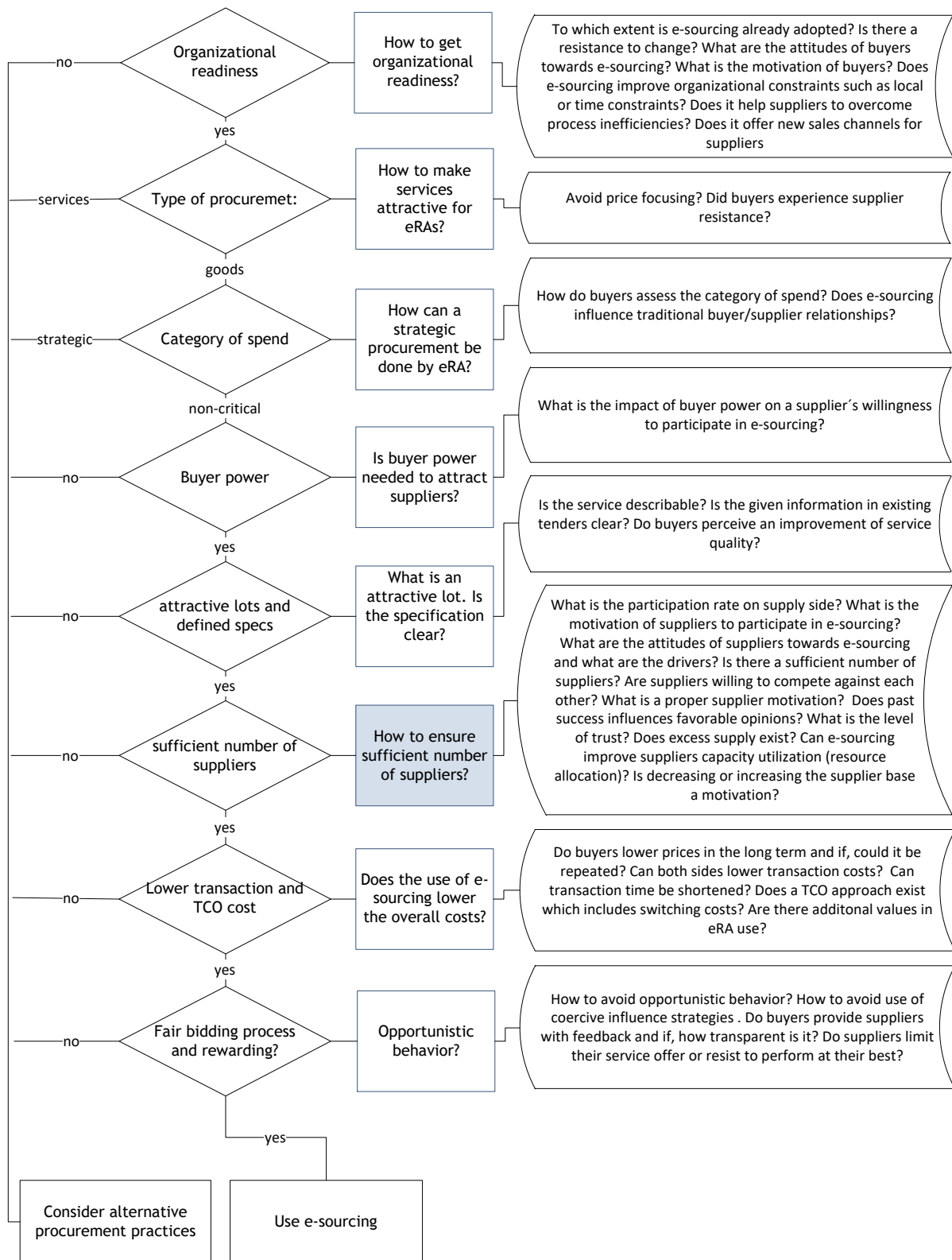


Table 3 1 First draft of a decision framework for the use of e-sourcing

### 3.1. Data and key performance indicators

The provided data from Ticontract comprise eight companies, which were chosen randomly from a pool of buyers that launched at least three e tenders in three consecutive years - more information was not available. Although the population is too small to gather statistical evidence, the use of this KPI may be an indication starter for a deeper assessment of eRA use in Germany, which will be done in the following chapters.

Company	Industry	2011	2012	2013	description
C1	Pharma & Healthcare	850	966	845	n° of invited suppliers
		544	628	583	n° of received offers
		64%	65%	69%	returned offers/invited suppliers
C2	Household appliances	22	18	16	n° of invited suppliers
		13	12	12	n° of received offers
		61%	65%	72%	returned offers/invited suppliers
C3	Packaging	1700	524	558	n° of invited suppliers
		578	220	229	n° of received offers
		34%	42%	41%	returned offers/invited suppliers
C4	Packaging	560	820	916	n° of invited suppliers
		79	49	37	n° of received offers
		14%	6%	4%	returned offers/invited suppliers
C5	Retail	1037	1042	991	n° of invited suppliers
		21	52	69	n° of received offers
		2%	5%	7%	returned offers/invited suppliers
C6	Wood	1208	274	280	n° of invited suppliers
		362	186	199	n° of received offers
		30%	68%	71%	returned offers/invited suppliers
C7	Automotive OEM	52	52	67	n° of invited suppliers
		23	27	36	n° of received offers
		45%	51%	54%	returned offers/invited suppliers
C8	Automotive OEM	58	65	77	n° of invited suppliers
		28	34	42	n° of received offers
		49%	53%	54%	returned offers/invited suppliers

Table 3.1 1 Ticontract data pool - eRA KPI 's from different buyers

The provided data in table 3.1 1 show no evidence of a widespread declining supplier participation in percentages. Only C4 shows a significant decrease of RO, whereas C1, C2, C3, C7, C8 show a stable or slightly increased RO and C5 and C6 could increase RO over a time window of three years. On the other side, the data give no evidence for a well-functioning eRA use. Firstly, no benchmark is available to estimate an optimal participation rate. A wide spread of participation becomes obvious, ranging from 2% in tender year 1 from company C5 to 72% in tender year 3 from company C2 as indicated in figure 3.1 2.

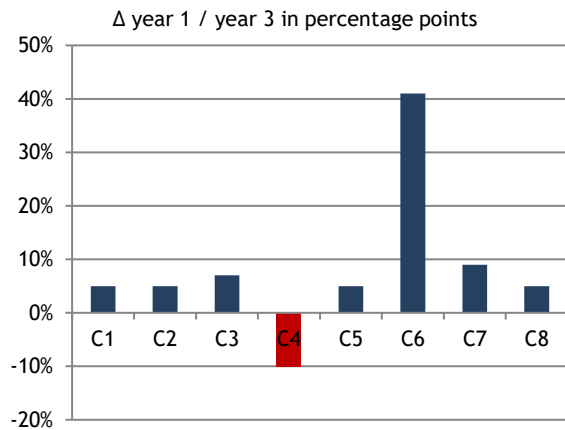
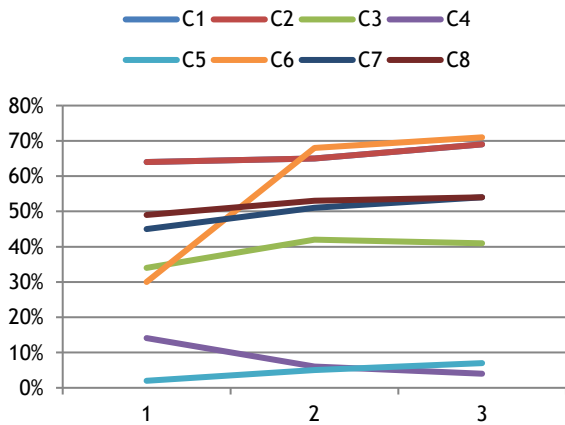


Figure 3.1 1 trend of supplier participation in % returned offers/invited suppliers (RO) over a period of three years

Figure 3.1 2 trend of supplier participation as delta from year 1 to year 3 in percentage points of RO

Considering a possible RO of 72% (C5) as benchmark the question can be raised why all the other eRA events show lower participation rates. We can assume that e sourcing on German markets does not show the same degree of performance among the sample population with an exclusive look on RO. Second, RO improvements could be achieved by any change in procurement strategy such as a change of quality and quantity of offered transports or contract conditions, or an improved supplier selection. Possibly suppliers simply dropped out of the pool by not risking further investments in a tender that was already lost in the previous period. With a closer look on absolute numbers in terms of invited suppliers in figures 3.1 3 and 3.1 4, the majority of companies C1, C2, C3, C5, and C6 now show a decreased number of invited suppliers.

