



DIGITAL PROCUREMENT: A BUYER'S PERSPECTIVE ON THE POST-ADOPTION STAGE OF ELECTRONIC REVERSE AUCTIONS

Master Thesis



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ABSTRACT

Online auctions are due to their increasing utilization at the forefront of the new digitalization agenda of modern procurement organizations. However, the current research has been predominantly concerned with the implementation phase of online auctions and focused on the perspective of suppliers participating in these auctions. This study hence intends to contribute to the presently underdeveloped area of research and to investigate the post-adoption period of online reverse auctions from the perspective of a buying company. The major part of data for this study has been collected at the procurement department of a Danish shipping company and supported with the data gathered at the leading provider of e-sourcing solutions and different suppliers experienced with e-auctions. The analysis of the data collected has been conducted qualitatively, using coding techniques suggested by the academia. As the result of the research process, a conceptual framework has been developed that contains the identified factors affecting the post-adoption period of e-auctions at buying companies. Findings suggest that the main factors influencing the post-adoption stage are risk management, contract management, inter- and intraorganizational relationships, continuous learning and feedback. Due to the topicality of the research, the results are presupposed to have implications for both practitioners and researchers.

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1. Introduction

This research focuses on the development of a framework for managing the post-adoption phase of electronic reverse auctions, a business-to-business (B2B) sourcing tool that emerged in the recent years as part of the growing interest in digitalization of procurement.

The study builds on a single case study of DFDS, a shipping and logistics company that attempted to introduce the electronic reverse auctions as part of its external sourcing toolkit. The initial implementation project proved to be challenging for a number of reasons and provided a fruitful ground for this research. Consequently, DFDS launched a project with the same goal, but with a focus on engaging the internal stakeholders and on a good communication about a) the criteria for the utilization of electronic reverse auctions, b) the tool's restrictions, c) the optimal process flow for using electronic reverse auctions in a way to achieve the best results and d) the benefits that electronic reverse auctions can bring to the company. To establish it as part of the category managers' toolkit, the procurement leader set targets for each category for the utilization of electronic reverse auctions based on their characteristics and applicability.

It is, therefore, important to contextualize the background that led to this research proposition. For that reason, the first subsection introduces the shipping industry, where it is discussed the challenges that companies will face in the future and how they are preparing for them, especially through digitalization and technological developments. Then, in the second subsection, DFDS's history, market strategy and focus on digitalization are described more thoroughly in order to demonstrate the importance that the company is giving to innovation across all functions. The third subsection focuses on explaining the procurement structure at DFDS, since such structure will be important to understand the different roles that the procurement staff have in relation to electronic reverse auctions and how each category can contribute to its dissemination within DFDS. In the fourth subsection, Scanmarket is introduced, which is the provider for the electronic sourcing platform for DFDS and contributes to the electronic reverse auction implementation by sharing their expertise and giving input on the best ways to utilize the tool based on the specificities of each sourcing process. Section five compares reverse auctions to traditional auctions and gives a background on its history and its progression until the present day, which is fundamental for understanding the importance the tool acquired in the recent past. Finally, the last section connects the previous sections by

describing the problem and how the authors propose to answer it through the research questions.

1.1 The industry

Shipping industry has been at the forefront of global development ever since its emergence (Stopford, 2009). Nowadays, the industry is in good conditions, mirroring the trends in the world economy and expanding at 4 per cent a year, which is its fastest growth in the last 5 years (UNCTAD, 2018). The United Nations Conference on Trade and Development (UNCTAD) is forecasting a continuous favourable trend in the next 5 years, with containerized and dry bulk commodities leading the growth at the expense of especially the tanker volumes. Freight rates have similarly increased, supported by stronger global demand and moderate expansion of fleet capacity (UNCTAD, 2018).

The sources of uncertainty in the coming years are considered increasing inward-looking policies and the rise of trade protectionism, as well as tensions between China and the US, or the European Union and the North American economies. Among other factors impacting the world trade, UNCTAD (2018) considers digitalization and electronic commerce as potentially driving the global seaborne trade. Although, it is noted that the exact impact of these developments is yet to be fully understood. Nevertheless, UNCTAD has listed digitalization and e-commerce among its key trends shaping the shipping industry outlook for 2018 and onwards.

In general, the industry seems to favour the technological developments, which are viewed as promising for the supply side of shipping. Advances in autonomous shipping, drones and blockchain solutions are among the ones cited to be the most impactful for the industry. However, concerns arise regarding the potential safety and security issues, as well as the negative effects on the jobs of seafarers. A key challenge will be the establishment of a seamless data exchange while ensuring the cybersecurity and protection of sensitive data (UNCTAD, 2018).

Consequently, e-commerce is especially relevant to the container shipping market, given its implications for consumption patterns, retail models, distribution networks, and transport and logistics. In particular, cross-border e-commerce was worth about \$189 billion in 2015. In order for shipping to access the potential of e-commerce trade, the industry members need to adapt, use their technologies to achieve greater efficiencies, and design integrated supply chain

solutions that will be e-commerce friendly. Maersk is considered a leading example in the industry, having pioneered its global integrator strategy that aims to drive down costs, improve reliability, enhance responsiveness and create a better link with its customers (UNCTAD, 2018).

1.2 The case company

DFDS is a shipping company established in 1866 after a merger of four major Danish steamship companies. It traditionally offers transport and logistics solutions for manufacturers and retailers, trade forwarders and hauliers as well as for individual passengers. As of 2019, DFDS has 7.200 employees predominantly based in Northern Europe and Turkey. The company currently operates a fleet of 55 ferries sailing on a route network covering the Baltic Sea, the North Sea, the English Channel and the Mediterranean Sea. The logistics division of DFDS further operates 9.200 trailers and container units, enabling a vast range of intermodal solutions by combining its logistic and shipping assets. The company is headquartered in Copenhagen, Denmark (DFDS, 2018a).

Since its founding, the company has been concentrating its operations on Scandinavia. While in its beginnings the focus has been put on transporting goods and coal from the United Kingdom to Scandinavia, DFDS was quick to adjust to the trade developments. Over its history, DFDS has operated its vessels in the Black Sea, serving the Russian market, but has also been involved in importing the goods from the USA to Scandinavia. When DFDS started to build up its passenger business, it was operating more than 120 vessels, forming one of the largest fleets in the world at that time (DFDS, 2018a).

Following the Second World War and the popularization of motor vehicles, DFDS was the first company to develop a roll-on-roll-off service, a technology used to these days, allowing for a more efficient transport of cars and trailers carrying industrial cargo or containers. Since 1970s, the company increased its focus on offering door-to-door services for businesses as well as individual customers. This strategy was accelerated in particular by the acquisitions of logistics companies. In 2018, DFDS has used a similar approach to expand into the Mediterranean region through the acquisition of Turkey's largest freight ferry operator, UN Ro-Ro (DFDS, 2018a). Today, DFDS is considered one of the largest ferry and logistics companies in Europe and the largest in Northern Europe (DFDS, 2018b).

DFDS is aware of the impact the modern technologies have on its business practices. Therefore, the company has decided to move its digital competencies to the centre of its strategy. Along the continuous improvement movement and acquisition efforts, digital competencies now form one of the three pillars of the company's business strategy. The purpose of such increased focus on the new technologies is the attempt to enhance the customer experience and to increase the operational efficiency (DFDS, 2018a).

In particular, the digitalization efforts have been categorized into three focus areas. Firstly, DFDS aims to improve its targeting of smaller customers by upgrading its digital go-to-market options. Apps and tools have been developed in order to provide better support to company's customers and to ease their access to DFDS' services. Additionally, a unified website has been created in order to increase the company's visibility in search engines and to integrate the individual passengers' points of access (DFDS, 2018a).

Secondly, the company has initiated the work on digitizing its core activities. It has established objectives covering improving the decision making through data, optimizing operations through automation and preparing for autonomy through innovation and partnership (DFDS, 2018a).

Finally, the base for DFDS' digital competencies is its newly defined IT foundation. The company has recently established a new IT development centre in Istanbul with the goal of accessing a highly skilled pool of IT talent. Apart from advancements being achieved in the field of cloud solutions and software developments, DFDS is presently finalizing the sourcing of its new Enterprise Resource Planning (ERP) system, while its implementation is expected to begin in 2019. DFDS considers its digital business projects to be one of its five key performance drivers in the upcoming year (DFDS, 2018a).

The digital transformation has also had a considerable impact on the procurement department. The above-mentioned ERP system is currently being sourced, while the focus in 2018 have been predominantly placed on the improvements in the master data management and e-sourcing practices. Especially the implementation of e-sourcing is thought to help the company to achieve additional savings while simultaneously increase transparency and fairness into the sourcing process. Among other benefits of e-sourcing as perceived by DFDS are the time savings, clarity of the requirements, structured and streamlined processes, faster evaluation of submitted bids and the possibility of having one key contact where the most of communication could be channelled through one system (DFDS, 2019a).

Since the beginning of 2018, the procurement department has managed to gradually increase the number of e-sourcing events held, mainly due to a constant growth of RFx activities. As of 2019, the target for the procurement department is to source 90 per cent of the projects that meet the criteria through e-sourcing. On top of that, the department is committed to conduct seven e-auction events until the end of the year. For a project to meet the e-sourcing criteria as defined by the group policy there needs to be a competitive environment on the market, the tender needs to be attractive enough for the suppliers, the purchase can be fully specified and compared across suppliers, and the stakeholders need to approve of the purchase (DFDS, 2019d).

1.3 Procurement at DFDS

The Group Procurement function at DFDS is responsible for leading negotiations and concluding contracts related to goods and services that cover the entire DFDS Group. Its main function is based in Copenhagen, Denmark, while the local branches are located in France, Lithuania and Turkey. The main task of the procurement department in DFDS is ensuring the specification of demand and providing the required levels of environmental protection, social responsibility, product quality and supply chain security (DFDS, 2019c).

The department is divided into three units including operational procurement, direct procurement and indirect procurement. While operational procurement is mainly responsible for daily operations related to the supply of DFDS' vessels, direct and indirect units copy a category management approach. The purpose of this approach is to ensure a balance between the needs of the company's key stakeholders while ensuring a conformation to the category strategies. In turn, all three procurement subunits provide value to the entire DFDS Group.

Operational procurement involves a system project manager, master data coordinator and a number of purchasing managers located across four different countries. Direct procurement covers the categories of technical marine, bunker, and logistics and equipment. Its staff is located in Denmark and Turkey. Indirect procurement employs sourcing managers located in both Denmark and Lithuania, a business analyst, a category manager for the onboard category and a category manager for the IT category. The organization also employs a varying number of student assistants helping out with different tasks across all three subunits.

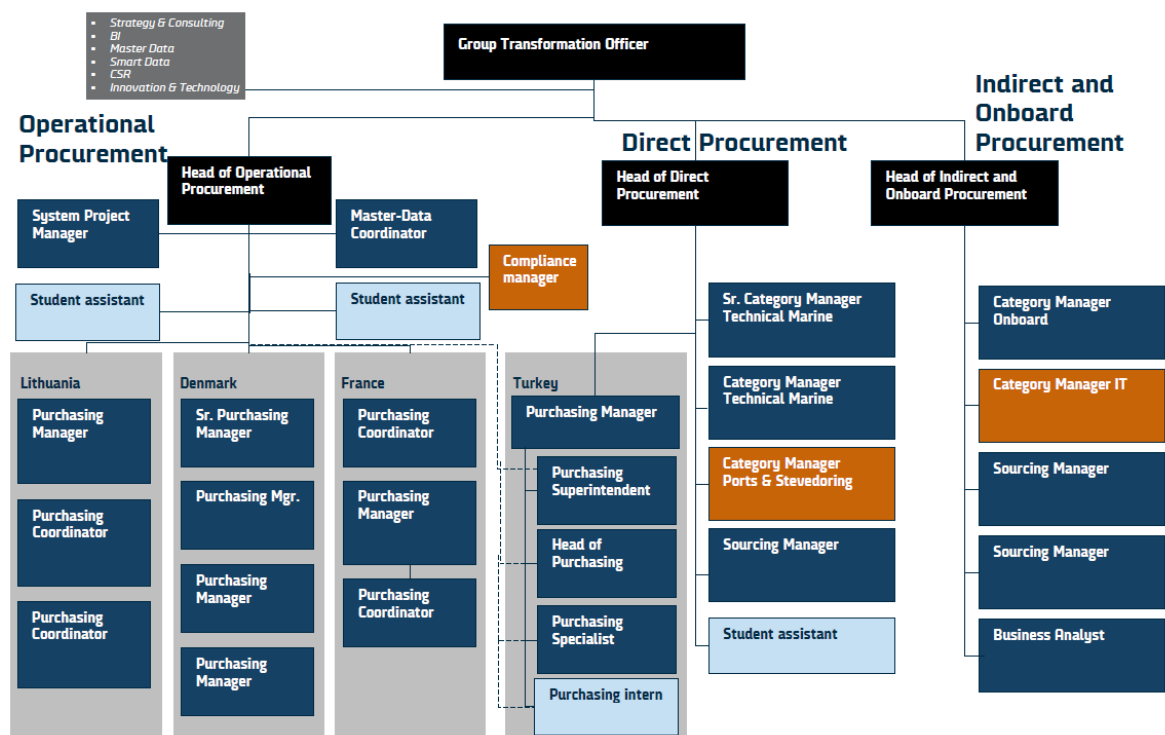


Figure 1 - DFDS's Procurement Structure (DFDS, 2019b)

1.4 Scanmarket

DFDS has decided to contract with Scanmarket, which is a Danish provider of electronic sourcing and procurement solutions. The company was founded in 1999 and is based in Aarhus, Denmark. It has also offices in Germany, Netherlands, the United Kingdom and the US (Scanmarket, 2019). Scanmarket product portfolio includes eRFx, a platform featuring quality standards, terms of delivery, quantity discounts, and financial strengths information, eSourcing, an application for managing contracts, eLearning, an online learning and training network, and eAuction, a platform for online price negotiations. In addition, the company provides platforms for spend analysis, contract management and consulting (Bloomberg LP, 2019).

The company is marketing itself as the world's most user-friendly and market-leading platform for strategic sourcing. As of 2019, it serves more than three hundred customers across more than eighty countries (Scanmarket, 2019). Scanmarket is nowadays recognized as one of the most experienced companies in providing solutions for both classic and complex RFx, negotiation and auctioning processes. Additionally, the company scores high on customer ratings when compared to its direct competitors (Spend Matters, 2018).

In regard to Scanmarket's eAuction platform, its main advantages are an intuitive interface requiring no formal training, low support requirements, multiple auction types available and

configurable bidding rules including the option to state individual starting prices, provide feedback, proxy bidding, rank, reserve price indicator and partial quantity bidding. The key benefits of the solution as marketed by Scanmarket include savings, efficiency, market intelligence, enhanced collaboration with suppliers, support for negotiations, and configuration options. According to the company, the cost savings average 12 per cent across categories, while the efficiency gains can rise up to 60 per cent (Scanmarket, 2018a).

Based on the Scanmarket's database, the number of eAuction events taking place has increased by 101 per cent in 2017 and continued to increase throughout 2018 (Scanmarket, 2018a). Among the company's users of eAuction platform are besides others Grundfos, Associated British Foods, Birds Eye Iglo Group, CEMEX, and Foodbuy (Scanmarket, 2018b).

1.5 Electronic reverse auctions

Electronic forward auctions can be defined as *"The sale of good or property, where people make higher and higher bids (offers of money) for each thing, until the thing is sold to the person who will pay the most"* (Cambridge Dictionary, 2019) or *"A sale of property to the highest bidder"* (Mirriam-Webster, 2019). These sales events are managed electronically by specialized companies, market makers, who provide an online platform where the bids take place.

Electronic reverse auctions (ERAs), also known as procurement auctions, forward auctions, downward price auctions or buyer's auctions, on the other hand, are managed by the buyer, who requests proposals from several sellers that compete against each other. The buyer then awards the lowest bidder (Kuo, Rogers, and White, 2004).

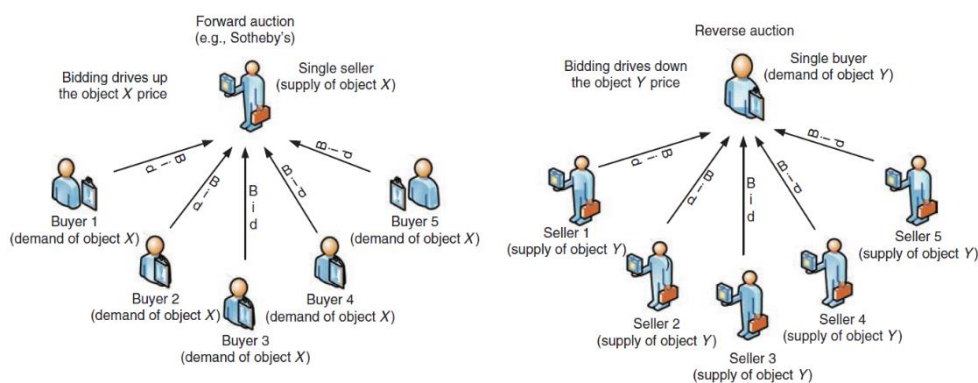


Figure 2 - Illustrations of the Forward and Reverse Auctions (Chen and Bailey, 2017)

Business-to-Business reverse auctions started in 1994 when the former McKinsey consultant Glen Meakem introduced to General Electric's executives his plan for reshaping the sourcing process for industrial parts and materials, an activity considered inefficient and non-value adding, but whose market was estimated to worth \$5 trillion a year worldwide. His plan included the creation of a startup that would develop a platform capable of running the online tender process to manage reverse auctions. The executives at General Electric did not accept the investment amount of \$10 million necessary for this project, so Meakem resigned from his position to dedicate full time to his idea, thus funding FreeMarkets, the first market maker – which is how companies dedicated to providing the necessary support for online reverse auction are called – for ERAs, who enjoyed the benefits of being the first-to-market and, five years later, achieved a market cap of \$7 billion (Tully, 2000).

When Meakem proposed his idea, the internet was still in its beginning – the first web browser, WorldWideWeb, had been created only four years earlier – which, associated with the dot-com bubble that occurred from 1995 to 2000, made executives be cautious with the risks associated with the innovation, and for the first two to three years, there was not much interest (Kuo et al., 2004).

As browser technology increased, so did the demand for ERAs and with the end of the dot-com crisis in 2000, the prices for the solution went down, attracting more competitors to FreeMarkets, who was bought for \$500 million by Ariba, in 2004 (Bloomberg, 2015). In 2001, General Electric – the same company that had refused Meakem's solution – used ERAs to source \$12 billion in contracts, with an expectative of \$600 million in savings (Kwak, 2002).

Substantial numbers such as General Electric's and recurrent success cases have made reverse auctions become commonplace and popularized as a mean to decrease prices, with a cost reduction estimate ranging between 5% - 25% of the current contracts for the first reverse bid, to simplify the sourcing process and to ensure transparency. Even governments have shown growing interest in the utilization of ERAs in their public bids. In the United States, almost every state uses the tool (Taylor, 2018) and one of the most recent cases is India's adoption of ERAs for the sourcing or renewable energy (Nishtha Saluja, 2018).

1.6 Problem formulation and Research questions

Electronic reverse auctions' increased popularity and success drew researchers' and practitioners' attention to develop frameworks and finding the best practices to capture all the benefits expected with ERAs, which resulted in an extensive amount of papers being published. Such papers analyze different perspectives regarding ERAs, for example, how companies can prepare for the implementation of reverse auctions as part of their sourcing process, which categories are better suited to be purchased through ERAs, and what the procurement professionals should take into account when deciding if a determined purchase should be made by online bids or by the traditional sourcing method.

However, there is a lack of information and frameworks that consider what companies should focus on after the implementation of electronic reverse auctions in order to ensure long-lasting results, the continued utilization of the tool and that the initial excitement generated by the forecasted benefits will not fade away after the implementation. Saprikis (2013) have identified this research gap and called upon a thorough investigation of the so-called post-adoption stage of electronic reverse auctions. More research is similarly needed to understand of long-term e-auctions use (Hartley, Lane, and Duplaga, 2006).

Moreover, the majority of the research papers take into account the supplier perspective in relation to e-auctions and how the buyer-supplier relationship is affected due to a more impersonal negotiation strategy, which shows high criticism regarding ERAs since most suppliers are reluctant to adopt it (Lee, 2011).