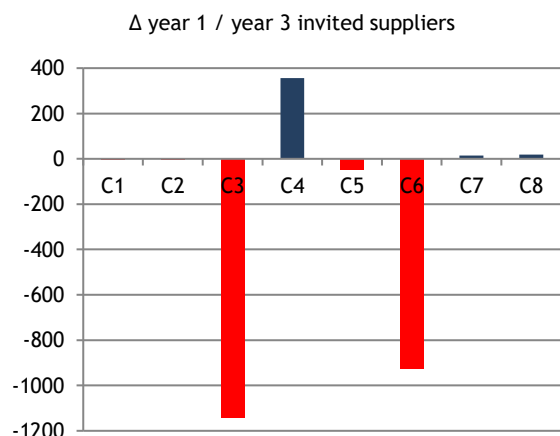
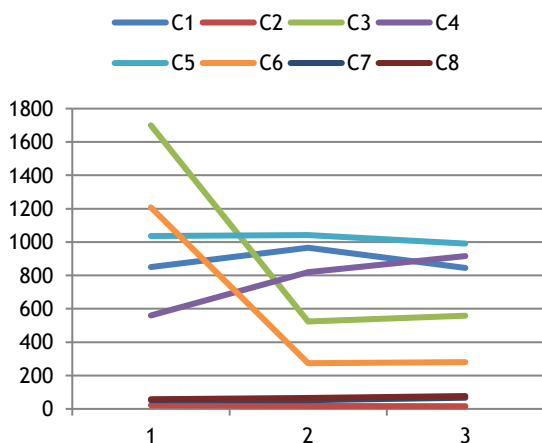


Figure 3.1 3 trend of supplier participation in absolute numbers of participants over a period of three years

Figure 3.1 4 trend of supplier participation as delta from year 1 to year 3 in absolute numbers of participants

Literature indicates overcoming market failures by widening the market range or improving the eRA outcome by inviting more bidders as one of the possible positive outcomes of e sourcing hence, narrowing of the supplier base seems to be counter-productive. On the other side, the findings might support the hypothesis that high competition leads to decreased tender participation.

Assuming that theoretically every transport supplier can respond to every eRA as long as it is a standardized transport request with the possibility to bid within the given capacity limits of suppliers, existing market failures become apparent by the fact that not every market participant on the supply side is able to provide each transport demand due to own preferences. Preferences may be the result of market restraints such as limited market scope. A supplier with a market scope in region A and B will offer transports from A to B, but not to region C due to missing contacts and abilities to generate necessary re-loadings. This is a first hint that up to this date an optimal supplier pool for each transport demand exists, which is not described by the supplier base in total. In so far as transport demands are homogenous in the service itself, they do differ in destinations, thus an optimal supplier base and participation rate cannot be comprehensively described for a greater number of transports.

Although the given population has no statistic relevance, and although the particular conditions are - due to missing access to further information - unknown, first indicators show that e sourcing varies in the degree of performance and might not show its full potential on German FTLS markets.

### 3.2. Interviews with buyers

Expert interviews were conducted in order to gain the information needed from buyers following the structure of the first draft of the presented decision framework. All companies currently use e sourcing tools of different types, from professional e sourcing platforms to own IT solutions on daily markets for tendering. In the focus of the interviews were questions about motivation, decision triggers, as well as facts. A survey was ruled out because a) there were difficulties in getting a deeper understanding of buyer motivation and b) useful information could potentially be missed due to a limited survey design. In total, ten companies participated in the interviews (table 3.2 1) out of which eight were interviewed as e sourcing users in German FTL service markets and two as a control and comparison group for any kind of material. The interviews were conducted with senior management procurement (5) or experienced logistics procurement experts (5). Two participants requested complete anonymity for themselves and their company data; interviewees were



labeled as AA-AJ randomly and linked with their companies B1-B8, CG1-2 in a key bridge that is known only to the author. One interviewee decided shortly prior to the interview was conducted to ban e sourcing from the company’s procurement practices. Nevertheless, his experience and opinion will be included in the interview evaluation. Two companies use e sourcing only for parts of their overall transport demand in a range from 9% to 30%, five others match their transport demand completely with the use of eRA with the exception of special transports such as liquid aluminum.

Company	Industry	employees	purchase volume	e sourcing
B1	Steel	2,000	10,000 shpmts.	own platform
B2	Chemicals	450	10,000 shpmts.	own platform
B3	Steel	160,000	250,000 shpmts.	own platform
B4	Steel	6,000	226,000 shpmts.	own platform
B5	Building materials	1,200	87,000 shpmts.	own platform
B6	Aluminum	7,000	n.n.	own platform
B7	Paper	3,500	100,000 shpmts	Ticontract
B8	Steel	8,100	n.n.	Ticontract

Control Group	Industry	employees	purchase volume	e sourcing
CG1	Steel	2,500	n.n.	own platform
CG2	Steel	1,000	n.n.	own platform

Table 3.2 1 sample interview buyers

All eight FTL service buyers were asked to define the desired objectives of e sourcing use and to rank them. The objectives of all interviewees were brought together in table 3.2 2 and points were added according to the ranking in an ascending way. Seven points for the most important objective, six for the second objective and so on. One shipper did not provide an answer.

QB1	Objectives	AB	AD	AF	AG	AH	AI	AJ	Pts.
1	freight savings	7	0	0	5	5	7	7	31
2	process improvement	0	0	7	4	6	6	0	23
3	market transparency	0	7	0	6	4	5	0	22
4	auditable procurement processes	0	6	0	3	7	0	4	20
5	improved planning	0	0	6	7	0	0	3	16
6	improved service quality	0	5	0	0	0	0	6	11
7	demonstrating of arm-length relationship	0	0	0	0	0	0	5	5

Table 3.2 2 Ranking of buyers’ objectives in e sourcing use

Apparently, the level of service quality only plays a minor role when it comes to procurement decisions on German FTL service market. In the control group price savings were ranked 1<sup>st</sup>,

an improved service or goods level was ranked 2<sup>nd</sup>, process improvement was ranked 3<sup>th</sup> and auditable procurement practices 4<sup>th</sup>.

Table 3.2 3 summarizes the remaining answers of all participants to questions along all stages of a possible decision framework.

Questions / Answers	Groups	buyers			control group		
		yes	neutral	no	yes	neutral	no
QB2	Was there a resistance to change within your own organization?	4	3	1	1	1	0
QB3	Do you have a positive attitude toward e sourcing?	4	0	4	2	0	0
QB4	Does it help suppliers to overcome process inefficiencies?	3	0	5	2	0	0
QB5	Does it offer new sales channels for suppliers?	8	0	0	2	0	0
QB6	Do you evaluate biddings with other than price criteria?	8	0	0	2	0	0
QB7	Did you or do you experience supplier resistance?	5	0	3	2	0	0
QB8	Do you assess truck transports as a source of strategic importance?	4	0	4	0	0	2
QB9	Does e-sourcing influence traditional buyer/supplier relationships?	4	0	4	1	0	1
QB10	Is buyer power needed to attract suppliers?	8	0	0	2	0	0
QB11	Have you ever forced an incumbent existent supplier to participate in an eRA event?	8	0	0	2	0	0
QB12	Is increasing the supplier base a motivation?	0	4	4	0	2	0
QB13	Is a transport a describable service?	8	0	0	2	0	0
QB14	Do you think suppliers assess your eRAs as a realistic opportunity to create new businesses?	7	0	1	2	0	0
QB15	Can e sourcing improve supplier capacity utilization?	8	0	0	2	0	0
QB16	Could you lower the prices with the first eRA?	8	0	0	2	0	0
QB17	Could you lower the prices in following eRA events?	0	5	3	0	0	2
QB18	Can both sides lower transaction costs?	8	0	0	2	0	0
QB19	Can transaction time be shortened?	8	0	0	2	0	0
QB20	Does a total cost of ownership approach exist which includes switching costs?	0	0	8	0	0	2
QB21	Are there additional values in e sourcing use?	8	0	0	2	0	0
QB22	Does e sourcing foster opportunistic behavior on buyer side?	2	0	6	2	0	0
QB23	Do you provide suppliers with feedback after an eRA event?	4	0	4	1	0	1
QB24	Does this feedback explain how the winning bid was evaluated?	0	0	8	0	2	0

Table 3.2 3 Buyer interview framework and answers

Four of the interviewees judged e sourcing as a proper way to procure transport services, four others raised concerns about it (QB3). Four companies assessed the procurement of truck transport capacity as a strategic task, four others as a non-critical category of spending (QB8). Surprisingly the control group reported to never use eRA in case of strategic resources.

All eight interviewees agreed that buyer power over new suppliers is needed to attract them to participate for own eRAs (QB10) and that they forced existent suppliers to participate (QB11), although seven companies believed that they had to offer realistic business opportunities for all suppliers (QB14).

Only three interviewees assessed price saving as the main objective of e sourcing (QB1, table 3.2 2), none of them offered other criteria than price to evaluate eRAs (QB6). Four interviewees declared that other factors were also important when rewarding the business (QB1, table 3.23), but they were not publicized to participating suppliers (QB24). All interviewees confirmed price savings as the outcome of eRAs (QB16). Whether these savings would be long term effects could not be predicted. All eight saw a first big impact on prices and only minor impacts in following eRA events (QB17). All interviewees were convinced that e sourcing had the potential of overcoming market limitations and therefore of increasing the capacity utilization rate (QB15).

AB reported a decreased quality in the processing of eRA transport requests compared to traditional requests made by phone or fax. “The processing is much slower and often our eRA just gets clicked away from guys who would otherwise die to work for you.” AJ reported resistance especially among existent suppliers, which still see the world with “outdated arrogance”. AD reported resistance among new suppliers, as well as among existent suppliers, which behave like a “bunch of prima donnas”. AH reported supplier’s reactions as inappropriate in a world of civilized human beings. The responses from supplier side ranged from “I do not participate; I rather save electricity” to “I never work for price drivers”. AA experienced some sort of nervousness among suppliers whereas three interviewees never experienced resistance. AB, AD, AF, AH, AJ reported after-buy service quality issues which comprised no-shows of ordered trucks without pre-notice, insufficient supply in times of high seasonality, lower level of communication, and increased number of transport damages.