DFDS represents an example of a traditional shipping and logistics company aiming to be at the forefront of benefiting from the use of modern technologies as well as digitalization. The company has only recently started to internally promote the use of online reverse auctions as a recommended e-sourcing tool and is open to share its previous experiences. Due to this fact, DFDS can be considered an ideal candidate for the setting of this research. At the same time, the company is expected to benefit from the results of this study since, until now, it remained unanswered what exactly is the impact e-auctions have on the buyer in the post-adoption period. DFDS further aims to avoid repeating the mistakes made in the past during its first attempt to practise electronic reverse auctions.

Therefore, the objective of this paper is threefold: to understand what are the key factors that buyers should focus on after the successful implementation of electronic reverse auctions in order to ensure all the benefits expected with them; to mitigate the possible risks described in

other papers, thus breaching the current gap in literature about how to manage the post-adoption phase of electronic reverse auctions; as well as adding to the buyer's perspective through the development of a framework. Lastly, to evaluate DFDS' current processes and, with the knowledge gathered, design the solution that best fits the company, thereby adding value to practitioners by demonstrating the applicability of the framework.

To reach these goals, the authors will propose the main research question:

- *How can buyers prepare for a post-adoption stage of online reverse auctions?*

The first step in answering this question is to understand what the challenges that buyers usually face after the implementation are that might jeopardize either the results achieved or even the continuity of electronic reverse auctions as a sourcing tool/strategy. Hence, the following sub questions are needed to support the research question:

- *What are the key factors associated with the post-adoption phase of ERAs that could jeopardize the results achieved?*
- *How could the case company improve the processes in the period following an e-auction?*

2. Literature Review

Electronic reverse auctions have steadily attracted the interest of practitioners and researchers since their creation back in 1994 and, as a result, there is an extensive amount of papers published, analyzing the tool from different dimensions and points of view. In this chapter, these research papers will be reviewed and elaborated upon the key factors that are related to the proposed research problem.

The first objective of the literature review is to increase the authors' knowledge regarding electronic reverse auctions and understand how ERAs can be a source of competitive advantage to the company. With this overview, it will be possible to evaluate what are the critical factors of the implementation process that will allow the company to achieve the full potential of ERA's benefits. Therefore, the first section of the literature review – 2.1 Electronic reverse auction as a source of competitive advantage – is structured as follows: the first subsection will describe how ERAs can be included in the sourcing process. Then on subsection two, ERAs' flexibility will be discussed by describing how their design can be adapted depending of each tender's specification. Subsection three considers that in some cases, a traditional negotiation is advisable instead of ERA, thus it will be evaluated what are the conditions that must be met in order for a tender to be eligible for an e-auction. The last subsection will summarize the benefits that can be achieved with the use of electronic reverse auctions.

The second objective is to evaluate the criticism regarding electronic reverse auctions since some researchers and practitioners have shown hesitation in adopting the tool as part of the procurement practices. Therefore, the second section of the literature review – 2.2 ERAs' criticism: Risks and challenges associated with electronic reverse auctions identifies the main risks and challenges that researchers have associated with ERAs. The main factors mentioned by the researchers were summarized in each subsection.

The first one describes the winner's curse, which is a risk related to the bidders of an e-auction, where in order to be aggressive in their proposal and outdo their competition, suppliers might offer prices that are too low, thus not benefiting on the contract in case they win the tender. The second subsection discusses the importance of buyers giving detailed information to and having a clear communication with suppliers when preparing and running an event and how relevant it is for suppliers to receive feedback regarding their participation in an e-auction and how these factors can influence the expected outcome. Subsection three considers that there is resistance regarding the implementation of ERAs both for buyers willing to implement it, and

suppliers who were invited to participate on an event. The studies mentioned in this subsection see training as one of the main strategies that buyers can adopt in order to overcome such barriers. The training can be associated both with buyers, when procurement professional receives in-depth information about ERA and its specificities, and with suppliers, when they are instructed on how to operate the software and what is expected of them during an event, so they can better prepare their strategy. The last subsection takes into account that one of the risks related to ERA is a possible strain in the long-term relationship between buyers and suppliers, which will depend on how ethical and/or fair suppliers perceive an e-auction to be.

Taking a deeper look into section one, it is evidenced that the literature has so far focused largely on the key factors that companies should consider in order to implement electronic reverse auctions as part of their sourcing process, either by discussing how its process can be integrated to the existing procurement practices, how it can be designed depending on the tender characteristics, in which cases the company should adopt it or what are the benefits it provides to the company. One thing these factors have in common is that all of them concern important points that buyers should consider *before* running an event, in the time preceding the execution of an e-auction. Therefore, it can be inferred that there is a lack of research regarding what factors are important for companies *after* an event is finalized. In this study, this gap will be dealt with by focusing on how buyers can manage their process after an event, how to identify and implement improvements to be done in the existing process and the impact of relationship management in the dissemination of ERAs.

Section two also shows that when it comes to criticism regarding e-auctions, researchers have a preference for considering the suppliers' perspective on what are the risks and challenges that ERAs pose, which might lead to biased conclusions regarding how much value the tool can actually bring to the market. This research will address this problem by applying the challenges and risks identified by the researchers considering the suppliers' point of view to a buyer's context, in this case, DFDS.

2.1 Electronic reverse auction as a source of competitive advantage

2.1.1 ERAs as part of the procurement sourcing process.

Engel (2004) defines strategic sourcing as “*an organized and collaborative approach to leveraging targeted spend across locations with select suppliers that are best suited to create*

knowledge and value in the customer-supplier interface”, where he emphasizes the importance of the collaborative aspect of the sourcing process.

According to Blood-Rojas (2017), there are typically seven steps to guide the sourcing process: internal needs analysis, assessment of supplier’s market, collect supplier information, develop strategy, sourcing strategy implementation, negotiation and supplier selection and implementation of transition plan and contractual improvements.

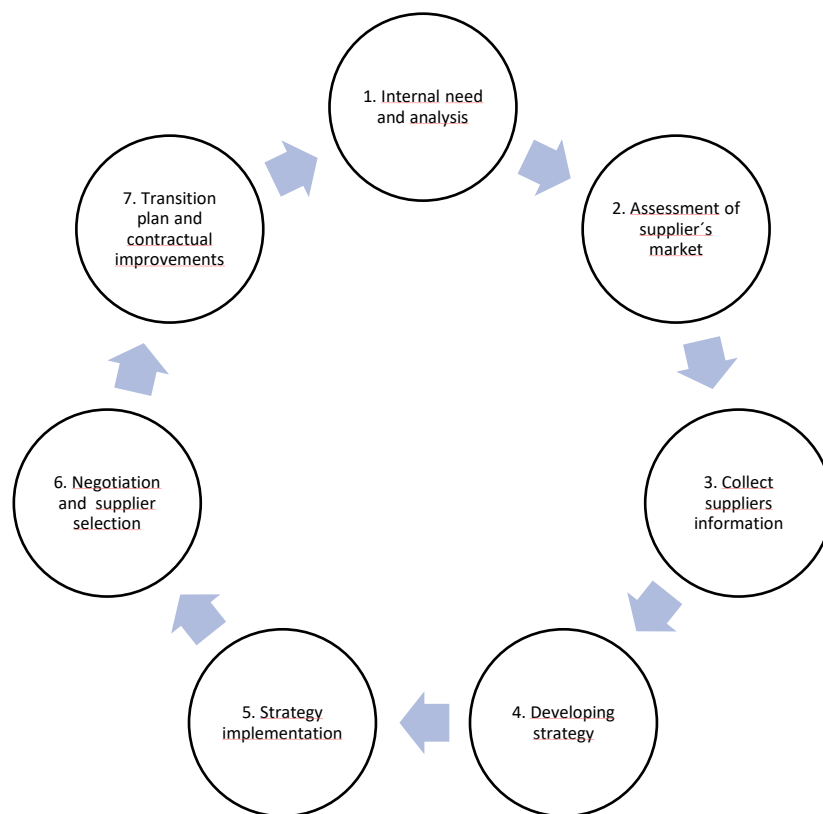


Figure 3 - Seven steps of strategic sourcing, based on Blood-Rojas (2017)

Step 1 - Internal need analysis: This step is related to the collection of data so that a benchmark of current performance, use of resources and costs can be determined. This information is then utilized in the definition of targets and sourcing strategy development.

Step 2 – Assessment of supplier’s market: In this step, the procurement professional evaluates the market from which the material or service could be sourced and its level of competitiveness.

Step 3 – Collect supplier evaluation: Potential supplier’s business reputation, performance, financial statements, credit reports and references must be thoroughly evaluated. The paper

indicates that this stage must be conducted carefully, once supplier's inability to meet the selection criteria could result in significant losses.

Step 4 – Develop strategy: With the information generated in the previous steps, procurement professional can develop a sourcing/outsourcing strategy and the choice for the best strategy depends on the level of competition in the marketplace and the company's risk policy towards sourcing/outsourcing and overall business strategy.

Step 5 – Sourcing strategy implementation: Once the strategy is defined, the buyer can start the implementation by approaching the market through a Request for Information (RFI), Request for Quotation (RFQ) or both (RFx). An RFx should include detailed material or service, product or service specification, delivery and service requirements, evaluation criteria, pricing structure and financial terms.

Step 6 – Negotiation and supplier selection: Once the information requested in the previous step is delivered by the suppliers, buyers must apply their evaluation criteria in order to compare the suppliers proposal and either a) request alignments to the initial offer, b) negotiate the terms and conditions proposed, c) shortlist the supplier for a second round of proposals and/or d) select a winning bid. The negotiation of the contract is also done in this stage.

Step 7 – Transition plan and contractual improvements: In this stage, procurement professionals should develop a communication plan and measurable Key Performance Indicators (KPIs), especially in cases where the selected supplier is new in doing business with the buyer or when switching suppliers.

Based on Kaufmann and Carter (2004), steps 5 - Sourcing strategy implementation (eRFx) and 6 - Negotiation and supplier selection (eAuction) can be executed electronically in four different levels of integration with the overall sourcing process:

- Pure face-to-face: The traditional sourcing method, uses neither eRFx nor eAuction.
- Almost pure F2F: Includes eRFx, but not eAuction.
- Auction-integrated: Have eAuction as their core element, but also incorporate face-to-face interactions and eRFx.
- Pure electronic auctions: Uses only eAuction, without any face-to-face interaction and specification is communicate when the event takes place.

2.1.2 ERAs' design flexibility

The objective of electronic reverse auctions is the same for all purchases: to stimulate competition amongst suppliers to ensure the best offers for buyers. There are, however, different types of ERAs that companies can choose from depending on the characteristics of the scope that will enable the company to achieve such objective (Kaufmann and Carter, 2004).

The literature on auctions discusses that the definition of which type to use depends on a) if suppliers can submit multiple bids, b) if suppliers can see their competitors' price (open versus sealed bids, and c) if the result of the event is binding or not, meaning that the buyer makes a commitment to award the contract to the winner of the ERA, without further negotiations. Based on these variables, Kaufmann and Carter (2004) affirm that the four types of ERA are English auction, Japanese auction, Dutch auction and Vickrey auction:

- English auction: The most common type of electronic reverse auction, it is also known as ascending-bid auctions. English auctions are characterized by bidders offering higher and higher bids, until the bidders withdraw and only one winner, with the highest price, remain. When applying the English auction concept to a reverse auction (buyer's auction), the concept has to be adapted from ascending-bids to descending-bids.

In the English auction type, buyers have the possibility to decide on a maximum bid decrement in order to keep suppliers active during an event and to avoid 'jump bids', which could discourage the competitors from making offers, thus jeopardizing the competition during an event. A variation of this auction type is the Japanese auction.

- Japanese auction: In this case, the prices increase continuously, making bidders relinquish their bids until the highest price wins.

Both cases are considered multiple-bids auctions and the competitors can see the prices or, in a variation of these auction types, competitors can see their rank compared to their competitors (e.g. green for the winning bid, yellow if the bid is close to the winning bid and red if the offer is not as competitive as the other bidders').

- Dutch auction: This auction type is the opposite to the English auctions, meaning the initial price is purposefully higher than the market level and are lowered after a specified period until one of the competitors accept the price informed, thus winning the contract. Therefore, in Dutch auctions bidders are allowed to see the prices, but contrary to the English and Japanese auctions, the Dutch variation is a single-bid type of auction, since the first bidder

who accepts the price proposed will be awarded the contract. Moreover, the results are binding, meaning that there's a guarantee that the winner of the auction will be awarded the contract. Adapting this concept of reverse auctions, the buyers start with a low price, which increases continuously by a pre-established percentage, until one of the suppliers accepts the price proposed and wins the contract with a single-bid.

- Vickrey auction: Bidders submit a single bid, and they can not see the current prices or their competitors'. This concept applies for both buyers and sellers.

Auctions can also vary in their durations, meaning that buyers can choose if there should be a time limit for the event (hard close), or if extensions to the original duration of the event if an offer is submitted within the last two minutes before its end are allowed (soft close). Buyers can also decide on a limit for the number of extensions (semi-soft close).

In summary, the design options that must be determined before the implementation of an ERA are: a) number of bids per bidder b) the degree of visibility allowed to suppliers c) if the ERA is binding d) level of maximum decrement e) ERA duration.

How buyers will define the optimal design will depend on the characteristics of the negotiation. Kaufmann and Carter (2004) defend that sealed-bids and ascending procurement auctions (e.g. Vickrey's auction) are applicable for cases where competition is not so strong, for example, when there's only one supplier available, provided that the supplier is not aware that they are the only bidder.

Regarding the level of commitment to the result of the ERA, the researchers affirm that buyers can achieve reputational advantage by committing to award the purchase volume based on the result of an auction. In the long run, a high level of commitment will allow suppliers to gain trust in the tool and mitigate the misconception that buyers are using the tool in order to achieve unethical benefits.

2.1.3 Criteria for using ERA

The benefits expected with the implementation of electronic reverse auctions make it an attractive tool for many category managers. Literature, however, reveals that the success of ERAs depends especially on the right conditions (Saprikis, 2013). Certain criteria must be followed for a successful implementation and should serve as guidelines for every category

manager prior to the decision of a traditional negotiation versus electronic reverse auctions. Wagner and Schwab (2004) identified eight determinants. They are:

1. Ease of specifying demand

This criterion states that ERAs should only be used for items that can be well described and specified, in order to guarantee that all suppliers have the same understanding of the scope they are quoting on.

Hawkins et al. (2005) complement this determinant by disserting about the importance of the buyer's comprehension of the internal customer's requirements in order to enable the comparison of 'apples to apples.' The researchers inform that such requirements are among others volume, place and time, purpose, physical characteristics, transport requirements, storage details, or major production cost drivers.

Wagner and Schwab (2004), however, emphasize that this does not mean that only commoditized, less complex and non-strategic products or services can be sourced through ERAs. According to them, complex and strategic products and services can be also sourced by ERAs if the demand for these can be properly specified, which agrees with Kaufmann and Carter (2004), who affirm that neither complexity nor specificity shall result in rejecting e-auctions as a sourcing tool.

2. Auction volume

This criterion considers that higher volumes are preferred by suppliers due to the possibility of the production of larger lot sizes, which allows for lower transaction costs and economies of scale, thus making the ERA more attractive in the sense of the higher the volume of products or services, the higher the power of buyers (Wagner and Schwab, 2004).

On the buyer's side, larger volumes justify the investment in ERAs, since there are costs associated with its implementation, e.g. the fees for intermediaries setting up each event, regardless of the volume. The volume should be high enough to at least cover these expenses. (Wagner and Schwab, 2004)

3. Expense of switching supplier

Wagner and Schwab (2004) also discuss that, for some companies, changing suppliers can be a time-consuming and long process, especially when the qualification of new suppliers has to follow a strict set of criteria (e.g. the pharmaceutical industry). For other companies, it might incur in additional expenses for changing the production line (e.g. the automotive industry). There are also internal costs involved in the search for new suppliers, negotiating new contracts and developing a new business relationship. Therefore, the lower the switching costs, the more beneficial the electronic reverse auction will be for the buyers.

4. Number of suppliers participating

The more suppliers participating in an electronic reverse auction, the stronger the competition, which would result in suppliers providing better offers. There is no 'right' or 'fixed' number of suppliers to participate, but buyers should always aim at having as many suppliers as possible, considering that the bids are independent of each other and that supplier can deliver according to the specification.

5. Competition among suppliers participating

Similar to the criterion four, criterion five considers that higher competition leads to better offers, but this criterion considers Porter's theory of competitive advantage and factors competition in the industry as a whole. A strong competition within the industry will generate more competition during the ERA.

6. Power of the buyers

This criterion is also based on Porter's theory of competitive advantage and argues that when the buyers holds the market power, they can put more pressure on suppliers to give better offers. Buyer's power can originate from a market with a small number of buyers with an expressive market share or from high purchase volumes.

7. Complexity of the negotiation package

Criterion number one demands that the products or services put through an ERA have clear specifications, which might lead buyers to only consider purchasing through electronic reverse auctions simple products (e.g. commodities) or services. On the other hand, Wagner and Schwab (2004) argue that ERAs can also be used with more complex items or services, or combinations of different products, services or both, which they call multiple variable bidding (MVB). Such complex bids were not possible in the past, due to restriction in the technology available. In the present days, however, technology evolved enough to allow events with more than one type of product and setting up pre-defined penalties or bonuses for individual suppliers based on factors other than price that should also be considered for a fair evaluation, such as payment terms, delivery times, supplier risk (Wagner and Schwab, 2004), technical capabilities, past performance, experience, proposal risk (Hawkins et al., 2005), among others.

The researchers, in fact, argue that it is more advantageous to the buyers to use MVBs, since the margin for reducing prices of simple products are low and there is not much differentiation in the strategy adopted between the competitors. MVBs, on the other hand, offer increased potential of savings and also allow suppliers to manage their resources according to their strengths (e.g. how much of their capacity is still available, their competencies and their network) (Wagner and Schwab, 2004).

8. Time to auction

Developing the best sourcing strategy before an event takes time and buyers should consider a planning period long enough to analyze and prioritize total spend, evaluate which products and/or services are better suitable for ERAs, define the scope and potential suppliers, understand supplier's cost drivers and market mechanisms and any other activity necessary to prepare a thorough RFQ in order to achieve successful results with the ERA.

When put together, these eight criteria can be visualized through an octagon that aids buyers when deciding which purchase should be made through a normal negotiation or through electronic reverse auctions. The further away from the octagon's center the results for each criterion are, the more favorable it is the decision to source through ERA and the center of the octagon indicates situations where ERAs are not advisable.

Figure 4 below shows an example of the utilization of the framework. In this case, criteria four (number of suppliers participating) and eight (time to auction) are at the center of the octagon, indicating that sourcing through ERA would be beneficial for the company. Most of the other criteria also score high in the framework. Only criterion five (competition among suppliers participating) and six (power of the buyer) have a score below average, therefore the purchasing manager should focus on increasing these areas in order to achieve even better results.

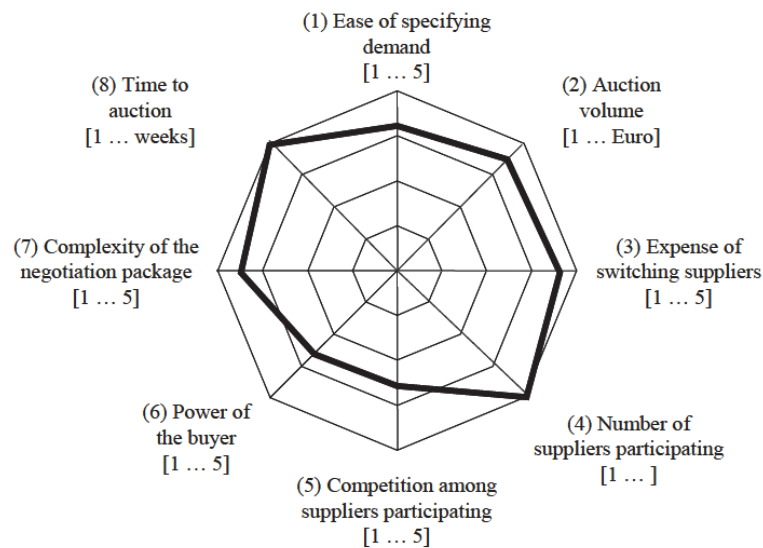


Figure 4 - Criteria for electronic reverse auction utilization (Wagner and Schwab, 2004)

Third, two key variables moderate the effect of the sourcing strategy and the sourcing professional's motivation on the decision to use an ERA. Moderators include the auction savings (product/service cost savings less auction cost) and prior ERA sourcing satisfaction whether the ERA comprises the entire sourcing process (e.g. 'pure electronic auctions') or a fraction of the sourcing process where the ERA complements other traditional sourcing processes (e.g. as face-to-face negotiations).

ERAs are considered capable of weighting non-price factors, thereby can be practically utilized in sourcing processes without a sole focus on price determine price while other terms of the agreement are determined in face-to-face negotiations. In this 'auction-integrated sourcing process' (Kaufmann and Carter, 2004), the buyer uses the ERA to determine the price, but is able to consider other non-price factors such as technical capabilities, past performance, experience, and proposal risk. Thus, ERAs are not prohibited for sourcing arrangements

requiring closer relations with suppliers (e.g. bottleneck spend) and, therefore, ERAs' use and supplier collaboration are not mutually exclusive (Hawkins et al., 2005).

2.1.4 ERAs benefits: adding value to the procurement function.

The increasing interest in electronic reverse auctions is boosted by advances in e-procurement technology that enable, for example, to create penalties and bonuses on the online bidding platform for individual suppliers based on their scorecards and parameters additional to the price that will be part of the evaluation of the best bids. Such improvements to the platform allow a fairer comparison between suppliers that are better performers or have a competitive advantage in relation to their competitors, as well as higher level of specificity of the product or service purchased (Saprikis, 2013).

However, electronic reverse auctions are an attractive sourcing tool due to its many perceived benefits for both buyers and suppliers. The most evident benefit and the one most mentioned in the literature is the additional reduction in prices when compared to a traditional face-to-face negotiation (Manoochehri and Lindsay, 2008; Wagner and Schwab, 2004; Caniëls and van Raaij, 2009; Emiliani, 2004; Duck, 2011; Rana Tassabehji, 2010; Carter et al., 2004; Hawkins et al., 2005; Hur et al., 2007). The pursuit of such additional reduction comes from the buyer's assumption that the market prices are actually lower than what they are currently negotiating (Kaufmann and Carter, 2004), and since any amount saved when purchasing shows at the bottom line (Manoochehri and Lindsay, 2008), this can be considered the most important benefit provided by ERAs.

The percentage of potential direct cost reduction varies in the literature. Some authors affirm that the range is 15-30% (Emiliani and Stec, 2005), 10% to 40% (Rana Tassabehji, 2010), 5-12% (Hartley, Lane, and Duplaga, 2006), 10-16% (Kauppi et. al, 2013). Caniëls and van Raaij (2009), however, argue that such price reductions are applicable to the first event of a specific category, and that it might be difficult to achieve the same level of price reductions in subsequent events for the same product or service.

Hawkins et al., (2005) apply the price reduction to the Resource-Based-Theory (RBV), thus making electronic reverse auctions a source of competitive advantage and consequently

superior financial performance. The researchers define resources as “*tangible and intangible entities that allow firms to efficiently and/or effectively produce market offerings that are valued by some market segment(s)*” and according to the RBV, such resources can be classified as a) financial, b) physical c) legal, d) human, e) organizational, f) informational and g) relational. Companies might differentiate themselves from the market due to an advantage in one of these resources’ types, but firms that combine the different types of resources in an exclusive manner achieve a competitive advantage compared to other companies since this combination is not easily transferable across organizations. By giving buyers the possibility to reduce their costs, ERAs become enablers of financial competitive advantage (Hawkins et al., 2005).

The authors also apply the RBV theory to ERAs by considering sources of competitive advantage other than price reduction. They also dissent that ERAs provide human competitive advantage by reducing the time required by traditional negotiation techniques to finalize a contract, which leads to the second benefit most commented in literature: efficiency. (Manoochehri and Lindsay, 2008; Saprikis, 2013; Wagner and Schwab, 2004; Caniëls and van Raaij, 2009; Carter et al., 2004; Rana Tassabehji, 2010; Hartley et al., 2006; Kauppi et al., 2013).

Efficiency leads to both human and financial competitive advantage, by considering the value of what is produced by the procurement staff, since ERAs substitute lengthy face-to-face negotiations with suppliers for categories that are not strategic for the company (Hawkins et al., 2005). Moreover, Manoochehri and Lindsay (2008) emphasize that the paperwork and communications through email or phone calls that might extend through several rounds are eliminated and negotiations are concluded in one business day. Wagner and Schwab (2004) support this idea by affirming that a superior negotiation process leads to efficient resource allocation, and since ERAs are a tool for optimizing the time necessary for negotiations, it is a source of efficiency. Carter et al., (2004) are aligned with this point of view and add that reverse auctions encourage buyers to standardize their procurement processes and structure their bid prior to the event. Thus, the increased productivity can only be achieved after buyers get accustomed to the ERA process and get experience by conducting repeating e-auctions.

An important factor that Carter et al. (2004) point out, is that electronic reverse auctions require a preparation time, which can be lengthy since it forces buyers to structure the scope before the

event, standardizing their specifications and developing a strategy for the ERA design, but Caniëls and van Raaij (2009) argue that digitalization of RFXs makes it easier for the process to be archived and repeated and for the knowledge gained with each sourcing to be shared, thus creating a smoother learning curve compared to a fully manual sourcing process. Therefore, the first events might seem complex and time-consuming to set up, but learning-by-practice ensures that the tool will lead to efficiency as procurement professionals become more familiar with it. In fact, the authors argue that the efficiency benefit might even outweigh price reductions since, as mentioned earlier in this chapter, it might be difficult to achieve the same level of price reductions for the same category in subsequent events.

A third benefit that can be found in literature is transparency (Saprikis, 2013; Wagner and Schwab, 2004; Rana Tassabehji, 2010), since the buyer will have the guarantee that the prices for the specific category being purchase through ERA are according to the market level (Duck, 2011).

Access to a global supplier database and a larger pool of suppliers (Manoochehri and Lindsay, 2008; Saprikis, 2013; Caniëls and van Raaij, 2009; Hartley et al., 2006), restructured supplier base due to a concentration of contract with fewer suppliers (Wagner and Schwab, 2004), lower inventory levels (Hartley et al., 2006) and better customer service (Kauppi et al., 2013) were also mentioned as advantages brought to buyers by the adoption of ERAs.

The benefits mentioned above are easily traceable to buyers. Literature, however, emphasize that suppliers also benefit from electronic reverse auctions. Transparency, when considered by the suppliers' point of view, mean that due to clear and detailed specifications, which is one of ERAs' main criteria, the terms on which buyers are evaluating the suppliers becomes clear to all the participants. Moreover, suppliers can than tailor their offers to the best of their resources (Saprikis, 2013; Wagner and Schwab, 2004; Caniëls and van Raaij, 2009).

In addition, at the same time that ERAs bring efficiency to buyers by reducing negotiation times they also, for the same reasons, bring efficiency to suppliers, especially since usually it is the supplier that has to travel to meet the buyers, which on occasion are situated in different countries, resulting in lengthy travel times (Manoochehri and Lindsay, 2008; Caniëls and van Raaij, 2009). Moreover, the travel expenses for the negotiation are incurred by the suppliers

and, since buyers are the ones who are responsible for the costs incurred with setting up events, it can be argued that ERAs also lead to lower selling and customer acquisition costs.

Access to new customers or markets (Saprikis, 2013; Wagner and Schwab, 2004; Caniëls and van Raaij, 2009) and shortened cycle times (Duck, 2011) were also mentioned as benefits for suppliers.

2.2 ERA's criticism: Risks and challenges associated with electronic reverse auctions

2.2.1 The winner's curse risk in ERAs

The winner's curse is a type of risk associated with the stress the bidders experience during an online auction. According to Carter et al. (2004), the winner's curse is a failure of judgement that is caused by a bidder bidding in excess of the real value of an item to the bidder. In the case of reverse auctions, the winner's curse occurs when a bidder bids a price that is too low or below its costs, and eventually deprives itself of a benefit of winning the bid. Inexperienced bidders have been shown to be prone to the risk of the winner's curse (Carter et al., 2004).

The risk of the winner's curse is higher in situations where it is challenging to estimate the costs accurately. Under these conditions, the supplier that is the most optimistic about the total cost of an item offered is likely to win the contract, however, it is equally likely to suffer from the winner's curse (Manoochehri and Lindsay, 2008). Besides, there is a risk of a permanent supplier damage to its business (Duck, 2011).

Teich et al. (2004) have investigated in their research the criteria for comparing various auction mechanisms and identified the revenue to sellers to be an important factor for the performance of online reverse auctions. The researchers have presented a dilemma of suppliers according to which the bidders cannot bid too high otherwise they will not win the e-auction, on the other hand, if their bid is too low, they risk receiving less revenue than originally desired. Nevertheless, the authors suggest a solution to the winner's curse situation in which the profit to sellers resulting from each bid can be calculated and optimized. Such calculation may, however, be only possible if the sellers know their cost structure and are willing to share this information with the buyer (Teich et al., 2004).

Tassabehji et al. (2006) have found evidence of the winner's curse resulting from suppliers' feeling stressed and pressured. Followingly, they viewed the e-auctions as a rather unfair

process although the researchers dismissed these claims since the suppliers should be in control of their bidding strategy (Tassabehji et al., 2006).

It is equally important for both buyers and suppliers to understand the concept of the winner's curse. Especially the less experienced suppliers need to be better accustomed to the pressure during an online auction, otherwise they may cause a potentially permanent damage to their business despite winning the auction event. Buyers initiating an online reverse auction may need to educate their aspiring suppliers on the risks associated with bidding a too low price. At the same time, buyers need to be aware that their winner takes it all strategy may challenge the suppliers to offer unrealistic prices in order to make the winning bid. Instead, by having an accurate overview of the expected cost of a given item, a buyer may consider setting up a fixed minimum bid price in which case the bidder coming the closest to this price will be the winner of the event.

2.2.2 Importance of feedback mechanisms in the ERAs implementation

The research on the impact of feedback mechanisms is rather scarce for both adoption and post-adoption stage of online auctions. This observation is supported by Rothkopf and Whinston (2007) who highlight the relevance of a future research in regards to the feedback offered to bidders and the respective feedback policies of buyers. The authors further reveal that the way the information is provided to bidders can influence their bidding strategies and thereby influence buyer's expected outcome from e-auctions (Rothkopf and Whinston, 2007).

Teich et al. (2004) discuss in their research article the information architecture of e-auctions and evaluate the level of feedback provided to suppliers under the various types of e-auctions. They state that there is no supplier feedback mechanism provided in the case of sealed-bid auctions in which the supplier is encouraged to minimize its bid as much as possible (Jap, 2003). However, there are several possibilities of feedback mechanisms in progressive, open-cry and one-round e-auctions. In addition, the researchers point out that even small changes to the information architecture may have a significant impact on the outcome and performance of an e-auction (Teich et al., 2004).

The importance of the internal feedback mechanisms is neither to be neglected. Hawkins et al., (2010) examined the feedback process from the purchasing agent's point of view and focused on the positive experiential feedback. The authors found out that in the post-adoption stage of e-auctions, the users of the tool place greater consideration on their own experiences than on

the management's instructions to use the tool. The practitioners of e-auctions are motivated by their positive experience regardless of whether the use of e-auctions is mandatory or not. Similarly, the negative feedback or experience will discourage the users from using the tool (Hawkins et al., 2010).

2.2.3 Training of personnel operating with the ERAs

In regards to the training received by buyers wanting to participate in online reverse auctions, Carter et al. (2004) identify training and education of the purchasing personnel as one of the most common mean to overcome implementation barriers to online auctions. The authors have found out that over two thirds of the buying organizations experienced resistance to the implementation of online reverse auctions from within their purchasing department. Another effective way of overcoming the internal resistance are obtaining the input of the resisting employees in the development process of online reverse auctions, establishing internal performance incentives connected to the e-auction use, and sharing the success stories to motivate and prove the effectiveness of online reverse auctions (Carter et al., 2004).

The research has also been concerned with the resistance by suppliers. Similarly as with buyers, communication and education of suppliers regarding the use of online reverse auctions are stated to be a commonly used tactics. On the other hand, a different approach is preferred by some buying companies that leave their suppliers with no choice but to participate in e-auctions. A key facilitator for successful e-auctions is found to be an extensive training for both buyers and suppliers. The training may be conducted by either the buying company or the market maker and is found to reduce most of the internal resistance to the e-auction use and at the same time to increase their adoption rate (Carter et al., 2004).

From the suppliers' perspective, the research by Carter et al. (2004) has shown that despite the fact that suppliers went through some sort of training prior to the e-auction, they were not able prepare for the actual event as the test and real auctions were essentially designed and conducted in different ways. It was also found out that many suppliers had not prepared a strategy when entering the e-auction, nor they had established the minimum price they were willing to bid. Consequently, the suppliers have found the online auctions considerably less favourably than buyers. Hartley et al. (2006) take the point of departure from the research by Carter et al. (2004) and complement that buyer training should likewise address information security concerns.

Lee (2011) suggests that the training at the buying company should involve the structuring of online auctions so that opportunism does not occur, deciding when they are appropriate and when are not, selecting suppliers to participate in these auctions, and managing of the incumbent suppliers participating. The author further states that the training should include addressing the potential conflicting goals of online reverse auctions and building long-term relationships with suppliers (Lee, 2011).

The training of personnel is a part of switching costs for buyer, that is, any costs incurred in switching its business to a different supplier (Hur et al., 2007). According to the researchers, switching costs are part of the equation for calculating total acquisition savings, which is a figure used to measure the attainable savings accrued from e-auctions. In order to calculate the total acquisition saving, switching costs are subtracted from the purchase price saving. In case of a full-service e-auction administration, training is provided by the third-party market maker. However, in self-service and hybrid e-auctions the trainings are at the expense of the buyer (Hur et al., 2007).

It may be concluded that the focus in the literature has been placed on the training of personnel prior the adoption of the electronic reverse auctions. There is a lack of research and, possibly, data available on the impact of a continuous e-auction training of both buyer and supplier personnel. It is presumed the users of e-auctions learn from their experience as additional products and services are being sourced, however, the potential effect of a conceptualized learning process in the post-adoption stage seems to be a neglected research area.

2.2.4 Effect of ERAs on the intra- and interorganizational relationships

Online reverse auctions have been found out to have a potentially damaging effect on buyer's long-term performance. Especially suppliers participating in open-bid auctions are more likely to suspect buyers of manipulating the process, for example by involving unqualified suppliers or by submitting their own bids in order to decrease the price. Such a suspicion may lead the supplier to share less information or engage in fewer mutually beneficial co-operations with the buyer. On the other hand, the research has also shown that some suppliers will, instead, be willing to tighten their relationship with their buyers in an attempt to avoid future auctions (Kwak, 2002).

In general, the stance on the impact of e-auctions on relationships is rather negative. Jap (2003) in her research article quotes several practitioners who have stated that the e-auctions take away

the partnerships built and that they will essentially change the attitudes and perceptions between the parties. There is also an ongoing scepticism about conducting e-auctions in businesses where negotiations are traditionally used.

Jap (2003) further confirms that a mere perception of opportunism linked to online auctions can cause damage to relationship between buyer and supplier. The most likely suppliers suspecting their buyers of opportunism are both new and current suppliers. The suppliers also expressed their dissatisfaction with the level of communication during an e-auction event since they feel unable to present their full capabilities as compared to face-to-face negotiations. The open-bid auctions cause an increase in the level of supplier suspicion of opportunism and the suppliers have been found to consider them unfair and exploitative. In order to not rise the suppliers' suspicions of opportunism, buyers are recommended to use these auctions rather carefully and limit them to purchases involving less important suppliers (Jap, 2003).

Interestingly, Jap's (2003) research has proven that the suppliers are more likely to make idiosyncratic investments in sealed-bid auctions. The reason is that suppliers consider buyers' move to sealed-bid auctions as an attempt to improve the business and, in turn, it encourages them to make dedicated investments. The research has further shown that online reverse auctions may serve as a wake-up call to current suppliers who will consequently be encouraged to signal their commitment in the long run (Jap, 2003).

Wagner and Schwab (2004) in their article refer to the research conducted by Jap (2003) and stress out the importance of companies paying attention to the interdependencies between the online reverse auctions and buyer-supplier relationships since most electronic auctions favour price over other goals. Neglecting factors such as quality of the product or service, customer service, cooperation and reliability in online reverse auctions could potentially result in deteriorated relationship. The buyer-supplier relationships are also crucial when considering the switching costs from one supplier to another since the expenses for setting up a new relationship need to be accounted for. Similarly, it is advisable to understand and specify the kind of relationship with the supplier as it defines the power of the buyer. Electronic reverse auctions are supposed to be suitable in relationships when buyer is the dominating party (Wagner and Schwab, 2004).

The research conducted by Kaufmann and Carter (2004) found out that the most effective way of dealing with ethical improprieties in buyer-supplier relationships is to provide explanation and follow-through of an individual party's actions. It has been also shown that the mere

perceptions of unethical activities may be just as destructive as the actual misconducts on either party's side. Kaufmann and Carter (2004) further indicate that there is no definite answer as to whether or not e-auctions harm buyer-supplier relationships. They add that some buyers view the e-auctions as a simple test of their suppliers. The researchers quote a practitioner expressing doubts about the sincerity of a buyer-supplier relationship if a strategic supplier is able to lower its current price by 20 per cent in order to win a bid in an e-auction. In any case, it is not a common practice to subject strategic suppliers to e-auctions (Kaufmann and Carter, 2004). In the later research conducted by Hur et al. (2006) it was found out that strategic relationship with suppliers cannot be warranted in order for e-auctions to be successful.

The effect of online reverse auctions on the buyer-supplier relationships have been also studied by Carter et al. (2004), who point out that buyers and sellers view the outcome of e-auctions differently. It was revealed that twice as many buyers are convinced that online reverse auctions improve the relationships with their suppliers, as compared to buyers having an opposite viewpoint. The satisfied buyers see the increased levels of trust and a greater access to supplier data as the main forces influencing their relationships with the suppliers (Carter et al., 2004).

On the other hand, the vast majority of suppliers expressed their negative experience with online auctions. The researchers quote a representative from a supplying company who believes that his company has done its customer a favour by participating in the proposed online auction and that the relationship may be the same again only after the supplier is granted additional benefits following the e-auction. According to Carter et al. (2004), no suppliers recorded an increase in trust following an e-auction, on the contrary, several suppliers experienced a decrease in trust they previously had in their customers. A number of suppliers also admitted they are prone to provide fewer services and less dedication to their customers using online reverse auctions. On top of that, such an approach also includes the unwillingness to provide additional capacity in cases of demand growth (Carter et al., 2004).

Carter et al. (2004) also note that many buyers find suppliers' complaints about online reverse auctions exaggerated, however, their findings suggest otherwise. Therefore, the researchers propose enhanced trainings of suppliers in an attempt to overcome their disfavour of e-auctions (Carter et al., 2004).

Some researchers challenge the market makers and claim that these providers cannot typically deliver on their promises to suppliers participating in e-auctions. The data supporting the market makers' statements about e-auctions improving buyer-supplier relationships is also

doubtful according to Emiliani and Stec (2004). In their research, Emiliani and Stec (2004) confirm that suppliers may regard online reverse auctions as opportunistic from buyers, which consequently results in opportunistic behaviour among suppliers, for example by charging their customers higher prices whenever given the opportunity.

Emiliani (2004) insists that online reverse auctions provide no real benefits for either buyers or suppliers, because they are depended on power-based bargaining and their impact is degrading the competitive abilities of both parties. In his research, Emiliani (2004) investigates the internal relationships in buying companies and points out that employees are often driven by their managers to drive down costs and therefore they then treat their suppliers in a similar manner. In order to tackle this problem, he suggests that the internal relationships need to be improved before attempting to improve the external ones. As the result, both employees and suppliers need to be seen as valuable resources with a potential to develop rather than exploit (Emiliani, 2004).

In their later research, Emiliani and Stec (2005) found out that online reverse auctions are structurally flawed and could negatively impact both buyers and suppliers by neglecting intangible personal and business aspects of buyer-supplier relationships. Their study also indicates results in the opposite spectrum of what market makers proclaim and buyers and suppliers aim to achieve by conducting online reverse auctions, including poor sourcing decisions, higher costs and less cooperative buyer-supplier relationship. In addition, the market makers have been shown to exaggerate the benefits achievable by both buyers and suppliers (Emiliani and Stec, 2005).

Concerning the ethics in buyer-supplier relationships, Emiliani and Stec (2005) posit that online reverse auctions are likely to violate ethical policies containing clauses about fairness and fair competition, building long-term relationships, trust and respect.