### 3.3. Supplier interviews and supplier survey

In total, twenty companies participated in the interviews of which all mainly act as truck transport supplier on German markets. Those interviews were conducted to gather first information and to develop a comprehensive understanding of drivers in e sourcing use on supplier’s side not limited to predefined questions of a survey. The company sizes ranged from small local companies with only one employee up to big global corporations with 450,000 employees. The average company size was 51-100 employees. The interviews were conducted with firm owners, CEOs or senior management in sales and dispatching. Again,

many participants requested complete anonymity for themselves and their company data.

The interviews were conducted with the following companies.

Alders	Alpensped	AMS	Bayer	CT Log	DHL	Geodis BM
Hasse	Hebbel	Hermes	Hesse	Kitzinger	LKW Walter	LTB
Neska	P&O	Petschl	Transped	Vertex	Waberer´s	n = 20

Table 3.3 1 Participants in supplier interviews and survey

	How to get organizational readiness	yes	no/neither	no
QS1	Do eRAs increase in absolute numbers?	18	2	0
QS2	Do you see new sales opportunities in eRAs through a higher market reach?	18	0	2
QS3	Do you see new sales opportunities in eRAs through an easier access to new customers?	15	0	5
QS4	Do you work on eRAs with the same care as on traditional freight requests?	9	1	10
QS5	Do you have sufficient organizational resources to participate in a tender?	9	1	10
QS6	Do you perceive eRAs as interfering factors in daily business routines?	8	3	9
QS7	Do eRAs contribute to better auditable procurement processes?	8	7	5
QS8	Do eRAs improve your planning base?	2	5	13
QS9	Are tender platforms user friendly?	10	1	9
QS10	If not, due to a lack of expertise?	3	0	17
QS11	If not, due to a lack of clarity?	9	0	11
QS12	What else do you need? Active search for tenders according to your needs?	11	2	7
QS13	What else do you need? Tender bundling to create round trips?	6	2	12
QS14	What else do you need? The opportunity to include other than price criteria into your bid?	13	2	5
	How to make services attractive for eRAs?	yes	no/neither	no
QS15	Does e-sourcing has the same meaning compared to traditional sales approaches?	8	0	12
QS16	Does e-sourcing have a strategic meaning for your company?	8	0	12
QS17	Do you get rewarded for your particular service quality or other criteria?	2	1	17
QS18	Is the price the only decision criterion?	17	1	2
QS19	Do you expect lower rates as an eRA outcome?	18	0	2
QS20	Does short-term considerations of eRAs deteriorate your planning situation?	15	0	5
	How can a strategic procurement be done by eRA?	yes	no/neither	no
QS21	Do eRAs negatively influence buyer/supplier relationships?	18	0	2
QS22	Are eRA users rather short-term focused?	14	2	4
QS23	Is your particular service quality your competitive advantage?	19	0	1
QS24	Will you go "the extra mile" for long-term customers?	14	0	6
QS25	Will you go "the extra mile" for short-term focused eRA users?	6	3	11
QS26	Do you rather allocate trucks to long-term customers in times of shortage of supply?	12	3	5

	<b>Is buyer power needed to attract suppliers?</b>	<b>yes</b>	<b>no/neither</b>	<b>no</b>
QS27	Have you ever been forced to participate in an eRA event though an incumbent existent customer?	18	0	2
QS28	Do you participate in eRAs of unknown buyers?	8	0	12
	<b>What is an attractive lot? Is the specification clear?</b>	<b>yes</b>	<b>no/neither</b>	<b>no</b>
QS29	In general, are the offered lot seizures appropriate for eRA use?	9	7	4
QS30	Are the demanded services well described?	10	4	6
	<b>How to ensure sufficient numbers of suppliers?</b>	<b>yes</b>	<b>no/neither</b>	<b>no</b>
QS31	Do you only participate in an eRA event when you see a chance to gain new business?	16	0	4
QS32	Do you prefer not to participate in case of high competition?	11	1	8
QS33	Should eRAs be abolished?	4	5	11
QS34	The use of eRAs should be increased?	2	5	13
QS35	Do you think the shipper is always the winner?	9	4	7
	<b>Does the use of e-sourcing lower the overall costs?</b>	<b>yes</b>	<b>no/neither</b>	<b>no</b>
QS36	Do eRAs improve your organizational processes?	3	0	17
QS37	Do eRAs have the potential to drive freight forwarders out of the markets?	8	0	12
QS38	Do eRAs have the potential to generate higher rates for you through avoided brokerage?	8	0	12
QS39	Do eRAs already improve your freight prices?	1	0	19
QS40	Do eRAs have the potential to improve your capacity utilization through improved re-loadings?	16	0	4
QS41	Do eRAs have the potential to improve your capacity utilization through more partial shipments?	16	0	4
QS42	Do eRAs help you to improve your market overview?	14	0	6
	<b>Opportunistic behavior?</b>	<b>yes</b>	<b>no/neither</b>	<b>no</b>
QS43	Do you perceive buyer behavior in eRAs as fair?	7	4	9
QS44	Are you likely to respond on a tit-for-tat base?	10	1	9
QS45	Will you be less accommodating?	10	2	8
QS46	Is the process of rewarding business transparent and is feedback provided?	3	3	14
QS47	tenders at the same point in time	12	2	6
QS48	risk loss of incumbent /existentcustomers	16	0	4

Table 3.3 2 Supplier interview framework and answers

The survey comprised the following companies additionally:

Adams	Alsbach	ASH	Bussmann	Dettendorfer	DLS	Dmytro
Freja	Fuchs	Görgen	Gronemeier	Holtkamp	Hudos	Klarholz
Krabbe	MTS	Nöldner	Octo	Olk	Pro Logistik	Rathschek
Roschinsky	Sievert	Sostmeier	Stahl log	THX	Transco East	Vey
Wismans						n = 29

Table 3.3 3 Additional participants in supplier survey

All interview participants had experience with e sourcing - most of them had at least been once compelled to participate through existent customers (QS27). It became apparent that nearly all companies (90%) defined their particular services from being personally available, quick decision-making, flexibility, fleet availability up to customer adapted billing processes as their unique value proposition or competitive advantage (QS23). With a focus on prices rather than other criteria, they saw more risks than opportunities (QS18, QS19, and QS48). All in all a remarkable portion of bad attitudes towards e sourcing was detectable with the potential to lower eRA outcomes not only in terms of participation, but also in terms of service quality. Eighteen companies were convinced that the use of e sourcing influences negatively traditional customer relationships (QS21) with the consequence that fifty percent of the suppliers would start treating eRA customers on a tit-for-tat base (QS44), while being less accommodating (QS45) and remarkably 55% of the companies would abolish eRAs if they would have the power to do so (QS33).

Starting from the statistically not relevant information of the interviews, a survey was designed for further examination of supplier attitudes towards eRAs, the drivers of those attitudes, supplier attitudes towards trustful customer/supplier relationships and its drivers as well. The survey included the interview partners and additional 29 companies - 49 in total. Out of all participants, 28 organizations are smaller companies with a maximum of 50 employees, and 21 companies have more than 50 employees up to corporations with 450,000 employees. To gain a statistical relevance with the survey, one could assume that the population should be similar to the given company structure in the industry with a focus on small and smallest companies. Since smaller companies still depend on freight forwarders and many quantities are offered beyond small suppliers' capacities preventing them from participating in eRA events, the proportion of e sourcing users on the supply should match an average company size. Consequently, the survey population has an average company size of 3.33 on a five-step scale from microenterprises (1) to companies with more than 100 employees (5). Except for questions 0, 2, 3, a five point Likert scale with the anchors strongly disagree (1), a neutral point (3), strongly agree (5) was used. Q0 was on a yes/no base, Q2 showed 1-5, 6-20, 21-50, 51-100, >100 and Q3 none, sales through dispatch, sales through management, sales representative, tender manager.

Q0 Have you already participated in eRA events?	99,00%	1,00%
<b>Question</b>	<b>Mean</b>	<b>SD</b>
Q1 We have a positive attitude towards e sourcing.	2,68	1,11
Q2 How many employees do you have?	3,33	1,48

Q3 Do you have own sales force?	2,92	1,32
Q4 We do not have any reservations to adopt to new business models or IT structures.	3,64	1,03
Q5 Our experience with e sourcing were positive.	2,74	1,05
Q6 We participate in eRAs even though the chance to win is only a slight one.	2,64	1,40
Q7 We also participate in eRA events from unknown shippers.	2,80	1,51
Q8 We participate in tenders with high competition.	3,22	1,76
Q9 E sourcing offers more opportunities than risks.	2,76	1,71
Q10 E sourcing creates a trustful buyer/supplier relationship.	2,36	1,77
Q11 Buyers using eRA are interested in long-term collaborations.	2,58	1,94
Q12 Buyers using eRAs have other motivations than starting a bidding war to drive down prices.	2,42	2,12
Q13 Service quality is still an important decision criterion for buyers using eRA.	3,36	2,19
Q14 Even though a buyer uses eRA we still have the option to negotiate to create a win-win situation.	3,34	2,26
Q15 Buyers using eRA don't use unqualified suppliers or phantom biddings to drive down prices.	2,94	2,40

Table 3.3 4 Supplier survey framework and evaluation

Derived from table 3.3 4 the overall attitude towards e sourcing is negative (2.68). ERAs will not create trustful relationships (2.36); instead, the buyers' motivations are obviously the introduction of arm length relationships (2.58) to drive down prices (2.42). Although suppliers are convinced that they have nothing to win (2.76), the majority believes that other than price criteria still play a role in rewarding the business (3.36) and that room for further negotiations is given (3.34).