In a research dedicated to investigating the impact of online reverse auctions on buyer-supplier relationships, Tassabehji et al. (2006) provide evidence indicating that the commitment and loyalty of suppliers have been harmed as a consequence of e-auctions. The online reverse auctions have been shown to promote arm's length relationships that are likely to result in suppliers holding back from relational investments in the future. The research article includes several cases of inflicted suppliers' behaviour such as a reluctance to share future cost-saving technological developments and proactively invest in developing collaborative relationships as long as the main decision criterion is price. In addition, Tassabehji et al. (2006) warn against

suppliers retaliating in the form of providing their customers with goods and services of quality proportionate to the newly e-auctioned price. Further evidence suggests that the incumbent suppliers are prone to view their customers more negatively no matter if they are the winners of an e-auction or not. There has also been a case when a supplier would give its customer a lower priority in case of an issue arising with the supply capacity (Tassabehji et al., 2006).

Moreover, the researchers have also analysed the factors impacting the suppliers' behaviour. The main causes of their behaviour were identified to be the practices and behaviours of buyers during the e-auction event. The suppliers have been found to be concerned with inadequate supplier pre-qualification, lack of systematic supplier rating and supplier visits, presence of unqualified bidders and with phantom bids by the buyers in order to lower the bid price further (Tassabehji et al., 2006). The bidders have also reported being disturbed by the lack of transparency during the e-auction event, as well as in the order-winning criteria. Lack of clarity and completeness of the product specification by the buyer is considered by the researchers as a typical consequence of arm's length relationships promoted by the e-auctions, resulting in lowered trust among parties and fear of opportunism on buyers' side. This fear is likewise driven by buyers' actions after the e-auction event when the buying companies have been attempting to change the terms and conditions of the contract.

Tassabehji et al. (2006) further propose potential improvements for the e-auction process in the form of trust-building mechanisms. According to their research paper, buyers should aim to reduce the information asymmetry by improving the product specification and minimizing changes to terms and conditions in the post-auction period. The buyers are also recommended to initiate more rigorous supplier qualification practices and allow the suppliers' representatives to observe the e-auction administrators during the event (Tassabehji et al., 2006). Other research suggests the using of multi-attribute e-auctions, subsidies for supplier's investment, payments to suppliers who do not win, and post-bid negotiation as ways of reducing the negative impact of e-auctions on relationships (Hartley et al., 2006).

The adopters and non-adopters of e-auctions have not been found different in perceiving the negative impact on the buyer-supplier relationships as a barrier to their adoption. This finding is attributed to the fact that both adopters and non-adopters are likely to realize they have purchases for which the good supplier relationships are less critical and thereby can be seen as potential candidates for e-auctions. Similarly, there are no differences between adopters and non-adopters in perceiving the importance of their e-auction knowledge and lack of supplier

participation. On the contrary, the concerns over information security have been identified to separate the views of adopters and non-adopters of e-auctions (Hartley et al., 2006).

Hur et al. (2007) support the proposition that concerns with the effect on buyer-supplier relationships are one of the barriers to the e-auction implementation. Their study proposed the limited economic benefits as another barrier to the adoption of e-auctions. They found out that e-auctions do not ensure substantial cost savings for every company that adopts them. In fact, only the companies with favourable organizational conditions such as large spend size, high-saving commodities, competent sourcing managers, and accumulated supply market knowledge are able to fully exploit the savings potential of online auctions. In some cases, the savings achieved do not cover for the e-auction service fees and the implementation of an e-auction software may also involve a considerable investment (Hur et al., 2007).

Despite the generally negative perception of online reverse auctions by suppliers, a part of them views e-auctions as an opportunity rather than a threat. In particular, the supplying companies competing on price are less concerned with the negative effect of e-auctions on the buyer-supplier relationships. It was also shown that these suppliers are more likely to come from developing countries, insinuating that e-auctions may help creating a level playing field for suppliers across countries. Past success in e-auctions is likewise expected to have a positive impact on suppliers' perceptions. On the other hand, suppliers differentiating themselves by their innovation capability and suppliers competing on their service quality will try to avoid the online reverse auctions (Caniëls and van Raaij, 2009).

In the more recent research, the view on e-auctions' impact on buyer-supplier relationship seems to be slightly changing. Tassabehji (2010) reports on e-auctions being seen as beneficial in building up buyer-supplier relationships as buyers work more closely with their suppliers while preparing them for the e-auction process. In his view, after e-auctions become more widespread, the perception of senior managers at the buying companies changes as these become aware of the potential of e-auctions in terms of strategic integration and collaborative relationships with the suppliers. It was also found out that e-auctioning commodity types of goods and services and using e-auctions to improve relationships with suppliers resulted in increased positive perception of e-auctions by the buying companies (Tassabehji, 2010).

Hawkins et al. (2010) emphasize that in cases when buyer-supplier relationships provide more value than the transaction price, the supplier selection process should not be solely based on the result of an online reverse auction. Instead, the resulting price should be only one of several

factors in supplier selection decision including among others total cost of ownership, quality, past performance, experience and technical capabilities (Hawkins et al., 2010).

A rather rare research adopting the buyers' point of view has been conducted by Lee (2011), who discovered that more experienced buyers perceive the online reverse auctions to have a negative impact on trust and cooperation, but not on supplier's viability in the long-term. These buyers may see the e-auctions as harming the long-term supplier partnerships and alliances they were working on. Besides, they may typically see the online reverse auction as just another tool to be used only when they find appropriate. The buyers with less experience, however, are prone to view e-auctions mainly as a quick way to reduce costs since they may not have yet established a closer relationship with their suppliers (Lee, 2011).

Lee (2011) emphasizes the importance of avoiding sending mixed messages to the purchasing representatives. For that reason, it is suggested the buying companies develop training methods including learning when the online reverse auctions are appropriate, structuring the e-auctions, how to select suppliers willing to participate, and the management of incumbent suppliers in e-auctions. Incumbent suppliers should accordingly be notified of the possibility of an e-auction in advance (Lee, 2011).

The necessity of trust in the buyer-supplier relationships has also been highlighted in the research concerned with online reverse auctions. According to Duck (2011), trust in e-auctions will build over time only when buyers and suppliers maintain the obligations and commitments contained in terms and conditions. However, trust should also be sought after proactively in order to achieve long-term commitment by both parties. The management is therefore suggested to focus on maintaining a trustworthy environment with its suppliers that would be based on transparency and fairness (Duck, 2011).

To sum up, the research conducted on electronic research auctions has been particularly fruitful in the period between early 2000s and 2012. As previously outlined, a vast majority of researchers focused on the perspective of suppliers and on the adoption stage of e-auctions. In the more recent research, the positive aspects of e-auctions seem to be gaining ground as opposed to the earlier work when the perception of e-auctions' effect on relationships has been viewed rather dubiously. Relational rust, personnel training, behaviour of parties involved, structuring of e-auctions and their appropriateness have been the topics emerging in the literature focused on relationships affected by online reverse auctions.

This study is focusing on the research areas previously unexplored or underdeveloped by the academia, in particular on the post-adoption stage of electronic research auctions (Saprikis, 2013) and on the perspective of buyers adopting these e-auctions (Lee, 2011). In addition, there has been a lack of research in the understanding of the long-term usage of e-auctions (Hartley et al., 2006). Therefore, the proposed research questions aim to investigate the key factors and the challenges faced by buyers in the post-adoption stage of electronic research auctions, including the main research question:

- *How can buyers prepare for a post-adoption stage of online reverse auctions?*

And the supporting subquestions:

- *What are the key factors associated with the post-adoption phase of ERAs that could jeopardize the results achieved?*
- *How could the case company improve the processes in the period following an e-auction?*

3. Methodology

This chapter begins with a discussion about the purpose of this research, the research approach and the philosophy adopted in this study. Later, the research design is introduced, where the case study is presented, along with the characteristics of the data collected and its time horizon. Subsequently, it is explained how the data was collected and further analysed. To conclude the chapter, the research's reliability, validity, generalizability and ethics are discussed.

3.1 The purpose of the research

According to Saunders et al. (2007), the purpose of research is directly connected to the research question itself, since the research question is the objective of the research and the way in which the research questions are formulated will determine if the research is classified as descriptive, exploratory or explanatory, or a combination of these three types.

Exploratory studies are focused on understanding 'what is happening?' and is recommended when the objective is to find new insights regarding a specific problem and assess phenomena from a new perspective. The authors highlight that these types of research are especially indicated in cases where the researcher wishes to clarify the understanding of a problem, and the nature of the problem is still unclear. Exploratory researches are flexible and adaptable, meaning that it allows the researcher to change the direction of the paper depending on the data gathered or insights incurred, and choose to have initially a broader focus and narrow it down as more information is collected. This type of research is usually conducted through search of the literature and interviews with experts in the area and/or focus groups.

Descriptive studies, as the name suggests, are focused on describing events or situations. This type of research can be conducted with a purpose of its own or as an initial stage to exploratory and explanatory researches, since it is important to have a clear understanding of the topic of the research prior to the data collection phase, since it will be expected from the researcher to draw conclusions based on the data gathered, not just explain them. Therefore, the authors advise the utilization of descriptive research as a precursor to explanatory studies, which are then known as descripto-explanatory studies. (Saunders et al., 2009)

Explanatory studies are focused on identifying causal relationships between different variables, e.g. the analysis of manufacturing scrap rates might reveal a relationship between scrap rates and the age of the machines being utilized by the company. The researcher can collect data to

create statistical tests that show the correlation between these variables to identify if there is an actual causality. Explanatory researches can also be conducted with qualitative data.

Based on the descriptions above, it can be argued that this study has an exploratory nature, since the focus of the research questions are the challenges and factors after the execution of an electronic reverse auction that buyers should manage in order to ensure a successful utilization of ERAs and, as discussed in the Problem Formulation, is not a topic well discussed in the literature, therefore there is a lack of research that explain the origin of the problem. Also, this research focuses on the buyer's perspective, which is also an addition to the current literature that focuses on the suppliers' point of view, thus analysing the problem from a different standpoint. Moreover, the methods utilized for conducting this research were the analysis of existing literature and interviews with experts in the field. Initially, the analysis of the existing literature was used as a way to increase the authors' knowledge about the topic in order to able to tailor the questionnaire to be conducted with experts in the field to the specific needs of this research.

3.2 Research philosophy

This study's objective is to apply methods that provide answers to the research questions developed, addressing a practical problem, therefore following a pragmatic philosophy. According to Saunders et al. (2007), such philosophy considers that the determinant of the epistemology, ontology and axiology is the research question and that it is possible to work with their variations.

Holden and Lynch (2004) corroborate with this position and add that the focus of the Pragmatic research is to apply methods that suit the problem, rather than the ontology, epistemology and axiology, meaning that the researcher is not bound by stipulations about unified methods or a unified ontology for science.

Saunders et al. (2007) further argue that such flexibility makes it more appropriate for the researcher to think of philosophy as a continuum instead of opposite positions, as it happens with positivism and interpretivism.

3.3 Research approach

Saunders et al. (2007) affirm that every research project involves the use of a theory and authors should consider the theory at the early stages of their study, since it will aid them in the definition of the research questions and objectives. The authors define ‘theory’ as “*a formulation regarding the cause and effect relationships between two or more variables, which may or may not have been tested*”, where ‘variable A’ is the way the author will conduct a particular research and ‘variable B’ are the results expected. They emphasize the understanding that ‘theory’ is applied in the everyday life, not just by researchers, since ‘theory’ is the concept that if a ‘variable A’ is introduced, ‘variable B’ will be the consequence, so every decision made will utilize a certain theory as a basis.

If authors have a well-defined theoretical position before they start collecting data, meaning that they have already theorized what is the result of the variables they are studying, then the authors are following a deductive approach. On the other hand, if the researchers will develop a theory after the collection of data, they are following an inductive approach. That being said, the theory will also define the objective of the literature review. With a deductive approach, the main goal of reading through the literature is to identify theories and ideas that the authors might test by collecting data, whereas with an inductive approach, the objective is to explore the data gathered and develop theories based on them that will be later related to the literature, meaning that the authors start the research without predefined theories or frameworks.

This study opted for the inductive approach. As mentioned in previous sections, there is a gap in the literature regarding the post-adoption phase of electronic reverse auctions and the buyer’s perspective and, as a result, not enough knowledge available about the topic prior to the execution of the research for the development of hypothesis and frameworks to be tested with the data. Also, the deductive approach, due to its objective of testing pre-established theories, demands strict and highly structured methodological procedures that, on the one hand, ensures the results’ reliability and facilitate the replication of the research, but on the other hand, are not flexible to other explanations to the research problem. If the hypothesis developed prove to be false, the researches will not have any alternative answer. In addition, the deductive approach establishes cause-and-effect links between variables without taking into consideration the human interpretation of their social environment.

3.4 Research design

3.4.1 Strategy

There are several possible strategies that researches can choose from (experiment, survey, case study, action research, grounded theory, ethnography and archival research), and while some of them are usually recommended for a deductive approach and the others for an inductive approach, the decision should be based on the research question and objective, the extent of the existing knowledge, the amount of time and resources available and the author's own philosophy (Saunders et al., 2009).

Case studies, which is the strategy adopted for this paper, are defined as *“a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real-life context using multiple sources of evidence”*. They enable a rich understanding of the context of the research (Saunders et al., 2009).

According to Saunders et al. (2007), there are two dimensions to case studies: 1) single case versus multiple case and 2) holistic case versus embedded case. The first dimension concerns the number of sources of evidence that are going to be analysed. A common source of evidence are companies, so if only one company is going to be used as basis for the data collection. The second dimension refers to the unit of analysis, where a holistic case study evaluates the company as a whole and the embedded case study also examines sub-units within an organization, e.g. departments or work groups.

For this research, the holistic and single-case dimensions are adopted in the case study. Single-case because DFDS has a unique trajectory, considering that the company has already attempted the implementation of ERAs in the past, but there was not substantial adherence to the tool, which was used sporadically and without structure, and now the company initiated a new project based on their learnings and experience. This learning curve will provide specific insight into the post-adoption phase. Holistic because the department in which the interviews were conducted, Group Procurement, represents the centralized best practices and are the process owners for the whole company, thus allowing for the creation of a standardized framework.

3.4.2 Choice

Triangulation is a research choice that allows the author to corroborate the research findings and ensure that the data is correct and unbiased, through the use of two or more independent sources of data or data-collection methods (Saunders et al., 2009).

Saunders et al. (2007) explain that triangulation is a part of mixed-method research, which allows for more flexibility in the way data is collected and analysed, thus broadening the spectrum of possible answers to the research question.

For this study, semi-structured interviews were conducted as the primary source of data with representatives from the case company and the market maker and an online questionnaire with the suppliers who participated in an electronic reverse auction was used as a secondary source, with the objective of comparing their results.

3.4.3 Time horizon

According to Saunders et al. (2007) time horizons relate to the length of time that the research will represent. There are two types of time horizons that researchers can use: cross-sectional studies are a snapshot that represents a specific point in time. They often use the survey strategy and can be both qualitative and quantitative, and many cases consist of interviews conducted over a short period of time. On the other hand, longitudinal studies observe people and events over time, therefore being able to analyse change and development. Which type better suit the research depends on the research question.

This research is conducted as a cross-sectional study, since the objective of the research questions is not to track the development of the post-adoption phase over time, especially because DFDS, the case company, has just recently implemented electronic reverse auctions as part of their sourcing tools, meaning that the company does not have yet enough data to be compared with previous periods, but to understand what the current situation in the company is and how to improve it. Moreover, conducting a longitudinal study would not provide more information, since the current situation in the company is already the benchmark of their experience since the ERA implementation.

3.5 Data collection

Semi-structured interviews served as the main source of primary data collection for this study. This type of interviews allows the researchers to vary the amount and the order of questions asked depending on the context of the interview. Additional questions are likewise encouraged whenever necessary in order to deepen the researchers' knowledge about the research topic. Semi-structured interviews are recommended in a case study strategy because they are capable of providing answers to 'what', 'how' and also 'why' research questions, and the data gathered is analysed qualitatively. Another reason for conducting this type of interviews is that it is compatible with complex and open-ended questions. Moreover, semi-structured interviews fit with the exploratory research category (Saunders et al., 2009).

The interviews were conducted in a two-to-one form, where both authors of the study were presented and asked questions and one respondent answered these questions. All interviews but one were stylized as face-to-face interviews, whereas the remaining interview took place over a Skype call. In line with the research on research methods, the interviews in this study were audio recorded and later fully transcribed by the authors (Saunders et al., 2009).

To achieve a variety in participants' responses and to get a more precise overview of the situation, the respondents were chosen from across different departments within Group Procurement. The respondents' work titles and hence responsibilities and experiences with the e-auctions also varied. Altogether, ten interviews have been conducted with the representatives from the case company. The list of participants from the case company included the transformation officer acting as a chief procurement officer, head of direct procurement, several category managers from both direct and indirect categories, business analyst representing a superuser of the e-auction tool, sourcing manager, and senior purchasing manager from the operational team. One additional respondent was a representative of a third-party provider of the e-auction tool, who was reached out to due to his expertise with the processes linked to electronic reverse auctions and to add further relevance to the findings in this study.

The interviews varied in duration due to differences in respondents' previous experience with e-auctions. The most experienced participants were invited to one-hour long interviews, while the less experienced respondents took part in interviews that lasted for approximately thirty minutes. All the participants were briefed on the topic of the interview and a short overview of the research problem. The respondents received this information typically about five days prior

the interview took place, together with their official invitation to participate in the study. The consent for recording the interviews was firstly requested when inviting the respondents to participate, and then later confirmed immediately before starting the recording. None of the potential respondents that were contacted declined to participate in the study.

In order to triangulate the data sources, a questionnaire has been used as a secondary data collection technique and sent out to the suppliers previously participating in the e-auctions initiated by the case company. The questions contained in the questionnaire were prepared in the same way as the questions asked during the semi-structured interviews and aimed to capture the suppliers' perspective and experiences with e-auctions. Using two or more independent sources of data helps verifying the findings of the research (Saunders et al., 2009). Likewise, conducting a semi-structured interview with a third-party provider of the e-auction tool is considered a part of the triangulation process.

3.6 Data analysis

As previously outlined, the data collected in this study is of qualitative character and has been approached from an inductive perspective. Following this approach, the study attempted to develop a conceptual framework from the findings based on the data collected and the theoretical background. The fact that the theoretical background was a part of this process may signal the presence of elements of a deductive approach. This is in line with the research by Saunders et al. (2009), which states that following an inductive approach is in usual combined with elements of a deductive approach.

The data collected has been analysed with the coding techniques presented by Corbin and Strauss (2008). At first, the information received was summarised in the first order codes using the interviews transcripts and questionnaire responses (see *Table 1*). That way it was easier to identify any potential patterns in the responses received. Since all the interviews have been transcribed, by marking down comments and observations on individual conversations, it has been made feasible for the authors to better capture the nature of the data.

Table 1 - Illustrative Quotes

Risk Management	
Head of Direct Procurement	"... it requires that all the suppliers have done their own calculations and are willing to know their limits."
	"... if they go too far below, then [...] you have to question, how sincere are they? How, why is that they want this job so badly? So it's like, why they're not playing a little bit hard to get? Why are they so desperate?"
	"... from a procurement perspective it [winner's curse] is advantageous for us only if you take a look at the price, but if the long term is that you want to work with a supplier that's disadvantageous, because then they've harmed themselves to begin with. And your relationship then is off to a rocky start because they are in a worse position."
Chief Transformation Officer	"I think that if prices are pushed low, I think that's only a good thing. I don't think that's a risk [...] we bought at too high prices before."
Senior Category Manager 1	"... there's a risk, that's why you have to prepare well, that's why they need to prepare the calculations upfront."
Senior Purchasing Manager	"... it is quite easy to press the button and afterwards it is difficult that the price level for this company who won is so low that they can't supply to the correct service [...] it can be our problem."
	"... it should not necessarily be the cheapest to win."
Category Manager	"... of course, if they bid too low [...] they could go bankrupt. That is the worst case."
	"... we should not have minimum price. Because the suppliers will never go too low [...] of course they are calculating so they would know where their margins are."
Sourcing Manager 1	"... you should not be looking only at the cost because it's very much about the quality of the services."
	"... they [buyers] usually quite underestimate the whole transition period, especially when you're changing all suppliers and there's always some sort of cost to it."
Sourcing Manager 2	"One thing is in the price, but then I would rather have a fair price for both parties, but then a really good service level agreement. So I as a customer feel safe."
Super User 1	"So that maybe could happen but there would have themselves to blame for that in my opinion, that's lack of preparation".
Super User 2	"... they [suppliers] should prepare for the auction. So they should know their limits, they should figure out where is your pain limit, were you comfortable, what is your minimum, so on so forth, so that when they go into e-auction they just don't sit and randomly press"
	"... one of the reasons why it's so exciting is that it's a live thing and you can get caught up and as this whole psychological thing is going on, and traffic lights and so on."
	"... we tell our suppliers to prepare themselves well, to define their own limits so we do not end up in a situation where supplier has gone too low. Of course, no one wants that, you know, we don't want it, the suppliers don't want it. It's a bad situation for everyone."
	"... they [suppliers] might offer so low prices that they give too bad [quality]... that could happen [...] I don't think so because then the suppliers would disfavour themselves in the future, right, then we would be displeased with them and kind of rumour might get out that they are not doing very good business."
Contract Management	
Head of Direct Procurement	"... our business partners are not necessarily used to that idea of thinking like that. But I think it [scorecard] is the best way forward because then it actually puts into a logical framework how we consider each supplier."
	"They were the cheapest. Were they the best quality? [...] if you ask the superintendents they say the service levels are not good enough."
Senior Category Manager 1	"... that's why it's really important that you have the specifications clear and limit the opportunities to do things like that. So, I would always demand specification from them and a description of what is it that they're supplying [...] But that's impossible. I wouldn't know if they did that anyway."
Senior Category Manager 2	"... when we have an agreement with the supplier, we are handing over the agreement and the responsibility of the agreement to the business."
Super User 1	"There could be a situation where they're going to lower the quality of the work, but then again it's up to our service level agreement and staff to be able to handle that if they're not doing their part of the agreement."
Interorganizational Relationships	
Head of Direct Procurement	"... it also opened up doors to some other suppliers that can fulfil requirements."
	"I think you have to rely on the people to people skills before going out and doing the e-auction but you could do it."
	"... the one [supplier] who won the winning bid and didn't get the final business called me and used the very few choice words about what they thought about e-auctions at DFDS."
	"... you need that face to face meeting in between, or a Skype call or something where you're actually speaking to a person explaining your reasons by explaining, you know, what the process will be what the outcome will be, and then explaining how it works, perhaps very briefly. I think that has to happen rather than going from an e-tender to auction right away, because then they're not prepared for it."
	"... they're really able to dig into the details of the business. And from our perspective, we're able to provide them the actual value that they provide to our business."
	"... in face to face, what happens sometimes is that you don't end up liking the individual you're facing. And therefore that colours your entire view of the company itself. So it eradicates that aspect of it that you're not having that personal aspect there."
	"I think suppliers would feel that they have more sway in a face to face negotiation. That they can influence more than in an e-auction. So that's the route they would always prefer."
	"I think they [suppliers] will question the results. I would expect a supplier who has done a lot of e-auctions and does not win to come back and challenge us on our scorecard and how we assign the

	<p>"I think they [suppliers] will question the results. I would expect a supplier who has done a lot of e-auctions and does not win to come back and challenge us on our scorecard and how we assign the handicaps and things like that. So I think we will have to be good at our homework and good at our reasoning."</p> <p>"As they [suppliers] become better at it I think they will create buffers. So I don't think it will necessarily be the same."</p>
Chief Transformation Officer	<p>"A successful e-auction is the e-auction where the suppliers had a good experience with it, they knew how to handle the system, the understood the rules, there were no misconceptions, there were no promises that were not kept on either side"... "so that means that they are willing to do it again"</p> <p>"... they are resisting towards it, they say "ah, we know each other for so long"</p> <p>"... this is a big change for suppliers, because you lose that personal relationship, right? And it becomes very robotic [...] So that is almost like, offensive to some suppliers."</p> <p>"Ideally there should be less time spent for them [suppliers] as well"... "less meetings, less negotiations"</p> <p>"That will be much easier, much quicker, less hassle, hopefully even lower prices if they become more comfortable with it, that they know what it means to actually bid."</p>
Market Maker	<p>"... in general we see that suppliers that are used to participating in e-auction, they kind of like it because it gives them a lot of transparency in terms of the market they are operating in, and also, they decide when to stop bidding so they are in control, they are not being pushed by the buyer or anything like that, and they also feel that this is giving them a fair chance to compete on equal terms."</p> <p>"Yes, we often get some negative feedback, not often, but when the incumbent supplier loses an e-auction [...] Because now they are mad, they lost the order and they feel like, if this could be a face-to-face negotiation, they would be able to use their personal influence on the buyer, to convince them to continue with the incumbent supplier."</p> <p>"... it is really rare that we meet a supplier that is negative upfront, because that is a great opportunity to come and win an order, but again we also make them aware of these benefits, that participating in the e-auction, they can ensure that this negotiation is really fair, everybody is competing on equal terms, nothing like personal relation or anything like that can affect the final result, and also at the same time, it gives them a lot of transparency about the market they are operating in. Because they will be able to see how they are positioned against their competitors, so if they know that they are ending the e-auction in the yellow light, they know they are really close to the winning price."</p> <p>"It takes an average 45 minutes to run an e-auction, and then the negotiation is done, whereas as in the old-fashioned way, they had to do it face-to-face, also per rounds, multiple rounds, and it would take around one month. So there is also a lot of time savings for the suppliers."</p>
Senior Purchasing Manager	<p>"... we also need to be aware that some companies, and also some big companies don't want to participate [...] if [...] it's the same company who wins every time, I say why should we spend time on it? It also costs them money to do it."</p> <p>"... two or three suppliers said, "no thank you, you are wasting our time"</p> <p>"I could just say that if you don't [participate], then you have missed the chance to do business with us. But that's also a bad way to do it in my opinion."</p> <p>"It's not my favourite way to do things because I think that you lose the good relationship with some suppliers on it."</p> <p>"... we have done it before, we could do business and earn money before. And have a good relationship to the supplier and I think, still it is damn important that we don't lose that part."</p> <p>"I am a little bit concerned that we can lose some of the good relationships with some of our suppliers. But if it should be so, then it must be so [...] that's very important for me that we can keep the vessels sail. That's where we earn the money on, not in e-auctions. We save a little money on e-auctions, we are not earning money on them, that's the difference."</p>
Category Manager	<p>"... older generation would like to, you know, meet, have a good time to discuss and then to find a good solution. Rather than this case, when we took away a lot of the personal aspect."</p> <p>"... that was difficult for the suppliers that hadn't conducted an e-auction. And you could also clearly tell that they were not prepared. They were going to be prepared, but they were not prepared in their internal organization that, okay, this is the future that you will be invited to e-auction..."</p> <p>"There were discussions, they [suppliers] were certainly not happy because we were changing a historical way of working [...] to a new way [...] that is something that you need to consider because there will be suppliers that say no, this is not our company, company rules or company standards say that we will not participate in the e-auction."</p> <p>"... for the known suppliers, taking away the personal relationship is a drawback. But for the unknown suppliers and new suppliers, you know, that can supply us with similar or even better, but they don't have the personal experience. For them it's a good way to get in and be evaluated only on the facts, on the hard facts. So that is one of the big benefits."</p> <p>"... it's a good way also for the suppliers to see where they are, where the market prices are."</p> <p>"... if they managed to go down by 20%, then we will also know, okay, something is also wrong, because how can they, you know, go down to that level from this level?"</p> <p>"... you're getting invited to something and then you win something, and then you lose something. And that is, you know, forgotten the next day if the process has been good and so on [...] I don't believe that they would retaliate or decrease their service to DFDS."</p> <p>"... I believe that they will never refuse by, oh I don't like this process. They might have opinions about it, but I believe they will try to get every deal they can [...] Unless their company has made a strategic decision to say no."</p>
Sourcing Manager 1	<p>"... there were actually more discussions going on than during sometimes even normal tendering, because you need to ensure they understand why you're doing it, the stakeholders understand why they are doing it. So I think I was quite surprised how much communication there was around it."</p>

	<p>"... the old supplier, they still believed that based on the partnership and being with us for such a long time, knowing our business, they still believed that they will get it. So when we called them a week or two after the e-auction and told them sorry, we are basically stopping the cooperation with you, you saw your results on the e-auction. They were so surprised."</p> <p>"You can't behave too arrogant and you still appreciate that they put the time in it. So I think it's just how you communicate it to them and then how you make them attracted to the business."</p>
Sourcing Manager 2	<p>"... we could just see that we cannot get all our terms through [and] we had to award the contract to the not winning party of the e-auction."</p> <p>"... if I had been the supplier, I would be very disappointed. I had just won the e-auction. I have just been notified. I had won, right. And then we had to take it back. That didn't feel good."</p> <p>"... I'm not sure of how they would respond to if you continuously call them in for tenders and then e-auctions, let's say, every six months. They might find that really annoying."</p>
Super User 2	<p>"... the general gut feeling from suppliers when they hear that this is an e-auction we're doing is that, oof, that's not good."</p> <p>"... of course, e-auction would not benefit their [suppliers'] bottom line. But I would say there's a lot of advantages to suppliers, especially the more competitive they are, the more e-auctions favour them because e-auction is an approach to negotiation and sourcing also that is very transparent for everyone [...] Everything is defined, everything's out there, it's in the system, everyone can see it, all these people you invite."</p> <p>"... the supplier in the e-auction by Category Manager that was a little upset, you know, I think it was partly also due to the fact that they've been engaged, doing business with us for so long, and they have a personal relationship. And they are probably used to the fact that they get invited in here. And then if you lower your price by this then, okay, you get it and then have a cup of coffee and talk about some golf or whatever."</p> <p>"... I would expect them to [participate], because if they don't participate in an e-auction, and that's the way we do business from now to go, they are just out, right. So we will be in that business, so I think they will all participate again."</p>
Intraorganizational Relationships	
Head of Direct Procurement	<p>"... they [e-auctions] brought a lot of stakeholder management. And he [Category Manager] is a lot closer to the stakeholders now."</p> <p>"... it starts off negative and becomes positive. I think it's always like this can't be done, it's too complicated. And then it becomes positive when they say it can be done."</p>
Chief Transformation Officer	<p>"... of course there's the choice of having the e-auction, requires from us in Group Procurement a lot of convincing, a lot of influencing skill, because the business stakeholders do not necessarily see the value of it."</p> <p>"... maybe they have a preferred supplier and they want to make sure they control... it's loss of control."</p> <p>"... the biggest problem is that keeping the business engaged in this, they will have one thousand excuses for why not doing an e-auction, and for why this particular category is very special and you cannot do it and so forth, so that is the number one challenge."</p>
Senior Category Manager 1	<p>"Usually when it's agreed that there's an e-auction, stakeholders are also quite interested, because it's a fairly new thing for them as well, and they're excited to follow [...] Also, you get the same level of interaction and relationship building, maybe even more than if you sit together in a face to face negotiation with them."</p>
Senior Category Manager 2	<p>"Have you been successful in getting the buy-in from the stakeholders? That's the last point, are the stakeholders fully committed? Do they understand that you can go through the e-auction?"</p> <p>"... regular meetings with our stakeholders, when we ask how things are and this is living up to the expectations and by attending the regular review meetings, which at the moment, I don't think we are so good at [...] That requires a relationship management, and I think we are a bit early stages here."</p> <p>"And then what you may have with that stakeholder is unfortunately, I think, a very high ego, and think that he could do best or she could do best. And that person will always think "Oh, I can always do better a face to face meeting", right?"</p> <p>"... we have decided for a soft approach, so the difficulty is to find the right way to communicate with the stakeholders, because it's different from stakeholder to stakeholder, and from situation to situation, and how much time and resources you are going to have to use in there."</p> <p>"We have an example in my category, where we said the winner will get it, and then when the e-auction showed the winner, the stakeholder said, "Oh no, we don't want to go with that."</p>
Senior Purchasing Manager	<p>"People are more or less against it and you can't change it. I don't like it, but I have used it and will use it if I am asked to use it."</p>
Category Manager	<p>"... it can also be a challenge for them [stakeholders] to understand, okay, this is the way forward. But then it's also a matter of making more demands on them to make clear requirements, clear specifications."</p> <p>"... you always need to go back to the internal stakeholders or the internal parties that have been a part of the e-auction. Okay, was this the right way? Will it be the right way for the future? To have this discussion kept alive [...] that is a little bit of lessons learned [...] You should have this discussion in order to improve."</p>
Sourcing Manager 1	<p>"... you have the business who was supposed to validate the baseline, but in that case, they didn't do it. They believed we have the right data. And suddenly they just hear that suppliers are mad, procurement is mad, everyone is mad."</p>
Sourcing Manager 2	<p>"You have to really convince your stakeholders that this is a good idea [...] some categories they have been quite successful in this, in technical marine especially [...] but in other categories you can find it really difficult."</p>

	"... we have never done an e-auction in IT, because that is really difficult [...] they [stakeholders] were all very hesitant to go down this road. They were afraid of losing quality and losing the overview of what we're getting."
Super User 2	"... he [stakeholder] really wanted to do an e-auction. I don't necessarily know if he has that in-depth knowledge to support that, but he really wanted to back then and also is pushing now for different projects. So you know, he wanted it, he was the key stakeholder, you wanted it, so that was step one..."
Continuous Learning	
Head of Direct Procurement	"Maybe we were too early out in terms of using this and not having enough knowledge in procurement to be able to use it properly." "... it's a learning curve for the organization, again, to get used to the idea of e-auctions, and especially that it can be used for complex projects."
Senior Category Manager 2	"... we are doing a one pager, where we describe how the e-auction went, because then everyone can learn from that and I think it's good, because when I want to do an e-auction, I can look and say "okay, these are the one-pages, these are the cases, how did it go here? Which one was applied? Which type of e-auction was applied? Why? What were the results?"
Category Manager	"... you need to prepare suppliers to say, okay, do you have all the internal upper management approvals so that you can reach the maximum limit? [...] they could have maybe pushed it a little bit more internally in their organizations."
Sourcing Manager 2	"...it was a very new process for them [suppliers] as well. I think a few of them have tried it before with customers, but others have not." "I think I had like a half an hour of training. And then I actually just did a lot of trial and error myself with some testaments, it was not a lot of training I received back then." "... we in DFDS are very immature in using them [e-auctions] [...] So there's definitely lots of learnings to take from the outside."
Super User 2	"... we trained the suppliers in using and understanding the system beforehand, because they should be really comfortable using a system that's quite important in e-auction setting." "Hopefully, they'll [suppliers] know a little bit more about what it is about if they didn't know that before. And maybe we should use that to learn how to maybe better prepare the suppliers [...] It felt like they were ok prepared, but maybe they just didn't realize the fact that they would lose like that." "They [suppliers] might learn how to use the systems in different ways to their advantage rather than just participating without their knowledge." "... we have a lot of learning to do and it's definitely not the best in class as of now. But we want to improve our journey and keep growing so I'm sure if you ask us in a year's time or two, our answers would be a little different." "There's a lot of new things you have to do that you might not have to do before but would actually benefit you short and long term [...] we didn't have this push and continuous kind of strive for keeping the momentum going that we have now where we keep reporting on, we can push for keeping everything and I think that's one of the reasons why we were not successful before." "... as you progress your journey it comes easy as people know more and more, the stakeholders know more and more, the suppliers have been taught more and more."
Feedback	
Head of Direct Procurement	"I think that's important. Feedback in any form, I would say both from the supplier as well as the internal stakeholders, both need to feedback into how they experienced it." "... it's important to give feedback to those who did not win. Why, and be really upfront about it. Give honest feedback to those who didn't win about their service levels or whatever the factors were."
Market Maker	"So after the e-auction, I think a small important factor is to really take the time to give the supplier feedback, and to thank them for their participation."
Senior Category Manager 2	"I think you still need to communicate with the suppliers that didn't win the e-auction. I know that it is very obvious for them that they didn't win [...] but you need to send them an email or give them a call for them to know that they didn't go through, or they didn't win the tender. To the one who won, to tell them the next steps and the one that didn't win."
Senior Purchasing Manager	"... it's important that when we are to start meetings with different companies, to tell them a little bit about our feelings and expectations. And also, they can tell us why they could not or did not want to go down."
Sourcing Manager 1	"... questionnaires would be nice but of course when you've dropped several suppliers because of this than I don't see how they would be maybe willing to reply to it." "... there could be some process and questionnaires and these things to share afterwards. It will be good for us as well. I mean, they can feel like we have been extremely arrogant and preparation wasn't good. So it would be nice to actually hear how they feel about it."
Sourcing Manager 2	"... the whole supplier relationship management come afterwards, but also for the parties that did not win the contract. If you want them to be, you know, engaged in your next tender, then you will have to spend some time with them."
Super User 2	"... it's a pretty good idea now you said it. We should probably, hopefully have that. We always appreciate feedback from suppliers on tenders, but we don't have like a defined process and maybe a questionnaire and maybe, you know, something like that. We don't, but actually it's a pretty good idea."

Consequently, relevant second order categories have been identified and the data collected has been grouped according to these subgroups. The categories were derived from a combination

of both, the data collected and the theoretical framework. As suggested in the literature, their naming has been derived from the existing research and also based on the actual terms used by the respondents (Corbin and Strauss, 2008). The overall goal of creating the categories was to provide the authors with a structured framework that would conceptualize the findings of the research (see *Figure 1*).

Lastly, the second order categories have been sorted into the aggregate dimensions. A manual approach for sorting the data has been used at this stage of the data analysis, which concluded in a selective process that transformed the data into a more comprehensible form. In line with the research, the naming of the dimensions and their structure has been based on the literature and rather variable at this stage, since the analysis of the data was in progress (Saunders et al., 2009). Being aware of this reality, the nomenclature of the dimensions has been gradually updated in harmony with the newest findings.

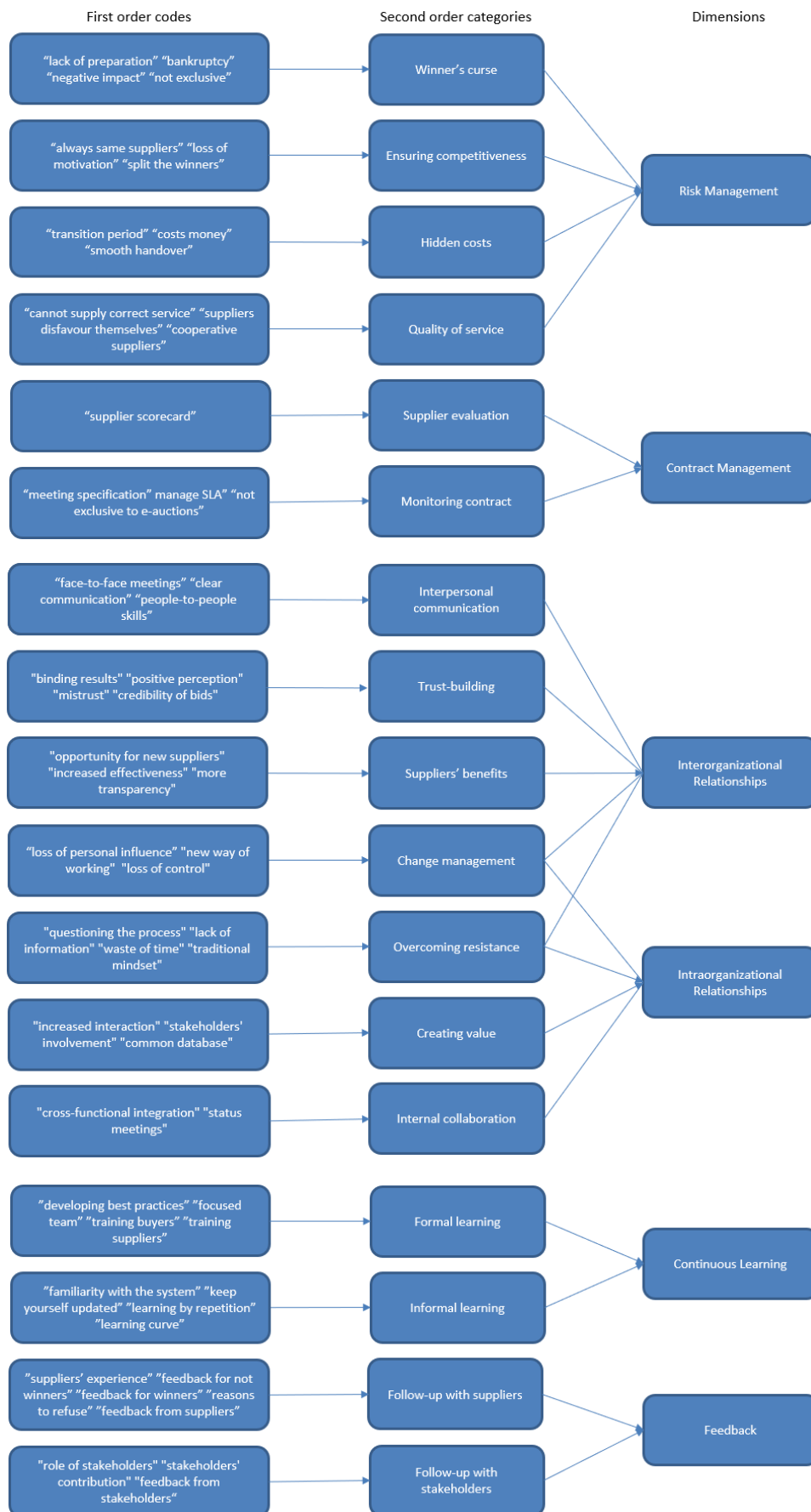


Figure 5 - First order codes, second order categories and dimensions

3.7 Credibility of the research

In order to secure the credibility of the research, both reliability and validity have been adhered to during the research design phase of this project. Both factors are vital in increasing the relevance of the answers to the research questions as proposed by Saunders et al. (2009). According to the researchers, reliability is referring to the consistency of findings resulting from the data collection technique chosen, whereas validity relates to the perception of the findings being put to the test. Generalisability is further discussed since it examines whether or not the findings may be applied to other research areas or organizations (Saunders et al., 2009).