To assess the drivers of attitudes and buyer/supplier relationships, we use a correlation table to examine the impact of single issues on the research objective. For attitudes, all questions are included, since intuition tells us that unethical behavior will drive attitudes the same way as experiences do. While the correlation will give us indications of strength of relationships between variables, we do need to consider that these results are based on one sample, which may not be statistically significant. We could determine statistical significance through calculating a p-value but this is outside the scope of this paper. However, due to the large sample size and the substantial magnitude of the given numbers in table 3.3 5 and 3.3 6, we have some confidence that the results are likely be significant. In addition, we should remember that correlation does not imply causation. The empirical data will show correlation effects as how two or more variables move in synchrony with each other, but this does not necessarily mean that one of them causes the other.

As shown in table 3.3 5, the biggest drivers towards eRA attitudes seem to be experience (0.63 - the better the experience, the better the attitude) - which is only to a limited extent under buyers' control - and the expectation of having a benefit (0.58, the higher the

expected benefit, the better the attitude), whereas the size of a company (0.09) or its particular sales forces (-0.09) seem to play only a minor role.

**correlation table attitudes towards eRA**

1	experiences with eRA	0.63	2	something to gain	0.58	3	high competition	0.48
4	opportunities	0.45	5	long-term collaboration	0.34	6	other than price criteria	0.34
7	trustful relationship	0.32	8	unknown shippers	0.30	9	phantom biddings	0.27
10	possible negotiations	0.26	11	attitude new tools	0.25	12	service as decision factor	0.22
13	sales forces	0.09	14	employees	-0.09			

Table 3.3 5 Correlation table attitudes towards eRA

Table 3.3 6 shows that a trustful relationship is positively correlated with the prospect of a long term-collaboration (0.86), the perception of having more opportunities than risks (0.85), the absence of cheating eRA practices (0.84), rewarding the business by including other than price criteria in a supplier evaluation (0.81), the possibility to enter into negotiations (0.80) and service quality as an important decision criterion in rewarding the business (0.75). The fact that trustworthy relationship is not highly positively correlated with positive eRA attitudes may be an indication of a different understanding of suppliers committed to eRA as a new business opportunity, which includes the side effect of lowered importance of traditional buyer/supplier relationships.

**correlation table trustful relationship**

1	long-term collaboration	0.86	2	opportunities	0.85	3	phantom biddings	0.84
4	other than price criteria	0.81	5	possible negotiations	0.80	6	service as decision factor	0.75
7	high competition	0.64	8	unknown shippers	0.58	9	something to gain	0.55
10	experiences with eRA	0.54	11	attitude new tools	0.37	12	attitude eRA	0.32
13	employees	0.26	14	sales forces	0.03			

Table 3.3 6 Correlation table trustful relationship



## 4. Findings / Case study

We will use the draft of the decision framework to compare the findings against the background of a real life scenario, with the experiences of BeCo. As a part of Germany's biggest Steel Corporation BeCo represents both sides of e sourcing. It does not only provide transport services as a classical supplier with an own fleet, it acts furthermore as a logistics procurement department for sister companies like ThyssenKrupp Rasselstein, ThyssenKrupp Stahl Service Center or Hoesch Hohenlimburg. The use of e sourcing comprises the procurement of FTL services as a buyer via Ticontract since 2012 and the participation in eRA events within the group, as well as in eRAs from outside companies as a supplier.

How to get organizational readiness?

On buyer's side adoption rates are still relatively unknown since numbers are not available, but an increase of eRA use is obviously based on the supplier interviews. BeCo has recently generated only 4.03% of its total revenues from e sourcing customers, starting from 1.65% in 2011. Based on the experiences of BeCo, customers who assess truck transports as a source of strategic importance show a high resistance to shift their procurement practices towards e sourcing. Most companies still prefer a traditional vendor approach and a collaborative buyer/supplier relationship. Buyers, who have already adopted e sourcing, have been motivated to drive down prices, to improve procurement processes, to gain market overview and to introduce auditable procedures. All have achieved their objectives, although a surprisingly high level of confusion of objectives has become obvious, such as defining other than price criteria as the main objective for rewarding the business, while failing to include those criteria in the launched eRAs.

Suppliers saw an opportunity for new businesses, but the low organizational readiness in terms of careful eRA processing and a lack of resources to work on tenders are correlated with negative attitudes towards e sourcing and its main driver a low expectation to achieve a benefit as well as negative experiences. Hence, a reduced will to invest in proper eRA resources is a possible outcome. This low benefit expectation is based mostly on the assumption that a missing opportunity to include other than price criteria prevents suppliers from using their particular value proposition to attract new customers. Only 14% of all surveyed companies have a specialized tender manager and even 40% of all suppliers called e sourcing an interfering factor in daily businesses. A lack of IT structures lost its importance as a severe detriment to e sourcing adoption, but the user friendliness of tender platforms is likely to be an obstacle to the adoption of eRA according to Grewal, Comer, and Mehta (2001) and Hartley, Lane, and Duplaga (2006). Weaknesses, such as function knowledge or a

lack of clarity especially in the use of buyer's own platforms were reported from 45% of all suppliers. A missing function to actively select tenders or a missing bundling of buyer requests to create efficient round trips which limits additionally supplier's opportunities to achieve benefits are the main weaknesses of market maker platforms. Market makers are more likely to succeed if they provide positive network externalities for participating firms. Understanding the goals of their participating firms enables market makers to design programs that facilitate goal achievement and enhance member retention (Grewal, Comer, and Mehta, 2001).

A further finding - not mentioned in any literature so far - was the reported concentrated launch of eRAs mainly in autumn. This might be owed to buyer's wish to start with new freight charges as a calculation base into the next accounting period, which often begins with first of January, but this eRA concentration further stresses low organizational readiness on supplier side and might further lower processing care.

Becker & Co. reported the same targets as the interviewed buyers, although process improvement and review and audit safety were the main drivers since they assumed buying at market prices as experts in logistics procurement and having the necessary knowledge to calculate freight charges. The targets in detail were:

1. Process improvement in truck transport capacity purchasing by using a lean and efficient internet based tool. The target was achieved by saving 14.5 person-days per eRA event.
2. Quick results to meet narrow time windows where markets show low demand and high supply - windfall profits. The target was achieved by reducing the lead-time for a tender from 18 days down to 7.5 days. This was short enough to 'surf the wave' of seasonality and to produce windfall profits.
3. Process improvement according to compliance requirements: transparent purchasing process, review and audit safety. The target was achieved.
4. Broadening of supplier portfolio to avoid a slide from brokerage to closure networks and to get "fresh" new inputs from outside the known network through a wider reach of internet based platforms with a sufficient number of participants. The expected results were not met. The supplier participation was surprisingly low. In 2014 overall returned RFIs were down by 26% compared to 2012, received offers were down by 24%. In 2014, BeCo exchanged 200 former suppliers from their own portfolio to new suppliers from the Ticontract database. Only 15% of all suppliers were either able and/or willing to hand in offers, compared to 20.7 % in last year's tender.

	Sent RFIs	Returned RFIs	Received offers	% of potential suppliers
2012	843	330	157	18.60%
2013	799	361	165	20.70%
2014	802	245	120	15.00%

Table 4 1 Becker & Co. eRA KPIs

5. Driving down the overall level of freight charges.

The target was achieved although the greatest savings were achieved in tender year 1 2012, thereafter savings were rather moderate and could have been the result of traditional negotiations as well. Precise numbers were not handed out because of a confidentiality agreement.

6. Creating a benchmark to compare cost of own fleet to market conditions.

Target was achieved in form of market transparency.

How to make services attractive for eRAs?

Based on the interviews with the control group, a difference between the eRA procurement of goods and services is not only reported in literature, but also in real life scenarios. The assumptions expressed by Caniëls and van Raaij (2009) that especially service suppliers can be expected to try to resist the commoditization of their offerings and are expected to be more critical towards eRAs than manufacturing companies, has been confirmed.

On buyer's side, only three out of eight companies had an exclusive focus on prices as the main criterion for rewarding business, but none offered an option for suppliers to include more than price value into the eRA events. Consequently, seventeen out of twenty suppliers assessed price as the only decision criterion for buyers and only two believed that they are rewarded for their service offer. Buyers also reported partially vehement resistance of suppliers to participate in eRAs, especially from existent suppliers. Here also, supplier behavior was driven by a negative attitude founded on the belief that they have nothing to win.

The supplier reactions to BeCo's first eRA were congruent and ranged from helplessness ("I never participated in a tender), to appeals ("reliable logistics need long-term conditions"), resistance ("I have no chance to win, why should I participate?), to threats ("now it's tit-for-tat, never ask me again to help you in hard times").

Is buyer power needed to attract suppliers?

All suppliers have already participated in an eRA event often because of coercive buyer practices, but only 40% of suppliers assess e sourcing as strategically important, whereas 60% prefer a traditional vendor approach. All buyers confirmed having made use of their power to force suppliers into eRA events, but not for unethical reasons, instead for pragmatic reasons of harmonizing procurements of logistics services. Coercive practices provide an inherent risk of damaging eRA outcomes in two ways. First, coercive practices influence negatively the buyer/supplier relationship by reducing trust. Second, they produce negative attitudes towards e sourcing, and in case of not re-warding the business to a forced supplier, they lead to negative experiences which in addition increase negative attitudes in a spiral of death. The effect of increased short-term supplier participation is achieved at the expense of lowering supplier's organizational readiness through negative attitudes, opportunistic behavior and deteriorated buyer/supplier relationships in the long run. Conspicuousness lowered acceptance of suppliers to participate in eRA events of unknown buyers. The reasons were a) an impeded potential assessment mainly based on missing personal contact, and b) a complicated credit assessment.

BeCo also forced existent suppliers to participate in eRA events for pragmatic reasons of unifying procurement processes, meanwhile offering support for those who participated in an eRA for the first time. They could not differentiate whether the apparent supplier resistance was based on resistance against the eRA itself or on the fact that suppliers were forced to participate. The observations from the interviews confirmed also that suppliers are less willing to participate in eRAs of unknown buyers. Therefore, BeCo used a detailed company presentation as a prefix to its eRA to make new suppliers more familiar with the company.

What is an attractive lot? Is the specification clear?

The offered lots range from a third of the overall transport demand of interviewed buyers to offerings of smallest lots to attract even small suppliers. We can assume that in general eRAs show their greatest potential when used among a wide base of suppliers (Brannman, Klein, and Weiss, 1987). The more the supplier base is narrowed, the more the market loses its function - not only in terms of creating a better winning bid, but also especially in terms of a deteriorated resource allocation. The majority of supply capacity in the market - which is held by small companies - is excluded from bidding, although small companies probably could offer the best service for all stakeholders on a particular transport destination. Since

big companies alone do not have the capacity to satisfy the transport demand alone, they have to allocate parts of the transport request to smaller companies, which is nothing else than brokerage in the form of freight forwarding and additional cost within the value chain. Derived from the interviews with suppliers, the share of brokerage in the industry is on average 38% of the overall transport demand.

When it comes to describable services, which are vital for eRA use according to Garcia-Dastugue and Lambert (2003), the opinions are highly divided among suppliers about the quality of buyers' request descriptions. Only 50% assess them as sufficient, 20% answered, "it depends" and the remaining 30% were convinced that eRA quality in terms of well-described transport request is poor in general. This comment is addressed to buyers, who often fail to include important details or include unclear information or contradictory data, to create an unambiguous calculation base for suppliers. Surprisingly, here some of the interviewees on supplier side commoditized their own services by raising the question why not all eRAs are standardized since the request for a transport from A to B on standardized equipment does not differ from one shipper to another one.

BeCo used a wide supplier base approach to enable small companies to compete, but since small companies saw no chance to compete against bigger companies, they often withdrew from participation. Other suppliers reported unknown conditions such as loading or unloading time made it impossible to define exact cost structures and consequently impossible to submit an offer.

How to ensure a sufficient number of suppliers?

According to suppliers, they seem to be motivated to participate in eRAs as long as they have something to gain and if their experience is positive. We can recognize a perception gap between buyers and suppliers, which fosters a negative impact on traditional buyer/supplier relationships. A perfect supplier motivation should be based on a realistic prospect for suppliers of something to gain. All suppliers reported theoretical opportunities to improve their businesses by increasing customer reach (80%), easier access to new customers (75%), capacity utilization through improved re-loadings (80%) and more partial shipments (80%), and an improved market overview (70%). Still 40% saw an opportunity in eRA use to drive brokerage completely out of market. Those were the mentioned benefits from buyer's side as well when asked where they would see a benefit for suppliers in eRA events and it appears that suppliers indeed have something to gain. Despite this insight, benefits were outweighed by the negative aspects of a) the expectation of suppliers to lose

revenues through lowered freight charges (90%) and b) the fact that an eRA event does not simplify sales processes on their side and therefore will be unlikely to lower internal transaction costs (85%). We can assume that even in the case of lowered transaction costs, the lowered freight charges still would outweigh the possible benefits. Suppliers simply drop out of the pool of bidders and might not be replaced; the system can erode. Substitution of dropped out suppliers is difficult since biddings for unknown companies are not very popular. If the number of suppliers dropping out of the process is high enough over time, leverage will eventually return to the sellers and the online reverse auction process will no longer be useful to buyers (Tulder and Mol, 2002).

Does use of e sourcing lower the overall costs?

All buyers reported significant savings in transaction costs or achieved price agreements. Due to a lack of willingness to provide more data about this critical question, we cannot assess the overall savings. We therefore cannot prove support for the recent research from Tully (2000), Cohn (2000), and Tassabehji et al. (2006) who reported savings between 5-40% either directly through product price reduction or transaction costs with an average of 15-20% more typically gross savings.

Derived from the data from German truck transport markets as described in chapter 2.4, we can only calculate a theoretical potential of cost improvements within the business through both a better resource allocation and a decreased level of brokerage. Starting with resource allocation, we assume an improvement of market conditions through a wide spread of information triggers, the well-described market mechanisms of the invisible hand. If we assume that not every loading finds the best available truck due to imperfect information and that this imperfect information causes empty runs, we can consider the lowering of empty runs as a potential to improve the financial performance of the whole industry by cutting its costs. Empty runs count for 20.7% or 6 billion of all 29 billion kilometers that form the overall kilometer performance of the industry in Germany. If we divide the overall revenues through overall kilometers, we get a price per kilometer - that is €1.30/km. Reducing empty runs by only 1 percentage point would mean a saving of 290 million kilometers or €377 million with an overall potential of €7.8 billion in total. If we assume furthermore that electronic systems can avoid brokerage, savings can be achieved by driving brokerage costs out of the markets. The share of brokerage among suppliers was reported to be 38% of all orders, that is, of revenue. Since we do not have correct numbers about the brokerage fee, we assume for reasons of simplicity a brokerage fee of 10% under weighted average capital cost considerations. Now we have a further potential for savings of €38

million for every percentage point of brokerage taken out of the market or €1.4 billion in total in case of complete brokerage avoidance.

#### Opportunistic behavior?

Unethical behavior like the use of phantom bids was not reported as a big issue so far and the outcome of the survey (table 3.3 4) was more neutral (2.94). Nevertheless, 45% of suppliers perceive eRAs as unfair (a further 20% - table 3.3 2 - answered “no comment”), and as an opportunity for buyers to start bidding wars (2.42). Therefore, suppliers are convinced that eRA use will not lead to a trustful supplier/buyer relationship (2.36), which triggers opportunistic behavior on supply side as discussed before.

Buyers miss an opportunity by not describing either the evaluation process or how business is rewarded. Some suppliers raised the suspicion that an eRA event is simply used to drive down prices and that those prices would be used to force existent suppliers into new price schemes rather than rewarding business to the actual winner. This suspicion was reinforced by the fact that rather no feedback about eRA results was provided. Only 15% of all interviewed companies reported eRA transparency and feedback as normally given.

BeCo reported missing feedback during the first tender as a lack of process awareness. Since the planning of the event absorbed all concentration, a feedback was simply forgotten. This could be true for a number of buyers who have to deal with the implementation of eRA results and a lack of feedback importance.

## 5. Framework of a sustainable use of e sourcing

The previous chapters provided data and findings in the use of e sourcing on German FTL service markets which can now be applied to complete the draft of the decision framework of how to decide when to use e sourcing as a procurement source for truck transport capacities on German markets and, in case of an adoption decision, how to successfully implement it as a sustainable procurement tool. There are two main aspects, which have to be considered: first supplier resistance and second system weaknesses. Supplier resistance is founded on the missing prospect to gain a benefit from eRAs, whereas system weaknesses are defined by inappropriate and unclear customer platforms or the missing opportunity of active participation on market maker platforms for suppliers.

Including other than price criteria into a rewarding decision will overcome supplier resistance when they see a chance to bring in their competitive advantages. The findings showed also that a strategic procurement should not be subjected to eRAs due to its long-term collaboration requirements. If the strategic meaning is defined as the thread of shortages in supply, a use of e sourcing may be reasonable or even helpful when it has the power to overcome market failures. To make a sensible use of eRA, buyers should be willing to widen their supplier base to offer even small companies an opportunity to participate, apart from known market improvements. The transport request should be described precisely and unambiguously including all environmental variables such as loading or unloading times. Each form of coercive influence reduces trust among trading partners. A reduced trust leads to disturbed buyer/supplier relationships and opportunistic behavior. To attract new suppliers it is vital to change a company's status from unknown to known through flanking promotion activities. Each attempt to improve the situation on supplier's side would increase supplier acceptance in addition. Avoiding opportunistic behavior includes avoiding the use of phantom biddings or similar methods and providing a proper feedback about supplier's performance in an eRA event in order to create a transparent and trustworthy process.

The decision framework shall provide first orientation of when and when not to use e sourcing. Answering a question with no does not necessarily mean an exclusion of eRA events from the procurement practices, but it might deliver a first indication that the eRA outcome will probably not describe an optimum.