Alternatively, transferability, truth-value and traceability may be considered as quality criteria in qualitative studies (Pedrosa et al., 2012). In that case, the information about the theoretical aim of the study, units of analysis and the selection criteria need to be provided in order to achieve transferability. Regarding the truth value, a precise description of the data analysis process is required and lastly, considering the traceability, the decision-making behind the selection of respondents, their number and the description of data collection is necessary to accomplish quality in a qualitative case study research (Pedrosa et al., 2012).

The credibility as well as the quality of the research has been also strengthened by triangulating the data collected. A semi-structured interview with a third-party provider of the e-sourcing tool and a questionnaire sent out to the suppliers that have participated in previous e-auctions initiated by the case company ensured that multiple sources of evidence have been used to construct the research findings. Yin (2009) emphasizes the using of multiple sources in a case study research since it generally operates with many variables. Triangulation also helps to improve the understanding of potential uncertainties in interpretations (Eden and Huxham, 1996).

3.7.1 Reliability

There are four common threats to reliability presented by Saunders et al. (2009), including participant error, participant bias, observer error and observant bias. Firstly, participant error is most likely to occur when participants take part in the study under conditions that could potentially have an effect on their mood or behaviour. In order to minimize this threat, the interviews in this study have been conducted on various days of the week and times of the day, so that there is not a substantial amount of data collected on days in the beginning or at the end of the working week. Similarly, the interviews were being conducted in morning as well as in

afternoon time slots. This is in line with the research by Saunders et al. (2009), who suggest choosing a neutral time for data collecting when employees are neither prone to be happier nor more tired.

Secondly, participant bias occurs when the research is conducted in organizations with authoritarian style of management and when interviewees present opinions favourable with their managers, instead of their own independent thoughts (Saunders et al., 2009). In this study, the threat of participant bias is dealt with by anonymizing the names of the interviewees. The interviews have been transcribed and the participants are addressed by their work position or title on the transcripts. The participants have been informed about this fact before the permission to record the interviews had been inquired and, therefore, could answer the authors' questions without concerns of any potential future repercussions from their managers. Besides, DFDS is an organization without an authoritarian style of management and this reality has been known to the authors prior commencing the research due to their previous experience with the company.

Thirdly, observer error becomes a viable threat when there are changes in the data collection method, for instance, if the data is collected on several occasions it is possible that the questions change or are asked in a different way (Saunders et al., 2009). Since a substantial part of this research has been conducted by semi-structured interviews, the threat of an observer error is present. Depending on the previous answers of an interviewee, the order of the questions asked was being altered in order to sustain continuity of the answers. In addition, several questions have been composed on spot in order to receive a prompt response from the interviewee. Saunders et al. (2009) propose an interview schedule with a high degree of structure in order to lower this threat. For that reason, the authors prepared a set of predefined questions in a specific order, intended for all the research participants. Another advantage of having a clear structure in the list of questions is that the data collected is better comparable, as opposed to if the interviews were unstructured (Frankel, Naslund, and Bolumole, 2005).

Lastly, there is a threat of an observer bias if the data analysis is conducted by more than one researcher and different ways of interpreting results emerge (Saunders et al., 2009). The authors of this study have been aware of this threat and in an attempt to minimize it participated in several meetings in person every week throughout and during the analysis part of the research. The findings have been discussed by authors in details plentiful times and both authors jointly correspond with the presented interpretation of the results. Since the authors of this study were

employed in the case company while conducting their research and acted as practitioners-researchers, this may have further increased the risk of observer bias. Regular meetings with the research supervisor and frequent discussions with mentors outside the case company served as safeguards from this type of bias.

3.7.2 Validity

As outlined above, validity is another factor contributing to the overall credibility of the research. Issues with the validity of qualitative studies are seen as a typical cause of lower credibility attributed to this type of studies (Frankel et al., 2005). The two prevailing threats to validity of the findings of this project could be the timing of the data collection and the maturation. Saunders et al. (2009) list timing, or history, among the threats since the responses of the participants may be affected by any kind of recent events. Similarly, maturation may pose a threat if there are other factors, unrelated to e-auctions, that are influencing the factors identified to take effect in the post-adoption stage of e-auctions.

Both these threats have been analysed by the authors of this study and in a follow-up considered while preparing the list of questions for the data collection exercise. Some of the participants have been less experienced with the e-auction tool as the others and, therefore, could incline to praising the benefits of the re-introduced e-sourcing mechanism. On the other hand, some interviewees from the same group of participants could show more scepticism towards the tool due to its novelty. In order to lower such threat, the authors included a portion of the questions focused on the original introduction of e-auctions in the company.

Likewise, maturation has been seen as a risk to the validity of the project, as the findings applying to the post-adoption stage could have been potentially influenced by events independent of online reverse auctions. For instance, a change in the buyer-supplier relationship recorded in the period following an e-auction could have been caused by the actions of the company's stakeholders, in spite of attributing this change directly to an e-auction. In order to minimize this risk, the authors attempted to prepare questions explicitly relating to the subject of e-auctions instead of giving the interviewees a scope to talk about the events they were most familiar with.

To further ensure the validity of the research, an extensive literature search has been conducted in order to support the findings with relevant academic research. The majority of articles used in building up the theoretical background are peer-reviewed and have been researched by using

Web of Science, an online subscription-based scientific database, as well as the university library searching tool. Several nonpeer-viewed articles have been found relevant due to identified research gaps in the current literature. Information accessed from several reports and webpages has been used to compose the introduction to the research problem and to the case company due to their topicality.

The theoretical framework was also closely adhered to when creating the list of questions for the study participants. This way it was helped to achieve a link between the data collected and theory. According to Gammelgaard (2004), the linkage between qualitative data and a research paradigm strengthens the validity of any qualitative research. Research paradigm built on a theoretical background then allows the authors to be rigorous in their research process and avoid coming to the conclusions that were not actually revealed by the data collected (Gammelgaard, 2004).

3.7.3 Generalisability

In regards to generalisability, Saunders et al. (2009) caution especially the researchers conducting a single case study research, that their findings may not be generalisable to other organizations. It is also deemed necessary that the case company is not notably different to its peers (Saunders et al., 2009). The importance of being able to generalise in a case study is further emphasized by Ketokivi and Choi (2014), who consider generalisability as one of the two essences of this type of research, along with situational groundedness, with a fundamental tension between them. In this study, it is presupposed that the findings will generalise to companies of similar size and background to the case company, including its management style, history, characteristics of supplier base and setting. However, the robustness of the conclusions requires testing in possible future follow-up studies.

3.8 Ethics

Research ethics as defined by Saunders et al. (2009), is the appropriateness of the researchers' behaviour towards the studied subject and those involved in it. It relates to the way the researchers collect design their research, collect and process data or summarize their research findings. The authors of this study made certain that the participants in the research were involved voluntarily and that the conversation between the authors and interviewees proceeded at the utmost transparent manner. Likewise, the comfort of the research participants has been

taken seriously and the authors have inquired repeatedly before each individual interview if the interviewee gives his or her consent to the recording of the conversation.

The interviewees and questionnaire respondents were beforehand also ensured of their anonymity in order to limit the potential restraints they might have if their names could appear in the study. On top of that, the research participants from the case company had an opportunity to access and read the preliminary versions of the study before it was finalized. By doing this, the authors aimed to achieve a degree of transparency that would reflect in the comfort of the research participants. The topic of confidentiality of the study was discussed with the case company representatives prior to the conduct of the interviews.

Finally, the issue of plagiarism has been treated with consideration and plagiarism has been actively avoided throughout the study. The theoretical background for this research project is anchored in the academia and all sources have been properly referenced and are presented in the bibliography section of this paper.

4. Findings

In the following lines, each of the dimensions identified during the process of data analysis is going to be scrutinized and supported by a corresponding reference to a respective study participant.

4.1 Risk Management

The first dimension discusses the risks mentioned by several of the interviewees, which are related to the post-adoption phase of electronic reverse auctions and how they believe buyers can manage such risks in order to reduce the probability that they might occur or the impact that they might have on the company in case they come true. The risks were grouped into the specific categories: winner's curse, ensuring competitiveness, hidden costs and quality of service.

4.1.1 Winner's curse

By analyzing the interviews, it is evident that buyers are aware of the risk of suppliers' bidding too low during the e-auction, at prices below their break-even point. It is a consensus among buyers that the consequence of such a situation would have a high impact, both financial and in the buyer-supplier relationship. Some cite the risk of bankruptcy in case the contract does not offer any benefits to suppliers at all, especially for small suppliers for whom the case company represents a high percentage of their market share. Others mention that the consequence for suppliers would be especially negative in case the rumors spread out in the market, resulting in suppliers losing face for future negotiations.

"From a procurement perspective it [winner's curse] is advantageous for us only if you take a look at the price, but if the long term is that you want to work with a supplier that's disadvantageous, because then they've harmed themselves to begin with. And your relationship then is off to a rocky start because they are in a worse position" Head of Direct Procurement.

"If the supplier wins, and they just all of a sudden don't want to supply us anymore [...] I guess they would just do it if they feel like it. Of course, that would have a massively negative impact on our relationship with them. And potentially, that rumour will spread out, so that supplier will lose a lot of credibility and might not be invited again, but I guess we would have to start over or invite the second most competitive supplier [...] But we would be impacted quite a lot

by the default. From the point of view, it will seem like we're not running a good thing and seem like, you know, have a negative impact on. But I don't think we have anything in place to just say, this is exactly what we do. We haven't experienced that before, so it would be a new thing" Super User.

Due to this massive impact on the suppliers' credibility in the market, the representatives from the case company also believe that the likelihood of such situation coming to fruition is low, since they have strong incentives to perform the contract according to what was established during the RFX phase. They argue it is the suppliers' responsibility to ensure that their calculations are done before the event takes place and that they follow their bidding strategies. Arguably, participating in more tenders will lead to suppliers being better prepared and as a consequence, less prone to be caught up in the 'heat of the moment' during e-auctions.

"Yeah, there's a risk, that's why you have to prepare well, that's why they need to prepare the calculations upfront" Senior Category Manager.

"So that maybe could happen, but they would have themselves to blame for that in my opinion, that's lack of preparation" Super User.

"They [suppliers] should prepare for the auction. So they should know their limits, they should figure out where is your pain limit, were you comfortable, what is your minimum, so on so forth, so that when they go into e-auction they just don't sit and randomly press and feel okay, this might be good, this might work. So, they know exactly how they should go about it. I guess if they take that approach, and they will never go too low, then they won't be hit by buyer's remorse" Super User.

An important point raised is that winner's curse is not a risk associated exclusively with electronic reverse auctions. Suppliers might feel pressured to reduce their prices below what is reasonable for their strategy even in a face-to-face negotiation. Arguably, ERAs enable a more transparent reason as to why prices are decreasing, since suppliers can see in real-time their competitors' price levels, which gives them a guarantee that the price reductions are fair, whereas in a face-to-face negotiation, even though buyers demonstrate their price calculation to justify a discount, suppliers have no guarantee that the prices requested are according to the market.

"I want to go lower, lower and lower just to get the business. But then you can argue, would he have done the same if you were in a face to face meeting, when you just told him 'listen, you

need to go down by 4 million, otherwise you don't get the business', maybe he would've done the same" Senior Category Manager.

"There is a risk, if it happens or not....no, depends again on the size. But I don't think that is something to do with an e-auction. You could have it, also not with an e-auction, you could have the same problem. Yeah, you gave a supplier where you have two contracts and they lose the biggest one of them which is, then of course you have that risk, but. This is something to take into consideration when you build up the tender, but that is not something related to the e-auction at all" Senior Category Manager.

4.1.2 Ensuring competitiveness

The case company's representatives also mention that it is important to maintain the level of competitiveness in the market. If such is not managed, there is a risk that the number of available suppliers will decrease in the long run. For the Head of Direct Procurement, such risk might result from the fact that buyers do not look outside of their borders and rely on what is easy by only considering suppliers whom they already invited for previous tenders, since these suppliers are already experienced with the tool and thus not much learning is required from their part. Inviting unexperienced suppliers demands an investment from buyers in training them on how to use the system and in making a transition process with them from a face-to-face negotiation to an electronic reverse auction, but on the other hand, increases competition, allowing for the maximum benefits of ERAs.

She then adds that suppliers who continuously participate in e-auctions but are not awarded any contract might lose motivation for future tenders, especially since it has been noted that some ERAs require a long and detailed preparation from suppliers prior to an event. One of the Sourcing Managers mentioned that at her previous job, there were tenders that took as long as five months of RFQ preparation.

Several study participants mentioned splitting the winners as a way to keep suppliers' motivation. Splitting winner means that the contract will be awarded not only to the supplier with the best offer, but also to the second or even third best bids. Caution, however, is advised by the Senior Category Manager since it is important to maintain attractiveness to all of the suppliers.

“... if the difference is too high, so if you have an 80/20, so what you lose is the attractiveness, you lose that criteria, because basically, you are doing two e-auctions in one. And the 80% is very attractive, where the 20% is not as attractive [...] whoever sees they are number two throughout the e-auction, then they may end up pulling out, so, I think you have to be careful regarding the attractiveness there. So, if you or more 40/60, I think that can still be attractive, or 55% and 45%” Senior Category Manager.

Other benefits of splitting the winners are 1) to utilize the specific strengths of each supplier, since one of them might be specialized in an aspect of the contract, but so much on the other, and 2) in cases where there are few suppliers currently available, the contract can be awarded to a fully developed winner who is perceived to be the best solution for that particular specification, whereas the second best bid could possibly be a supplier that needs a certain investment, e.g. the time needed to familiarize the underdeveloped supplier with the buyer's culture and specification, from the buyer's side in order to prepare them to be a fully developed supplier. This way, buyers increase their supplier base, thus becoming less dependent on a selected number of partners that then hold power over the negotiation and reducing their risk of exposure to suppliers' bankruptcy, misconduct or non-performance.

“Definitely awarding more suppliers depending on the set up, that's also situations where you're going to get too exposed to one supplier that case, we need to... So limit our risk and mitigate it....And another situation could be in cases where we are working with a new, potential new supplier, and even though the prices may not be the best we can see that the potentially, it could be something that we could work with in the future and establishing or kind of relationship” Super User 1.

4.1.3 Hidden costs

One of the criticisms regarding e-auctions refers to the emphasis on price, disregarding other factors that might incorporate costs that, once taken into account, might make the solution unviable. Buyers counter this criticism by affirming that, based on the scope defined in the RFQ, bonuses and handicaps are defined to be used as background calculations during an event, thus ensuring that the winner will be chosen based on the total cost of ownership, not only on the product or service direct price. This way, when suppliers offer their price at the event, these calculations will either increase or decrease their final offer based on what they are offering in their proposal. Several research participants mentioned this practice in their interviews.

“... it's not just the one with the lowest price, but the one that provides quality and service as well. And that means you actually need to go in and really put in your, you know, your details in your e-auctions, the handicaps as well as, you know, not so that you favour one party, but that you're very realistic beforehand in terms of assigning handicaps based on quality service, whatnot” Head of Direct Procurement.

In order to make a detailed evaluation of the proposals prior to the event, buyers must spend time trying to uncover all the possible hidden costs, otherwise taking the risk of finding later during the process that a certain cost cancels out the good prices offered and make the contract unsustainable to the business.

One of the tenders mentioned by one of the Senior Category Managers was the procurement of backup batteries for power plants, in which ‘safety’ was a critical factor for the buyer, who then assigned specific handicaps for each supplier individually depending on the quality and how thorough were their proposals on their battery disposal process.

For one of the Sourcing Managers, considering the transition period between contracts is another example of how companies might avoid unforeseen extra costs. To illustrate such costs, she mentioned a situation where the supplier who won one of her e-auction contracts was not the incumbent, but a new supplier, who was not experienced with the buyers’ business. The incumbent supplier, however, had a long-term relationship with the buyer, and it was expected from both parties that they would win the e-auction, which led to buyers not taking the time to plan for a transition period between suppliers. As a consequence, when the new supplier started working the contract, the buyer realized that they would still need to be supported by the previous supplier for the following six months. Since no agreement had been made with the incumbent supplier to maintain the contract prices after e-auction, the supplier charged higher prices during that period, and in the end, the buyer had to pay 20% higher every month.

“We set up some penalties for them because of the wrong deliveries, but they still believed that they could push for the prices to be low enough for us to continue the cooperation. What happened during the e-auction was that they lost, they were second. And basically, the category manager said ‘well, now we are ready to go with the new supplier’. But the old supplier, they still believed that based on the partnership and being with us for such a long time, knowing our business, they still believed that they would get it. So, when we called them a week or two after the e-auction and told them ‘sorry, we are basically stopping the cooperation you with

you, you saw your results on the e-auction', they were so surprised [...] But the problem was that we still needed this supplier to be onboard for the next six months" Sourcing Manager.

4.1.4 Quality of service

The last dimension is also related to the criticism mentioned in the previous section, that buyers when introducing e-auctions give a higher importance to prices than any other factors that impact a contract execution. In the previous section, this criticism was associated with hidden costs that make the contract unviable. In this section, this association is taken a step further into literature's scepticism by describing the interviewees' view of the consequence of too low prices in the quality of contract after an e-auction.

Some of the study respondents were also concerned about this possibility of reduction in the service quality due to suppliers offering unrealistic prices. *"If you held an e-auction on that and one company was 20% cheaper, then [...] the cleaning will also be 20% cheaper or worse than the other one because they have to pay exactly the same time hours for the cleaners"* Senior Purchasing Manager.

"... you should not be looking only at the cost because it's very much about the quality of the services. So, if they go all the way down and below the baseline, we were not fishing for that kind of level of the cost. And it actually just showed us that something might be wrong. And we would be endangering the whole quality of the process, if they're, you know, really squeezing down the prices so much" Sourcing Manager.

One of the Super Users, however, adds to the discussion by affirming that non-performance or loss of quality would be disadvantageous for suppliers as well, since they would lose credibility in the market, and be perceived as suppliers who cannot control their own prices. In that sense, suppliers have a strong incentive to be careful with their proposals and have strict calculations before the e-auctions. *"... they [suppliers] might offer so low prices that they give too bad [quality]... that could happen [...] I don't think so, because then the suppliers would disfavour themselves in the future, right, then we would be displeased with them and kind of rumour might get out that they are not doing very good business"* Super User.

Senior Purchasing Manager offers another perspective and emphasizes his concern regarding the focus on price and how they might affect supplier's collaboration with the buyer's business, meaning their willingness to 'go that extra mile' to help their clients during the time of need, even if such situation was not previously specified in the contract. This collaboration and sense of partnership is a consequence of a relationship built over trust and constant communication, and buyers should take that into account when setting up an ERA. To illustrate this, he mentions the example when one of the vessels he manages needed an item, which was missing in the buyer's warehouse. Traditionally, he could count on the supplier's support in acquiring this item, be it from having reserves of this material in case such a situation occurs and giving preference to the buyer's demand or contacting their supply chain in order to speed up its delivery. With a face-to-face negotiation, this aspect of the relationship is already integrated into the buyer's evaluation of each supplier, even if in a subjective way. By using e-auctions, buyers must quantify this and other variables to make a fair comparison between the supplier's proposals.

"I can remember one time, it's one of the ferry suppliers [...] I think they were set to sail in the afternoon, and we missed a little item. And we knew he [the supplier] had it on stock, but he has just lost a contract and he earned so little money, so he can't afford to open the factory. Then it's damn expensive to wait to Monday morning. And that's the one we have to balance"

Senior Purchasing Manager

4.2 Contract Management

Contract Management was mentioned by the case company's representatives as an important factor to monitor after the realization of an e-auction event. This dimension is subdivided into two categories: monitoring contract, allowing buyers to ensure that the quality of the service is according the buyers' expectation, and supplier evaluation, which enables buyers to evaluate their providers and seek improvements whenever necessary.

4.2.1 Monitoring contract

After the event is finished and the contract duly signed with the winner, the procurement professional hands over the contract to the internal stakeholders, who will then be responsible for ensuring that the terms and conditions negotiated are being executed according to the

specification established during the RFQ process. Therefore, a good relationship and effective communication between procurement and the technical function is necessary to guarantee that misalignments are handled accordingly. *“When we have an agreement with the supplier, we are handing over the agreement, and the responsibility of the agreement to the business”* Senior Category Manager.

“There could be a situation where they're going to lower the quality of the work, but then again it's up to our service level agreement and stuff to be able to handle that if they're not doing their part of the agreement” Super User.

“I think they were the cheapest. Were they the best quality? [...] if you ask the superintendents, they say the service levels are not good enough” Head of Direct Procurement.

The Senior Category Manager, however, argues that a situation where there are misalignments in the contract and, consequently, a need to manage it, is not exclusive to electronic reverse auctions, and should be done after every tender process. He provides an example of his tender for back up batteries.

“That's why it's really important that you have the specifications clear [...]. So, I would always demand specification from them and a description of what is it that they're supplying and also this is...they go into the e-auction, but of course there might be some areas where you can't describe everything in details and they may in the future say 'ok [...] we have to sell this cheaper than we planned, we are going to exchange some of these batteries that are not described anywhere for a different kind of battery'. But that's impossible. I wouldn't know if they did that anyway [on a traditional negotiation]” Senior Category Manager.

4.2.2 Supplier evaluation

Along with the overall compliance to the contract and service level agreements (SLAs), buyers must ensure their supplier's performance on a wider range of criteria, e.g. financial stability, level of investments, investment in research and development and so on. There is a wide range of key performance indicators (KPIs) available for buyers to choose from when evaluating their providers and choosing the ones that best translate their expectations for the contract and the company's vision depends on the buyer's strategy.

For the Head of Direct Procurement, the more e-auctions the buyers take part in, the more experienced they become in understanding the best ways of setting up these KPIs, which she

groups together in an evaluation tool called Supplier's Scorecard, where all the variables important for the evaluation of suppliers are considered, weighted according to their importance and their relationships to the company's strategy described, in a way to ensure that not just the price is being taken into account.

"Our business partners are not necessarily used to that idea of thinking like that. But I think it [scorecard] is the best way forward because then it actually puts into a logical framework how we consider each supplier" Head of Direct Procurement.

4.3 Interorganizational Relationships

The topic of interorganizational relationships is the largest of the six dimensions identified and it has been reoccurring in each of the interviews conducted. The common themes have been collected and grouped into the following categories: interpersonal communication, trust-building, suppliers' benefits, change management, and overcoming resistance. The last two categories have been found equally present in the dimension of interorganizational relationships that will be discussed in the next section (see 4.4 Intraorganizational Relationships).

4.3.1 Interpersonal communication

The necessity of an interpersonal communication has been cited on numerous occasions during the data collection process. The respondents from the case company consider namely the people-to-people skills, face-to-face meetings and also clarity in communication as important factors in maintaining the good relationships with the suppliers.

Firstly, competent people-to-people skills are found to be able to maintain the relationship with a supplier. Some of the criticism of e-auctions is directed at the potential lack of personal aspect in communication. As the Category Manager illustrated: *"... older generation would like to, you know, meet, have a good time to discuss and then to find a good solution. Rather than this case, when we took away a lot of the personal aspect."* The Category Manager further admitted that taking away the personal side of the negotiation was indeed one of the considerations when the case company started with e-auctions: *"The other criteria were to take away the personal relationships [...] meaning personal relationship is, are we dependent to have person Y in company X because that person is contributing so much additional value than just a low cost?"*

Another opportunity for taking an advantage of good people-to-people skills may arise during the sourcing process when the buying company lets its suppliers know about a possibility of an e-auction. Since many of the suppliers, including the incumbent ones, are found to be rather sceptical about e-auctioning, the buyer can often find itself at risk of losing a potential supplier prior to an e-auction. As the Head of Direct Procurement put it: *"I think you have to rely on the people-to-people skills before going out and doing the e-auction but you could do it. It's just you really... you have to be aware of the risk that you're taking."*

Secondly, face-to-face meetings are regarded as an effective tool of negotiating in business relationships. The presence and importance of having face-to-face discussions with suppliers is recognized by the respondents in this study as illustrated by the quote from the Head of Direct Procurement: *"I think face to face meetings are required. So I don't think an e-auction can replace face to face meetings [...] also face to face meetings is very good way of judging, sort of how sincere and how well prepared the supplier is."*

Similarly, the face-to-face meetings may be required prior to the e-auction process as a way of helping the suppliers to be better prepared for the event. Since some suppliers may have only a little experience with electronic reverse auctions, establishing a process that would feature a more personal communication would in turn improve the suppliers' experience and, perhaps, performance. As the Head of Direct Procurement further explained: *"... you need that face to face meeting in between, or a Skype call or something where you're actually speaking to a person explaining your reasons by explaining, you know, what the process will be what the outcome will be, and then explaining how it works, perhaps very briefly. I think that has to happen rather than going from an e-tender to auction right away, because then they're not prepared for it."*

The representatives of the case company are also aware of the fact that this type of negotiation may be preferred by their suppliers since they feel they have a stronger influence over the buying company. As the Head of Direct Procurement explained: *"I think suppliers would feel that they have more sway in a face to face negotiation. That they can influence more than in an e-auction. So that's the route they would always prefer."* This finding was further supported by one of the Supplier that reported a lack of contact leading up to an e-auction: *"Information is lost due to lack of contact upfront of the auction."*

The concern about e-auctions removing the interpersonal communication between the trading partners has not been found unique at the suppliers' side. However, the necessity to introduce

the e-sourcing tool to the suppliers may eventually result in intensifying the communication between the parties, as illustrated by one Sourcing Manager: *"... I just thought that you will take away everything, all the discussions you have with suppliers, all the face to face negotiation, just so you could have 20 minutes on e-sourcing tool and do everything digitally. But I think there was actually more discussions going on than during sometimes even normal tendering, because you need to ensure they understand why you're doing it, the stakeholders understand why they are doing it. So I think I was quite surprised how much communication there was around it."*

Lastly, maintaining a clear communication around the e-auction process with the suppliers is also found relevant according to the case company representatives. Appreciating suppliers time and keeping them attracted to the business is one of the priorities according to one of the Sourcing Managers who explained: *"You can't behave too arrogant and you still appreciate that they put the time in it. So I think it's just how you communicate it to them and then how you make them attracted to the business."*

Having a clear and direct way of communicating with suppliers is then also found useful when discussing the suppliers' participation in the e-auction process according to the Category Manager: *"... then you also need to be bold and say, this is the process that we have chosen and then we will consider the latest bid that you have said as final. And that we will use."* As he further added, in order for e-auctions to succeed it is important for the buying company to overcome the resistance from its suppliers and try to convince them of the benefits arising from the e-auction process: *"I could just say that if you don't [participate], then you have missed the chance to do business with us. But that's also a bad way to do it in my opinion."*

4.3.2 Trust-building

Another set of factors related to e-auctions and affecting the interorganizational relationships has been grouped under the category of trust-buildings. The factors included in this category are concerned with the credibility of the bids, mistrust, binding results of e-auctions and positive perception of the suppliers.

The impact of the credibility of bids in an e-auction has been brought up by the Category Manager who discussed the possibility that a supplier would significantly decrease its price during an e-auction. Despite the fact such a decrease would likely be beneficial for the buying company, it would also make the company question how sincere its supplier has been with its

pricing before. As the Category Manager put it: *"... if they managed to go down by 20%, then we will also know, okay, something is also wrong, because how can they, you know, go down to that level from this level?"*

The bidding strategies in e-auctions could also be affected by the opportunistic behaviour on the suppliers' side, in turn influencing the interorganizational relationships. One of the Sourcing Managers mentioned a case when the buying company had not set up the e-auction correctly and the suppliers recognized a potential opportunity: *"They [suppliers] went back to their first proposal and made it much more expensive because they saw that we don't have already a rate, and we just overshot the expectation. And then of course they kind of had us in their hands as well [...] Because you kind of establish some sort of mistrust. And then they feel like they're just going for the money and then we're going to do the same. So afterwards, there was a lot of arguing [...] why would we set up the baseline badly against them? [...] it kind of actually broke a lot of trust built during the years."*

However, a typical e-auction would not result in a decrease in trust by either a buyer or a supplier. As Category Manager explained: *"... you're getting invited to something and then you win something, and then you lose something. And that is, you know, forgotten the next day if the process has been good and so on [...] I don't believe that they would retaliate or decrease their service to DFDS."*

Concerning the binding results of e-auctions, several respondents referred to cases they have experienced where the winning supplier was not awarded a contract and how this could affect the trust-building process in the relationship. Another Sourcing Manager noted on two occasions: *"... if I had been the supplier, I would be very disappointed. I had just won the e-auction. I have just been notified. I had won, right. And then we had to take it back. That didn't feel good"* and *"... the one who won but then did not win the contract they were really upset..."*.

The reasons for not awarding the contract to the winner of an e-auction could be twofold. One of the Sourcing Managers described a case where the setup of an e-auction was incorrect: *"... we could just see that we cannot get all our terms through [and] we had to award the contract to the not winning party of the e-auction."* In a different case mentioned by one of the Senior Category Managers, the reason for not awarding the contract to the winner has been the resistance from the internal stakeholders: *"We have an example in my category, where we said the winner will get it, and then when the e-auction showed the winner, the stakeholder said, 'Oh no, we don't want to go with that.'"*

The reaction of the suppliers to the case company not being able to award the winner is then best depicted by the quote from the Head of Direct Procurement: *"... the one [supplier] who won the winning bid and didn't get the final business called me and used the very few choice words about what they thought about e-auctions at DFDS."*

Therefore, it is important for the companies initiating e-auctions that their suppliers have at the end of the process a positive perception of the company itself, but also of the potential repetitive e-auctions in the future. There have been several cases where the study respondents identified the suppliers' positive perceptions as one of the success factors of e-auctions, for example the Chief Transformation Officer noted: *"A successful e-auction is the e-auction where the suppliers had a good experience with it, they knew how to handle the system, they understood the rules, there were no misconceptions, there were no promises that were not kept on either side [...] so that means that they are willing to do it again."*

This idea has been further reinforced and elaborated in various teams within procurement of the case company. As one of the Super Users remarked, the competitiveness is one of the areas which could be hindered as a consequence of suppliers' negative preconceptions: *"... if they [suppliers] have a bad experience with having an e-auction, either run by DFDS or another company, then definitely that could cause or remove the whole foundation for having the e-auction. Because if you do normal reverse e-auction, then the very foundation right now is that you have suppliers competing against each other. And we have the perception of competition and actual competition."*

On the other hand, one Super User stressed the significance of communication with the losing suppliers so that they can understand why they did not succeed: *"... but if they know what they are doing, then in the end of an e-auction, everyone will be happy, and the ones that are not winning, they will know the reason why they are not winning. They are not competitive enough and everyone will then have trust in the process."* The perception of the suppliers can also be affected by the degree of transparency in the buyer's evaluation. If the suppliers are not satisfied with the way they are being evaluated or if they are concerned about the transparency in evaluation, the trust-building process between the parties can likewise be at stake as confirmed by one of the Sourcing Managers: *"One thing is just to know how to do it and other thing is how they perceive our evaluation."*

The future usage and spread of the e-auction tool in buying companies could be deteriorated if it prevents or counteracts the trust-building initiatives of these companies. Nonetheless, the

possible change of perception of suppliers towards the buying company is limited to e-auctions initiated by that company and does not transfer to the overall company level, as put by the Category Manager: *"... I believe that the perception of them [suppliers] of us doing an e-auction, that doesn't just change the perception of DFDS as a company."*

4.3.3 Suppliers' benefits

The benefits the suppliers are able to utilize from participation in electronic reverse auctions are expected to have a positive influence on the buyer-supplier relationships. Among the most cited suppliers' benefits as perceived by the case company as a buyer, as well as the market maker, are more transparency, increased effectiveness, appreciation of competitiveness and greater opportunities for new suppliers.

Compared to traditional face-to-face negotiations or e-mail correspondence, users of e-auctions across the procurement organization of the case company view more transparency as one of the most valuable benefits for the suppliers. The suppliers in e-auctions have access to information about the pricing of their competitors in real time and equal terms and can therefore compare their offerings easier. The Market Maker explained: *"... they can ensure that this negotiation is really fair, everybody is competing on equal terms, nothing like personal relation or anything like that can affect the final result, and also at the same time, it gives them a lot of transparency about the market they are operating in. Because they will be able to see how they are position against their competitors, so if they know that they are ending the e-auction in the yellow light, they know they are really close to the winning price."* Various respondents from the case company shared a similar view and clarified that e-auctions are in their opinions more transparent than usual ways of negotiation.

A different perspective on the transparency has been taken by few of their colleagues, who see the main benefit of having more transparency in the fact that the evaluation criteria are clearly visible and accessible by the suppliers. The Category Manager illustrated: *"... also let's say we have two known suppliers that we have good relationships with, then it's also very transparent for them to see, okay they're evaluating on this."* His opinion was later supported in an interview with one of the Super Users who added: *"... I would say there's a lot of advantages to suppliers, especially the more competitive they are, the more e-auctions favour them because e-auction is an approach to negotiation and sourcing also that is very transparent for everyone [...]"*

Everything is defined, everything's out there, it's in the system, everyone can see it, all these people you invite."

Another benefit for suppliers resulting from introducing e-auctions is the increased effectiveness of the sourcing process. E-auctions are expected to speed up the whole process, as well as to make it easier since less rounds of negotiations are required. According to the Market Maker: *"It takes an average 45 minutes to run an e-auction, and then the negotiation is done, whereas as in the old-fashioned way, they had to do it face-by-face, also per rounds, multiple rounds, and it would take around one month. So there is also a lot of time savings for the suppliers."* These arguments were further supported by one Supplier that acknowledged the efficiency of the process; however, it underlined the fact that the work required prior to an e-auction is rather exhaustive: *"It is quick and efficient - but the amount of work to be done prior to the e-auction is quite large."* On the contrary, a different Supplier did not identify any particular benefits from participating in an e-auction.

The interviews with the case company representatives revealed that buying companies also perceive the improvements in efficiency as benefit for their suppliers. As one of the Sourcing Managers mentioned: *"I think it gives them easy access, perhaps to just come with some fast bids instead of waiting for a lot of time, several days, several weeks sometimes, for getting a counter offer [...] They can also get a really fast response. That's good."* The Chief Transformation Officer confirmed that less time spent in less negotiations is believed to make e-auctions more attractive for the case company's suppliers: *"Ideally there should be less time spent for them [suppliers] as well [...] less meetings, less negotiations."*

According to the case company, its suppliers may also appreciate that they will be rewarded primarily on the competitiveness of their offer. One Super User explained his argument by saying: *"... all suppliers should appreciate that if you're a competitive supplier that really wants to win the business, then you should appreciate that as well. And I think, for the suppliers they know that [...] the benefit is definitely there. Especially to the more competitive suppliers."* The Head of Direct Procurement also added that for some suppliers it can be beneficial if the personal aspect of the relationship is removed and because of that they can compete solely on the strength of their offer: *"... it's more the opportunity. Because in face to face, what happens sometimes is that you don't end up liking the individual you're facing. And therefore that colours your entire view of the company itself. So it eradicates that aspect of it that you're not having that personal aspect there."*

The greater opportunity coming up for new suppliers as a result of e-auctioning has been also mentioned several times during the data collection process. The Head of Direct Procurement revealed that the new suppliers are more likely to win the business as compared to normal negotiations: *"... it also opened up doors to some other suppliers that can fulfil requirements."* The Category Manager further supported the argument by saying that the new suppliers may benefit substantially by being evaluated only on facts, as opposed to if the relationship factor was taken into consideration: *"... for the known suppliers, taking away the personal relationship is a drawback. But for the unknown suppliers and new suppliers, you know, that can supply us with similar or even better, but they don't have the personal experience. For them it's a good way to get in and be evaluated only on the facts, on the hard facts. So that is one of the big benefits."*

4.3.4 Change management

Change management is one of the two dimensions identified to have an impact on both, inter- and intraorganizational relationships. A loss of personal influence and unreadiness for a new way of working has been found to have an impact on the interorganizational relationships. The factors influencing intraorganizational relationships will be discussed in the next chapter (see 4.4 Intraorganizational Relationships).

Even though the loss of personal communication has been cited as beneficial for especially the new suppliers, the past experience of numerous representatives of the case company, as well as the market maker, reveal that a substantial number of the suppliers view this factor in a negative way. The Market Maker confirmed this perception is quite common among incumbent suppliers: *"Yes, we often get some negative feedback [...] when the incumbent supplier loses an e-auction. Because, of course he is unsatisfied with it, but this is the most we get negative feedback. Because now they are mad, they lost the order and they feel like, if this could be a face-to-face negotiation, they would be able to use their personal influence on the buyer, to convince them to continue with the incumbent supplier."*

The case company respondents had similar experiences when the incumbent suppliers ended up disappointed because they could no longer count on the relationship factor in a negotiation. As the Chief Transformation Officer mentioned: *"... they are resisting towards it, they say 'ah, we know each other for so long' [...] So that is almost like offensive to some suppliers."* One Sourcing Manager had a similar encounter with her supplier: *"... the old supplier, they still*

believed that based on the partnership and being with us for such a long time, knowing our business, they still believed that they will get it. So when we called them week or two after the e-auction and told them sorry, we are basically stopping the cooperation you with you, you saw your results on the e-auction. They were so surprised."

One of the Super Users also reflected on cases where he has been a part of the e-auctioning process and the incumbent suppliers did not appreciate being unable to exert their personal influence upon the buyer: *"... that supplier was a little upset afterwards [...] maybe they felt like they should have an advantage because of the relationship..."* and *"... the supplier [...] was a little upset, you know, I think it was partly also due to the fact that they've been engaged, doing business with us for so long, and they have a personal relationship. And they are probably used to the fact that they get invited in here. And then if you lower your price by this then, okay, you get it and then have a cup of coffee and talk about some golf..."*

The input from one of the suppliers participating in a recent e-auction initiated by the case company confirmed its perceived loss of personal relationship. As one Supplier explained: *"[suppliers] do not have the 'touch and feel' of the customer. So the personal relationship is lost. And we take pride in a good relationship with the customer. With an e-auction only price matters, more or less."*

In regard to the change management, some of the suppliers have been found to be not only upset their loss of personal influence, but also in general about the new practices in business. Especially some of the traditional suppliers have expressed their discontent with e-auctions as a new way of working as explained by the Category Manager: *"There were discussions, they [suppliers] were certainly not happy because we were changing a historical way of working [...] to a new way [...] that is something that you need to consider because there will be suppliers that say no, this is not our company, company rules or company standards say that we will not participate in the e-auction."*

On the other hand, some of the study respondents believe the case company may turn this into its advantage and motivate its suppliers to engage in digitalizing the industry and its practices. As one Sourcing Manager put it: *"And for them [suppliers], it's a great exercise to do it. Because then of course, they need to do a lot of preparation before and so I think it was generally the whole like, okay, digitalizing industry, procurement is being done differently. So they saw it as a motivation to be part of the process as well."*

Nonetheless, the overall satisfaction of some of the suppliers after a conducted e-auction has been found to some degree contradictory to the above findings. One Supplier complained about being unable to discuss crucial matters with the buyer and, just as another Supplier, experienced that the focus on price prevailed over other factors: *"We did not have the possibility to give in the best offer. That is not always 100% linked to the purchase price. No possibility to discuss technical solutions with the customer. This is a system where strategy, luck and lowest price are preferred before getting the optimal technical solution."* The satisfaction level following the e-auction was marked as dissatisfactory by one of the Suppliers.