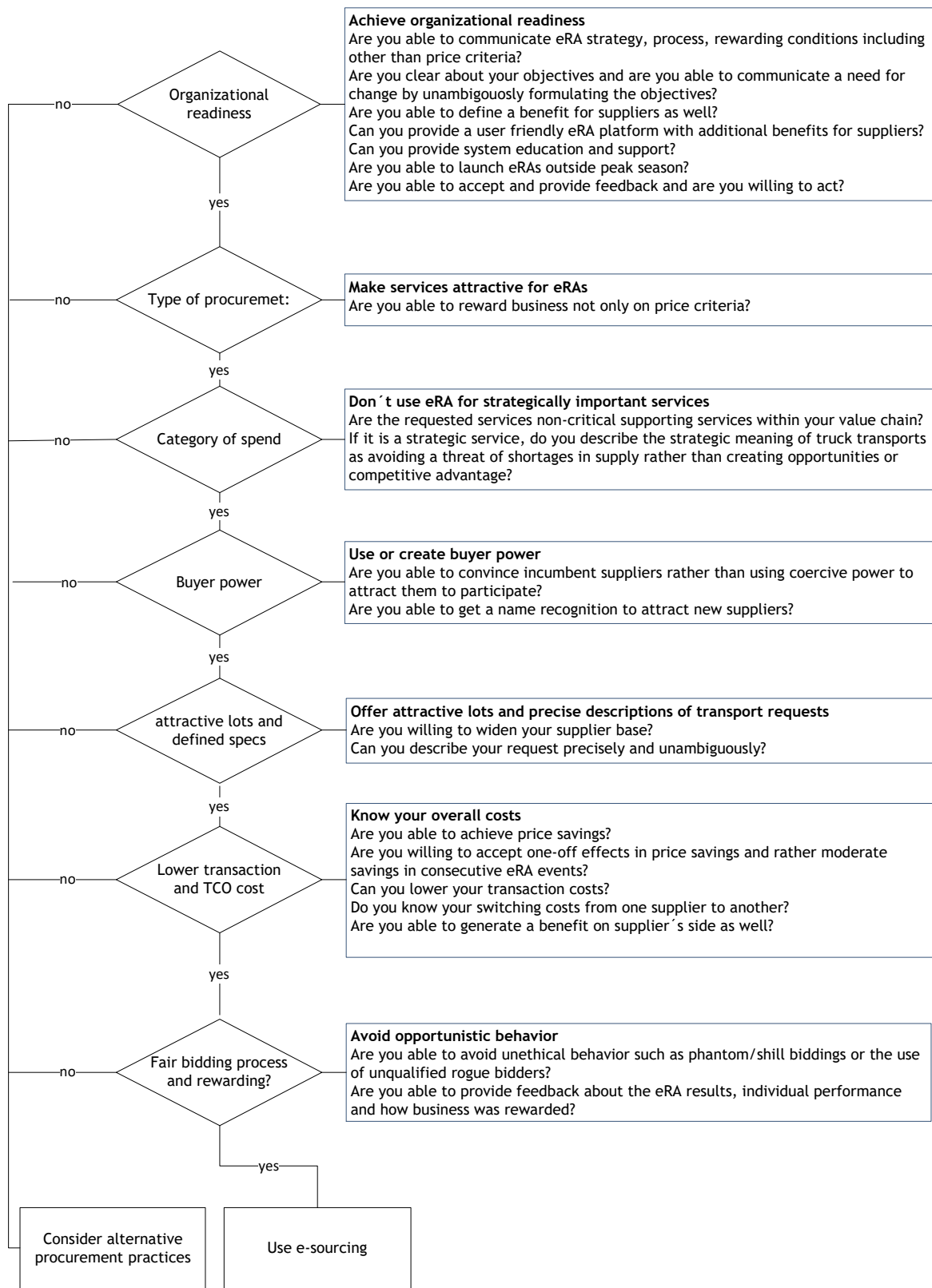


Table 5 1 Decision Framework - when and when not to use e sourcing

## 6. Conclusion

This thesis is set out to explore how a tool that works on a win-lose base by nature can be turned into a source of win-win situations.

- Does e sourcing deliver a benefit compared to traditional models?

Kobe (2001) doubted the value of e sourcing as a reasonable procurement practice by stating that buyers could achieve similar results like net savings more easily and much less expensively by sending out letters to suppliers demanding price cuts or risking to lose their business. This statement may be true in terms of absolute prices, but it tells nothing about relative prices. What does a saving of 10% mean compared to true market price?

E sourcing does not seem to be the undisputed bright shining star in the sky of procurement. Knowing its weaknesses is vital for a sensible use. E sourcing creates conditions in which traditional vendor models based on trust and long-term collaboration lose their importance. It favors quick results with a focus on short-term considerations. This might be useful for every good or service which is easily available and described as a commodity, but not for critical goods or services under strategic considerations or in industries where price is not the decisive factor for a purchasing decision. However, for non-critical resources - especially goods - e sourcing provides a bundle of well-described and proved benefits from price savings, process improvements, higher flexibility, lower inventory levels, and wider supplier base to the extent of creating better market conditions through an increased information quality that is, mainly transparency and an improved resource allocation.

- Is e sourcing an appropriate instrument to buy truck transport services for full truck loads (FTLS) on German truck transport markets?

Truck transports are of high strategic importance and the particular service of each carrier is still the decisive factor for the purchasing decision of a buyer. This assumption is supported by suppliers' definition of their particular service propositions as unique and not comparable to others. Barney and Hansen (1994) defines a strategic resource as a resource that provides competitive advantage to a firm, difficult to imitate with no direct substitutes and as a tool to pursue opportunities or avoid threats. Supplier development and a collaborative relationship become increasingly important in FTL service procurement the more buyer's overall business strategy depends on a functioning truck transport service. Achieving 'world-class' status in procurement requires harmonization of purchasing strategy with business

strategy. Therefore, FTL service procurement has not only to be efficient in terms of savings, it has furthermore to be effective in terms of supplier development and collaboration, given that buyers assess truck transports as a resource of strategic importance. For this type of buyer e sourcing with a focus on short-term considerations might not be an appropriate procurement tool.

On the other hand, truck transports appear as a rather simple task. The number of suppliers is sufficient and access capacity is easily available. The industry has low entry barriers, since car manufacturers offer rental services for trucks and trailers. The required training to prove a personal suitability can be done within two weeks, and transport licenses are available in sufficient numbers. Overall doubts can be expressed whether trucks are of any strategic meaning and whether other than price criteria are a fundamental value proposition within the industry.

Whether e sourcing is an appropriate instrument to buy FTL services on German truck transport markets depends on its adoption rate, which is market penetration. Only with a critical mass of e sourcing users, this tool is powerful enough to influence the highly diversified market structures in the direction of a removal of market failures or supplier preferences. Buyers mainly define the term strategic resource in connection with transports as the vital need to avoid threats in form of shortages in capacity supply, which could seriously disturb the value chain in times of JIT and labor division rather than the creation of opportunities and competitive advantages. Surprisingly, a well-functioning e sourcing could even help to underline the strategic function of truck transports by stabilizing the available supply through an improved resource allocation.

- To what degree is e sourcing adopted on German FTL service markets and how does it perform?

Figures on the actual use of e sourcing on German FTL service markets are not available, neither in numbers of buyers using e sourcing, nor as a share of transport capacity volume procured by e sourcing. Suppliers notice an increase of eRA events. Although almost every supplier already participated in an eRA, their organizational readiness to adopt e sourcing as a modern way to generate businesses is still very low. Furthermore, only a minority assess them as a strategic task for the future.

All buyers reported benefits from eRAs, but since this procurement tool is still in its infancy long-term reports are not yet available. Differences in the performance of eRAs within the industry can be explained - among others - by the fact that supplier preferences limit the available supply for particular transport demands based on destinations, quantity or time requirements. The available data proved also that the market still shows a remarkable portion of brokerage and empty runs. Taken all together, e sourcing use has room for improvement of adoption rate and performance in this particular market.

- Does supplier participation in e sourcing degrade over time, where are possible barriers concerning carrier acceptance and how can e sourcing be improved?

The numbers derived from the observations at BeCo indicate a declining level of carrier participation, but since the reasons for this recession are unknown because of missing information or long-term observations, a causal relationship cannot be formulated. That is true also for the provided data from other companies, which showed growth of supplier participation in percentages of returned offers, which simply could have been the result of a narrowed participant base on supplier side because of dropped out carriers.

Barriers to carrier acceptance are obvious. Since the focus on this thesis lies on the exploration of barriers to carrier acceptance, a summary can be made by stating that experience and the prospect to gain a benefit mainly seem to drive attitudes towards e sourcing. Those attitudes influence directly the organizational readiness that is the readiness and the will to participate in e RA events. The outcome of this participation is predominantly characterized by suppliers' perceptions about buyers' motivation and objectives to use eRAs.

To this date, suppliers mainly report bad experiences with eRAs and the perception that the pie is always assigned to the buyer with the consequence that there is nothing to win for themselves. Even though most of suppliers have already participated in eRA events, most of them showed no acceptance or even enthusiasm for this way of collaboration. Suppliers indeed suspect buyers to behave opportunistically and they will react accordingly, which lowers the outcome of eRA even further.

## 6.1. Practical implications on how to improve e-sourcing

Many attempts in other industries were made to improve e sourcing outcomes, including white papers or codes of conduct for e-auctions to address buyer/supplier issues or to increase organizational readiness (Emiliani, 2005), or payments to suppliers who participate but do not win to match the cost of bid preparation (Daly and Nath, 2005).

It is unlikely that a whole industry's self-perception can be switched from specialized service experts to providers of commoditized standard services in the short or medium run to make e sourcing use less complicated. Nevertheless, some selective measures might be helpful to improve eRA outcomes even in the short run. This paper developed a first decision framework of when and when not to use e sourcing in German FTL service markets by making recommendations, which take into account all research findings that support a more balanced pie allocation among all e sourcing participants in order to gain acceptance on both sides - demand and supply.

## 6.2. Further research

I aimed to bring more light in the still existing darkness of e sourcing use in German FTL service markets. Much of what was found in literature described congruently the mechanisms of e sourcing use in this particular industry of truck transportation in Germany. However, that does not necessarily mean that the findings of this work can be transferred onto other industries. Each industry forms a particular buyer/supplier relationship, business practices and business conducts, leading thus to possible different definitions of the term opportunistic behavior.

Many of the empirical findings have to do with psychological aspects of doing businesses such as bounded rationalities, resistance to change, and prospect theory. Cultural differences are prevalent as well. Caniëls and van Raaij (2009) states that the more developed the economy of the supplier country, the more negative the supplier's opinion about ERAs. Interviewees reported differences in the willingness to compete in prices across different countries. Since the meaning of buyer/supplier relationships, opportunistic behavior or the willingness to compete on prices are predicted throughout different cultures, a transfer of the findings onto the same industry of another country might not necessarily be warranted.

In summary, this work provides a starting point for further research in most aspects of e sourcing in German FTL service markets, and especially on the supplier side, since recent

literature shows a noteworthy lack of available works. Even within the particular industry of German FTL services, the transferability of the findings may be limited since they base on only one sample. Correlations were shown, but causality is still somewhat unclear. A more widespread research with more interviews or further surveys with a focus on causalities will redefine the further results.

### 6.3. Reflection

As an industry insider, I started this research as an experienced e sourcing user - at least in my self-perception - with the conviction that the work on this paper should be simplified by previous knowledge. Much of what I found in the literature was surprising and disturbing since I have realized a variety of contradicting findings or missing transfer possibilities of generally accepted assumptions into a particular business environment. All in all the riches of work were much higher than expected and reached from mathematical correlations to applied psychology. A huge perception gap between buyers and suppliers has become apparent. Whether buyers were confused about their objectives or suppliers showed a remarkable risk awareness, much of what was found is based on a missing knowledge of fundamental mechanisms and drivers in e sourcing use in the particular market of FTL services in Germany. The step back from a biased point of view with superficial knowledge and the necessary step towards a critical and productive research has been the biggest challenge I have had to face. This movement seem to be necessary not only for me, but for all participants in German FTL service markets to make e sourcing to what it is: a simple tool with the power to create multiple benefits among multiple stakeholders without being a silver bullet as long as every participant is willing to re-think his or her own prejudices, concerns and fears.

## References

- Anderson, J., and J. Narus (1990). A model of distributor firm and manufacturer firm working partnerships. *Journal of Marketing* 54(January): 42-58.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management Inquiry* 4(1): 71-90.
- Barney, J.B., and M.H. Hansen (1994). Trustworthiness as a source of competitive advantage. *Strategic Management Journal* 15(8): 175-190.
- Bartholomew, D. (2001). E-Business commentary - starving suppliers is not the answer. *IndustryWeek*, November 1.
- Beall, S., C. Carter, P.L. Carter, T. Germer, T.E. Hendrick, and S.D. Jap (2003). *The Role of Reverse Auctions in Strategic Sourcing, CAPS Research Report*. Tempe, AZ: CAPS Research.
- Bogaschewsky, R. (2013). Elektronische Beschaffung 2013 : Stand der Nutzung und Trends. *Elektronische Beschaffung 2013 Bundesverband Materialwirtschaft, Einkauf und Logistik e.V. (BME)*: 1-17.
- (2014). Elektronische Beschaffung 2014 : Stand der Nutzung und Trends. *Elektronische Beschaffung 2014 Bundesverband Materialwirtschaft, Einkauf und Logistik e.V. (BME)*: 1-18.
- Brannman, L., D. Klein, and L.W. Weiss (1987). The price effects of increased competition in auction markets. *Review of Economics and Statistics* 69(1): 24-32.
- Bundesverband Güterkraftverkehr Logistik und Entsorgung (BGL) e.V. (2014). *Der Gewerbliche Güterkraftverkehr - eine Branche in Zahlen*. Frankfurt am Main.
- Caniëls, M.C.J., and E.M. van Raaij (2009). Do all suppliers dislike electronic reverse auctions? *Journal of Purchasing and Supply Management* 15(1): 12-23.
- Carr, A., and J. Pearson (1999). Strategically managed buyer-supplier relationships and performance outcomes. *Journal of Operations Management* 17: 497-519.
- Carter, C.R., L. Kaufmann, S. Beall, P.L. Carter, T.E. Hendrick, and K.J. Petersen (2004). Reverse auctions--grounded theory from the buyer and supplier perspective. *Transportation Research Part E: Logistics and Transportation Review* 40(3): 229-254.
- Christopher, M.G., and J. Gattorna (2005). Supply Chain Management and value-based pricing. *Industrial Marketing Management* 34: 115-121.
- Chwelos, P., I. Benbasat, and A. Dexter (2001). Research Report: Empirical Test of an EDI Adoption Model. *Information Systems Research* 12(n): 304-321.
- Cohn, L. (2000). B2B: the hottest net bet yet? *Business Week*, January 17.
- Collis, D.J., and C.A. Montgomery (1995). Competing on resources: strategy in the 1990s. *Harvard Business Review* 73: 118-128.

- Croom, S.R. (2005). the Impact of Internet on Supply Chain Management: An empirical study of key developments. *International Journal of Operations & Production Management* 25(1): 55-73.
- Daly, S.P., and P. Nath (2005). Reverse auctions for relationship marketers. *Industrial Marketing Management* 34(2): 157-166.
- Davila, A., M. Gupta, and R. Palmer (2003). Moving Procurement Systems to the Internet: *European Management Journal* 21(1): 11-23.
- Drolet, A.L., and M.W. Morris (2000). Rapport in conflict resolution: Accounting for how nonverbal exchange fosters cooperation on mutually beneficial settlements to mixed-motive conflicts. *Journal of Experimental Social Psychology* 36(1): 26-50.
- Dyer, J., and W. Chu (2003). The role of trustworthiness in reducing transaction costs and improving performance: Empirical evidence from the United States, Japan, and Korea. *Organization science* (December 2014).
- Ellram, L.M., and A. Carr (1994). Strategic Purchasing: A History and Review of the Literature. *International Journal of Purchasing and Materials Management* 30(1): 9-19.
- Emiliani, M.L. (2000). Business-to-business online auctions: key issues for purchasing process improvement. *Supply Chain Management: An International Journal* 5(4): 176-186.
- (2004). sourcing in the global aerospace supply chain using online reverse auctions. *Industrial Marketing Management* 33: 65-72.
- (2005). Regulating B2B online reverse auctions through voluntary codes of conduct. *Industrial Marketing Management* 34(5): 526-534.
- (2006). Executive decision-making traps and B2B online reverse auctions. *Supply Chain Management: An International Journal* 11(1): 6-9.
- Emiliani, M.L., and D.J. Stec (2002). Realizing savings from online reverse auctions. *Supply Chain Management: An International Journal* 7(1): 12-23.
- (2004). Aerospace parts suppliers' reaction to online reverse auctions. *Supply Chain Management: An International Journal* 9(2): 139-153.
- Engelbrecht-Wiggans, R. (1980). Auctions and Bidding Models - A Survey. *Management Science* 26(2): 119-142.
- Figliozzi, M.A., H.S. Mahmassani, and P. Jaillet (2003). Modeling Carrier Behavior in Sequential Auction Transportation Markets M. Paper presented at the 10th International Conference on Travel Behaviour Research, August 10-15, in Lucerne, Switzerland.
- Fisher, R., W. Ury, and B. Patton (1991). *Getting to Yes: Negotiating Agreement Without Giving In*. NY: Penguin Books.



- Garcia-Dastugue, S.J., and D.M. Lambert (2003). Internet-enabled coordination in the supply chain. *Industrial Marketing Management* 32(3): 251-263.
- Giampietro, C., and M.L. Emiliani (2007). Coercion and reverse auctions. *Supply Chain Management: An International Journal* 12(2): 75-84.
- Grewal, R., J. Comer, and R. Mehta (2001). An investigation into the antecedents of organizational participation in business-to-business electronic markets. *Journal of Marketing* 65(July): 17-33.
- Gunasekaran, A., and E.W.T. Ngai (2008). Adoption of e-procurement in Hong Kong: an empirical research. *International Journal of Production Economics* 113(1): 159-175.
- Hartley, J.L., M.D. Lane, and E.A. Duplaga (2006). Exploring the barriers to the adoption of e-auctions for sourcing. *International Journal of Operations & Production Management* 26(2): 202-221.
- Hawkins, T.G., M.J. Gravier, and C.M. Wittmann (2010). Enhancing reverse auction use theory: an exploratory study. *Supply Chain Management: An International Journal* 15(1): 21-42.
- Holland, C.P., and A.G. Lockett (1997). Mixed mode network structures: the strategic use of electronic communication by organizations. *Organization Science* 8(5): 475-488.
- Howard, M., R. Vidgen, and P. Powell (2006). Automotive e-hubs: exploring motivations and barriers to collaboration and interaction. *Journal of Strategic Information Systems* 15(1): 51-75.
- Jap, S.D. (2001). *The impact of online, reverse auctions on buyer-supplier relationships*. Emony University, Atlanta, GA, July.
- (2002). Online reverse auctions: Issues, themes, and prospects for the future. *Journal of the Academy of Marketing Science*.
- (2003). An exploratory study of the introduction of online reverse auctions. *Journal of Marketing* 67(July): 96-107.
- Joachim, D., and C. Moozakis (2001). Can Covisint find its way? Low adoption rates force auto exchange to radically alter mission. *Internetweek*, September 17.
- Kaufmann, L., and C. Carter (2004). Deciding on the mode of negotiation: to auction or not to auction electronically. *Journal of Supply Chain Management* May: 15-26.
- Kern, T., L.P. Willcocks, and E. Heck (2002). The winner's curse in IT outsourcing: strategies for avoiding relational trauma. *California Management Review* 44(2): 47-69.
- Kisiel, R. (2002). Low auction revenue plagues covisint. *Automotive News*, July 22.
- Klein, S. (1997). Introduction to electronic auctions. *International Journal of Electronic Markets* 7(4): 3-5.

- Knudsen, D. (2003). Aligning corporate strategy, procurement strategy and e-procurement tools. *International Journal of Physical Distribution & Logistics Management* 33(8): 720-734.
- Kobe, G. (2001). Supplier Squeeze. *Automotive Industries*, March.
- Lamming, R., and T. Johnsen (2000). An initial classification of supply networks. *International Journal of Operations & Production Management* 20(6): 675-691.
- Leenders, M., J. Nollet, and L. Ellram (1994). Adapting purchasing to supply chain management. *International Journal of Physical Distribution & Logistics Management* 24(1): 40-42.
- Liker, J., and T. Choi (2004). Building deep supplier relationships. *Harvard Business Review* 82(12): 104-113.
- Lysons, K. (2000). *Purchasing and Supply Chain Management*. Upper Saddle, NJ: Prentice-Hall.
- Mabert, V A., and J.A. Skeels (2002). Internet reverse auctions: Valuable tool in experienced hands. *Business Horizons* 45(4): 70-76.
- Malone, T.W., J. Yates, and R.I. Benjamin (1987). Electronic markets and electronic hierarchies. *Communications of the ACM* 30(6): 484-497.
- McAfee, R.P., and J. McMillian (1987). Auctions and Biddings. *Journal of Economic Literature* 25: 699-738.
- Millet, I., D.H. Parente, J.L. Fazel, and R.R. Venkataraman (2004). Metrics for Managing Online Procurement Auctions. *Interfaces* 34(3): 171-179.
- Min, H., and W.P. Galle (2003). E-Purchasing: Profiles of adopters and non-adopters. *Industrial Marketing Management* 32: 227-233.
- Monczka, R., and J.P. Morgan (2000). Competitive supply strategies for the 21st century. *Purchasing Magazine* 128: 48-55.
- Morgan, R.M., and S.D. Hunt (1994). The Commitment-Trust Theory of Relationship Marketing. *Journal of Marketing* 58(3): 20-38.
- Mullane, J., M. Peters, and K. Bullington (2001). Entrepreneurial firms as suppliers in business to business e-commerce. *Management Decision* 39(5): 388-393.
- Ordanini, A., and G. Rubera (2008). Strategic capabilities and internet resources in procurement. *International Journal of Operations & Production Management* 28(1): 27-52.
- Otto, A. (2013). Tenderflut erfordert Routine. *DVZ Deutsche Verkehrs-Zeitung*, March 11.
- Pearcy, D.H., D.B. Parker, and L.C. Giunipero (2008). Using electronic procurement to facilitate supply chain integration: an exploratory study of US-based firms. *American Journal of Business* 23(1): 23-35.

- Ping, R., and F.R. Dwyer (1992). A Preliminary Model of Relationship Termination in Marketing Channels. In *Advances in Distribution Channel Research Vol. 1*. ed. G.L. Frazier, 215-233: Greenwich, CT: JAI Press.
- Porter, M.E. (1980). *Competitive strategy*. New York, NY: The Free Press.
- Presutti Jr, W.D. (2003). Supply management and e-procurement: creating value added in the supply chain. *Industrial Marketing Management* 32(3): 219-226.
- Quesada, G., and M. González (2010). Impact of e-procurement on procurement practices and performance. Ed. Carlo A. Mora-Monge. *Benchmarking: An International Journal* 17(4): 516-538.
- Richards, B. (2000). Dear Supplier: this is going to hurt you more than it hurts me... *Ecompany Now* 1(1): 136-142.
- Ring, P.S., and A.H. Van de Ven (1992). Structuring relationships between organizations. *Strategic Management Journal* 13(7): 483-498.
- Rink, D., and H. Fox (1999). Strategic procurement planning across the product's sales cycle: a conceptualization. *Journal of Marketing Theory and Practice* 7(2): 28-43.
- Roberts, J.S. (2001). Great Expectations: E-Procurement and Work Process. *Purchasing Today* 12(10): 24-30.
- Rusbult, C.E., and A.M. Van Lange (1996). Interdependence Processes. In *Social Psychology: Handbook of Basic Principles*. ed. E.T. Higgins and A.W. Kruglanski, 564-596: Boston: Guilford Press.
- Ryan, J. (2003). FreeMarkets Down 23%: Lowered 4Q outlook dsappoints Wall Street. *Dow Jones Newswires*, October 28.
- Schoenherr, T., and V.A. Mabert (2007). Online reverse auctions: Common myths versus evolving reality. *Business Horizons* 50(5): 373-384.
- Segev, A., and J. Gebauer (2001). B2B Procurement and Marketplace Transformation. *Information Technology and Management* 2(3): 241-260.
- Simpson, J., and D. Mayo (1997). Relationship management: a call for fewer influence attempts? *Journal of Business Research* 29(6): 209-218.
- Smart, A., and A. Harrison (2002). Reverse auctions as a support mechanism in flexible supply chains. *International Journal of Logistics* 5(3): 275-284.
- Smeltzer, L., and A. Carr (2002). Reverse auctions in industrial marketing and buying. *Business Horizons*, March/April.
- (2003). Electronic reverse auctions: Promises, risks and conditions for success. *Industrial Marketing Management* 32: 481-488.
- Soliman, K.S., and B.D. Janz (2004). An exploratory study to identify the critical factors affecting the decision to establish Internet-based interorganizational information systems. *Information & Management* 41(6): 697-706.

- Standing, C., R. Stockdale, and P. Love (2007). Hybrid buyer-supplier relationships in global electronic markets. *Information and Organization* 17(2): 89-109.
- Talluri, S., W. Chung, and R. Narasimhan (2006). An optimization model for phased supplier integration into e-procurement systems. *IIE Transactions* 38(5): 389-399.
- Tassabehji, R. (2003). *Understanding E-commerce for business*. Thousand Oaks, CA: Sage Publications.
- Tassabehji, R., W.A. Taylor, R. Beach, and A. Wood (2006). Reverse e-auctions and supplier-buyer relationships: an exploratory study. *International Journal of Operations & Production Management* 26(2): 166-184.
- Thompson, L., and R. Hastie (1990). Social perception in negotiation. *Organizational Behavior and Human Decision Processes* 47(1): 98-123.
- Tulder, R. Van, and M. Mol (2002). Reverse Auctions or Auctions Reversed: First Experiments by Philips. *European Management Journal* 20(5): 447-456.
- Tully, S. (2000). The B2B tool that really is changing the world. *Fortune* 141(6): 132-145.
- Turban, E. (1997). Auctions and biddings on the Internet: An assessment. *International Journal of Electronic Markets* 7(4): 7-11.
- VDA (2012). *Güterverkehr Wirtschaftlichkeit und Nachhaltigkeit im Unterricht*, July. <http://www.vda.de/dam/Unsere-Autos/Gueterverkehr.pdf> (accessed January 8, 2015).
- Vickrey, W. (1961). Counterspeculation, auctions, and competitive sealed tenders. *Journal of Finance* 16(1): 8-37.
- Webster, F.E., and Y. Wind (1972). A General Model for Understanding Organizational Buying Behavior. *Journal of Marketing* 36(2): 12.
- Williamson, O.E. (1985). *The Economic Institutions of Capitalism*. New York: The Free Press.
- (1993). Calculativeness, Trust, and Economic Organization. *Journal of Law and Economics* 36: 453-486.
- (1996). *The Mechanism of Governance*. New York: Oxford University Press.
- De Wit, B., and R. Meyer (1998). *Strategy: Process, Content and Context*. London: International Thompson.
- Womack, J., D. Jones, and D. Roos (1990). *The machine that changed the world*. New York, NY: Rawson Associates.
- Wu, F., G. Zsidisin, and A. Ross (2007). Antecedents and Outcomes of E-Procurement Adoption: An Integrative Model. *IEEE Transactions on Engineering Management* 54(3): 576-587.