4.3.5 Overcoming resistance

Next, suppliers' resistance to e-auctions has been found as concerning by several study participants. Suppliers with traditional mindsets, considering the e-auction process as a waste of time, their unpreparedness and questioning the process setup by the buying company are among the topics reoccurring in this category. Similarly to the change management category, overcoming resistance is equally impacting the intraorganizational relationships, what will be examined in the next chapter (see 4.4 Intraorganizational Relationships).

The suppliers with a more traditional thinking have been found to resist the e-auction process presented by the case company. The general perception of these suppliers is that e-auctions are something negative and they find it hard to identify or utilize any benefits related to e-auctions. As one Super User explained: *"... the general gut feeling from suppliers when they hear that this is an e-auction we're doing is that, oof, that's not good."* He goes further by saying that it could be a principal position of the supplier that it is not going to participate in e-auctions: *"... it was the incumbent supplier that didn't want to participate in it [...] this supplier said that we don't want to participate. I don't remember, if it was like a principal thing from the company, or if they just didn't have time..."*

For the case company and any buying company in general, the task is then to try to overcome this resistance from its suppliers. The study participants expect the companies can do this by simply continuing to initiate the electronic reverse auctions and the suppliers will eventually learn to accept the tool. One Super User responded: *"... I would expect them to [participate], because if they don't participate in an e-auction, and that's the way we do business from now to go, they are just out, right. So we will be in that business, so I think they will all participate again."*

However, the suppliers' resistance is not only limited to their potentially more traditional mindsets. A number of suppliers have been reported to consider e-auctions as a waste of their time. The Senior Purchasing Manager mentioned a case he experienced a few years back: *"... two or three suppliers said, 'no thank you, you are wasting our time [...] I can't remember the name of that Russian company of lubrication oil that said, 'we'll never participate', and they are a quite big player on the market."*

The case company representatives feared that especially the repetitive e-auctions may result in suppliers' resistance. As one of the Sourcing Managers explained: *"... I'm not sure of how they would respond to if you continuously call them in for tenders and then e-auctions, let's say, every six months. They might find that really annoying."* A similar opinion was expressed by the Senior Purchasing Manager who added: *"... if it is the same company who won every day, every time, then more and more would refuse and say no, we don't want to waste our time on this. But that could be a problem."*

Naturally, one of the reasons why suppliers may consider e-auctions a waste of time is also because of their lack of competitiveness as suggested by the Senior Purchasing Manager: *"... we also need to be aware that some companies, and also some big companies don't want to participate [...] if [...] it's the same company who wins every time, I say why should we spend time on it? It also costs them money to do it."* Another reason could be their lack of preparation prior to an e-auction as mentioned by the Category Manager: *"... you could also clearly tell that they [suppliers] were not prepared. They were going to be prepared, but they were not prepared in their internal organization that, okay, this is the future that you will be invited to e-auctions..."*

Some of the study respondents have been found concerned about losing the already established relationships with their suppliers, for example the Senior Purchasing Manager noted: *"... I am a little bit concerned that we can lose some of the good relationships with some of our suppliers. But if it should be so, then it must be so..."* and *"The supplier relationship management or what do you call it, it is quite important and we don't spend any time on it. We do not spend so much time as we should be. And this is one of the things that we can lose a little bit when we have a lot of e-auctions. But it's come to stay and we have to do it so I will participate in."*

One of the suppliers has also underlined that e-auctions will have an influence on its buyer-supplier relationships. One Supplier also commented on the perceived lack of information

leading up to the recent e-auction: *"Less information is shared and possible pitfalls might not be found before supplier is chosen based on the result from the auction."*

Regarding the future of e-auctions at the case company, the interviewees expect the suppliers to be more watchful and start questioning the process even more. According to the Head of Direct Procurement, the company initiating an e-auction will have to improve its preparation for the e-auction event, since the more experienced suppliers will be ready to question its results: *"... it will become more broad, I think they [suppliers] will question the results. I would expect a supplier who has done a lot of e-auctions and does not win to come back and challenge us on our scorecard and how we assign the handicaps and things like that. So I think we will have to be good at our homework and good at our reasoning [...] "I think they will have resistance to the results. They will question us as to how we put things together. Why it was the way it was."*

In addition, the suppliers with more experience are likely to cause a decrease in savings attainable by the buyer. As explained by the Head of Direct Procurement, these suppliers will improve in creating buffers for themselves, eventually resulting in lower savings for the buyer: *"As they [suppliers] become better at it I think they will create buffers. So I don't think it will necessarily be the same."*

4.4 Intraorganizational Relationships

The intraorganizational relationships dimension is another of the six dimensions identified during the data collection process. It contains four secondary order categories including change management, overcoming resistance, creating value and internal collaboration. The first two subcategories are shared with the dimension of interorganizational relationships due to their relevance and presence in both types of relationships.

4.4.1 Change management

As outlined above, the change management subcategory is linked to interorganizational, as well as intraorganizational relationships. While the themes related to change management and interorganizational relationships have been mainly the loss of personal influence and suppliers' reluctance to new ways of working, a new factor linked to intraorganizational relationships is the stakeholders' fear of a loss of control over the sourcing process.

The Chief Transformation Officer described a potential situation where the internal stakeholders have a preferred supplier in the sourcing process and therefore want to actively participate in choosing the supplier, something that is more difficult when using the e-auction tool: *"... maybe they have a preferred supplier and they want to make sure they control it [...] it's loss of control."* One of the Senior Category Managers had an experience when the e-auction process ended up in stakeholders' dissatisfaction because their preferred supplier was not the winner of the e-auction: *"We have an example in my category, where we said the winner will get it, and then when the e-auction showed the winner, the stakeholder said, 'Oh no, we don't want to go with that.'"*

In addition, the internal stakeholders may also be concerned about the loss of personal influence, either because of their advanced ties with a specific supplier or if they feel that the personal relationships are not being taken into account while conducting an e-auction. As the Chief Transformation Officer noted: *"... if they [stakeholders] have a relationship with the suppliers, that tends to be potentially constrained by introducing an e-auction."* In relation to the suspicion of the personal relationships not being evaluated properly, one Senior Category Manager recalled a case in the past: *"... there was a supplier that we have used for a very long time, that was extremely challenged when this was put through an e-auction, and when that supplier was not confirmed, then there was of course some feelings internally, about the fact that how do you weight the relationship with that supplier that you have had for such a long time?"*

4.4.2 Overcoming resistance

Overcoming resistance is the second reoccurring theme that has firstly originated when analysing the interorganizational relationships. The factors of traditional mindsets and stakeholders questioning the e-auctioning process remain, however, a new factor is presented related to the lack of information on the stakeholders' side.

The companies that have already introduced or are planning to introduce e-auctions as a part of their sourcing process have to seemingly face a lot of resistance. On top of the resistance faced by their supplying counterparts, the interviews with the case company indicated a considerable amount of resistance also from the internal stakeholders. As the Chief Transformation Officer explained: *"... the choice of having the e-auction requires from us in Group Procurement a lot of convincing, a lot of influencing skill, because the business*

stakeholders do not necessarily see the value of it." He went on admitting that convincing the internal stakeholders is the greatest challenge the procurement representatives are presented with: *"the biggest problem is keeping the business engaged in this, they will have one thousand excuses for why not doing an e-auction, and for why this particular category is very special and you cannot do it and so forth, so that is the number one challenge."*

In some categories, the internal stakeholders have been found powerful enough to prevent e-auctions from happening at all. One Sourcing Manager provided an example of such category: *"... we have never done an e-auction in IT, because that is really difficult [...] they [stakeholders] were all very hesitant to go down this road. They were afraid of losing quality and losing the overview of what we're getting."* Another illustration came from one of the Senior Category Managers who commented on his stakeholders' feeling of superiority: *"And then what you may have with that stakeholder is unfortunately [...] I think a very high ego and thinking that he could do best or she could do best. And that person will always think 'Oh, I can always do better a face to face meeting', right?"*

Moreover, the resistance towards e-auctions may originate from within the procurement department itself. One Super User discussed a case when he felt that one of his colleagues was not pleased about the way the sourcing process was being handled: *"... I think Senior Purchasing Manager was maybe not too pleased as well. He is a bit of an old school guy. And I think he really thrives in the kind of relationship aspects of it [...] in e-auction you just take, you know, basically that whole aspect and move it away [...] that might have been a little upsetting to Senior Purchasing Manager."* When the Senior Purchasing Manager was later confronted with this statement, he acknowledged his partial resistance and objection towards the e-auction tool: *"It's not my favourite way to do things because I think that you lose the good relationship with some suppliers on it."*

Since the findings show there might be a widespread resistance towards e-auctioning, at least in the introduction stage, it is crucial for the procurement representatives to be able to secure their stakeholders' commitment and support. One Senior Category Manager commented on the importance of having her stakeholders on board: *"... it requires a commitment from the stakeholders [...] the stakeholders need to be on board and not change their mind afterwards and it has happened before here and that's why I think people started 'ok we don't want to be there again' from the procurement side and their stakeholders don't want to use it again because of their experience with the suppliers."* According to the Head of Direct Procurement,

getting the internal stakeholders committed is a learning process and it requires acceptance of the fact that e-auctions can be used for complex projects. After all, as the Category Manager remarked: *"... in the beginning of the process it's also a new way of doing business for our internal stakeholders."*

The case company has also experienced misunderstandings between its procurement departments and its stakeholders. One of the Sourcing Managers recalled a case when the internal stakeholders were believed to provide a specific data for validation but misalignment caused issues affecting the company as well as its suppliers: *"... the business was supposed to validate the baseline but, in that case, they didn't do it. They believed we have the right data. And suddenly they just hear that suppliers are mad, procurement is mad, everyone is mad."* Furthermore, the Head of Direct Procurement was involved in a sourcing process where the stakeholders' opinion was not fully taken into account, which eventually resulted in their discontent: *"They [suppliers] were the cheapest. Were they the best quality? [...] if you ask the superintendents, they say the service levels are not good enough."* The cases reveal that even if there may not be any particular resistance from the stakeholders' side in the beginning, it can as well arise due to the misconducts during an e-auction process.

The new factor introduced in this category is the possible lack of information by the stakeholders leading to their resistance. This lack of information may have an influence on stakeholders' commitment and their interest in e-auctions. As the Head of Direct Procurement mentioned: *"... it starts off negative and becomes positive. I think it's always like this can't be done, it's too complicated. And then it becomes positive when they [stakeholders] say it can be done."* However, she has also experienced a case where the support from stakeholders was missing: *"... they [stakeholders] don't really know or were interested in."*

In general, the procurement representatives anticipate that a significant amount of convincing is necessary to commit their stakeholders to electronic reverse auctions. One Sourcing Manager admitted some of the procurement categories have been more successful in convincing their stakeholders than others: *"You have to really convince your stakeholders that this is a good idea [...] some categories they have been quite successful in this, in technical marine especially [...] but in other categories you can find it really difficult."* According to the Category Manager, clear specifications and requirements are the factors that could help in convincing his stakeholders of benefits related to e-auctions: *"... it can also be a challenge for them*

[stakeholders] to understand, okay, this is the way forward. But then it's also a matter of making more demands on them, to make clear requirements, clear specifications."

Lastly, two similar inputs have been collected in regard to stakeholders' perception of the e-auction tool. According to both, one of the Senior Category Managers and the Senior Purchasing Manager, the stakeholders' opinion of e-auctioning is predominantly negative. The Senior Category Manager remarked that convincing her suppliers of e-auctions' benefits is easier than convincing her internal stakeholders: *"... you will need to convince the suppliers as well, but it's easier than convincing stakeholders, because, of course they want to participate."* The Senior Purchasing Manager also confirmed his, previously outlined, rather negative preconception of the tool: *"People are more or less against it and you can't change it. I don't like it, but I have used it and will use it if I am asked to use it."*

4.4.3 Creating value

The value creation category has grouped inputs from various parts of the procurement department of the case company. In line with the findings summarized in this category, electronic reverse auctions may create value and, therefore, positively influence the intraorganizational relationships. Among the commonly cited value creators are the increased interaction between procurement personnel and their stakeholders, stakeholders' involvement in the sourcing process, and a common database for procurement and its stakeholders.

By introducing e-auctions as a sourcing tool, it was underlined by one of the Senior Category Managers that the interaction between procurement and its stakeholders does not deteriorate. In fact, it is likely to increase compared to traditional face-to-face negotiations because of the novelty of e-auctions: *"Usually, when it's agreed that there's an e-auction, stakeholders are also quite interested because it's a fairly new thing for them as well, and they're excited to follow [...] they will be a little bit more interested than usual, but probably because it's a novelty. Also, you get the same level of interaction and relationship building, maybe even more than if you sit together in a face to face negotiation with them"*.

The importance of creating stakeholders' involvement has been mentioned by various accounts during the data collection phase. Since their interest in e-auctions positively impacts the probability of their success, the procurement representatives have found the involvement of stakeholders valuable. One of the Super Users was among the respondents commenting on stakeholders' involvement: *"... you should have some satisfied stakeholders that we are doing*

this with, they will feel like the process have been good. They have been involved, we have managed to construct an e-auction that incorporates all the important aspects."

Inviting the stakeholders to be a part of the process is often the responsibility of the procurement representatives as further noted by one Super User: *"Category Manager did a great job on that, involving them [stakeholders] on it, giving them some responsibility and so on. So I would say there was [...] no really negative feedback on the one from anybody in the internal department..."* One of the Senior Category Managers also showed support for this argument: *"Have you been successful in getting the buy-in from the stakeholders? That's the last point, are the stakeholders fully committed? Do they understand that you can go through the e-auction? "*

Several respondents have been also highlighting the stakeholders' drive and enthusiasm for e-auctions. One Super User recalled a case when one of his stakeholder was found eager to conduct an e-auction in his area of expertise and eventually helped to drive the whole sourcing process: *"... it was mainly in the beginning, it was a lot of like stakeholder driven or their ambition to run e-auction [...] he [stakeholder] really wanted to do an e-auction. I don't necessarily know if he has that in-depth knowledge to support that, but he really wanted to back then and also is pushing now for different projects. So you know, he wanted it, he was the key stakeholder, you wanted it, so that was a step one..."* Likewise, the Senior Purchasing Manager experienced a positive response from the stakeholders: *"... some of them [stakeholders] love them [e-auctions] also and I think that's exciting, I think that's also fine."* Lastly, one Sourcing Manager remembered a similar case of enthusiasm among her stakeholders: *"... they [stakeholders] had very cost driven approach as well. They wanted to try out, it's exciting. It's like you're watching someone bidding and it is like a game. So it was mostly positive internally."*

In regards of the internal stakeholders on the executive level, their early involvement and the following approval of the e-sourcing project has been found equally crucial, as revealed by one of the Senior Category Managers: *"... some of them [stakeholders] were very excited, some of them not, just because they don't know enough, so those are the ones who needs to be kind of trained, or the ones with who we need to use a different strategy so it is a soft approach, and really describe the pros and cons. If you go up to the higher level, EC or CFO, I mean, when they saw the statistics and the result after the first e-auction, that was a no-brainer."*

Next, other factors contributing in creating value for the internal stakeholders as well as for the company are the common database and meeting of stakeholders' expectations. As commented by one Super User, the formation and access to the common database that has been granted after the adaptation of the e-sourcing tool has been positively regarded by the stakeholders: *"I think they are quite positive, because they can also see the benefits about having the information in one place and they can go in and see what's going on instead through an e-mail and we have all the data for afterwards. I think there's many benefits that we can see in this tool here. And I think, overall, I think that stakeholders, they have a positive view in regard to that."* One of the Super Users, in addition, underlined the necessity to meet stakeholders' expectations of the e-auctions: *"... I think the stakeholders were also pleased, they thought it was a good outcome."*

4.4.4 Internal collaboration

Internal collaboration is the last of the four identified categories in the intraorganizational relationships dimension. The relevance of both the cross-functional integration and status meetings has been the prevalent topic in this category that involves inputs from across various procurement teams.

The cross-functional integration is thought to be an essential pillar of the internal collaboration. Numerous accounts have reported during the data collection process about the attempts to achieve better alignment between procurement teams and their stakeholders. E-auctions could serve as a mean of achieving such an alignment as confirmed by the Head of Direct Procurement: *"... they [e-auctions] brought a lot of stakeholder management. And he [Category Manager] is a lot closer to the stakeholders now."* Besides, one Senior Category Manager mentioned the varying responsibilities of procurement and its stakeholders when it comes to e-auctions: *"... there are always responsibilities between procurement and the business that differs from category. And we are really working at the moment to get this more aligned."*

The seriousness with which the case company approaches the cross-functional integration was best illustrated by one of the Senior Category Managers who discussed the adopted soft approach for integration: *"... we have decided to use a soft approach, not the push approach. So, the push approach would be we do an e-auction, group procurement decides, the CFO sends out an email, 'you'll have to do this'. But we have decided for a soft approach, so the*

difficulty is to find the right way to communicate with the stakeholders, because it's different from stakeholder to stakeholder, and from situation to situation, and how much time and resources you are going to have to use in there."

One Sourcing Manager further stressed the necessity to make sure the stakeholders understand the principles of e-auctions: *"... you need to ensure they [suppliers] understand why you're doing it; the stakeholders understand why they are doing it."* This argument was also supported by one of the Super Users who added: *"... because it's also the first time for these people [stakeholders] and we need to [...] align with them and actually set things up internally also..."*

On top of that, some of research participants also mentioned the need for holding regular update meetings where procurement and its stakeholders can engage in discussions. The Category Manager explained the reasons and benefits for such status meetings: *"... you always need to go back to the internal stakeholders or the internal parties that have been a part of the e-auction. Okay, was this the right way? Will it be the right way for the future? To have this discussion kept alive [...] that is a little bit of lessons learned [...] You should have this discussion in order to improve."* Nevertheless, one of the procurement representatives criticized the current way of holding the meetings and saw a room for improvement in the internal relationship management. In one of the Senior Category Manager's words: *"... [review meetings] which, at the moment, I don't think we are so good at [...] That requires a relationship management, and I think we are a bit early stage here."*

4.5 Continuous Learning

A reoccurring topic during the interviews was about how the case company is still at the early stages of its learning curve towards the optimal utilization of electronic reverse auctions. The company is taking several actions in order to shorten the time required to develop the knowledge necessary to operate the tool at its full capacity. In this section, these actions are divided in two categories: Formal and Informal learning, and they will be split based on how they relate to the learning process.

4.5.1 Formal learning

The company identified that one of the reasons why the implementation of ERAs did not have as much interest the first time around was because buyers were poorly trained into how to set

up the events in the system, the specificities of each e-auction type and the criteria for when ERAs are advisable. As a consequence, one of the first actions taken by the company after deciding to implement electronic reverse auctions as part of their toolkit was to arrange extensive training course with the Market Maker both on the structure and practicalities about how to operate RFXs and e-auctions in their platform, as well as the strategic advantages that procurement professionals must consider when deciding for which e-auction design best suits the company's strategy and the specific demands of each tender.

The training was conducted with Category Managers, Senior Category Managers, Sourcing Managers, Purchasing Managers, Super Users and the Head of Direct Procurement, where the Super Users, due to their responsibility of being the focus point of contact for the case company's procurement function regarding electronic reverse auctions, received an extra module of training, so they could become more independent in managing the company's ERAs.

"Maybe we were too early out in terms of using this and not having enough knowledge in procurement to be able to use it properly" Head of Direct Procurement.

"It was quite a heavy communication we've done around it and it's probably also the training of the category managers that we had" Chief Transformation Officer, about the difference between the first time DFDS implemented e-auctions and now.

The Head of Direct Procurement complements that a proper training of the internal personnel is not important just to allow the procurement function professionals to make informed-decisions, but also increases their confidence and willingness to use the tool, thus leading to more interest: *"We just didn't use it as much because we didn't understand it as much."*

Another action mentioned by the case company's representatives is establishing a focused team to be the internal sponsor of the tool within the company. This team is focused in keeping an updated knowledge about best practices related to electronic reverse auctions, guide Category, Sourcing and Purchasing Managers in choosing the best ERA design for their tenders, conducting internal trainings for new employees, sharing the knowledge acquired with each event conducted, promoting the tool internally and keeping the initial excitement with the tool alive.

"I think we needed [...] the kind of dedicated team that is continuously pushing on it" Super User.

“There's a lot of new things you have to do that you might not have to do before but would actually benefit you short and long term [...] we didn't have this push and continuous kind of strive for keeping the momentum going that we have now where we keep reporting on, we can push for keeping everything and I think that's one of the reasons why we were not successful before” Super User.

“We knew that this was not going to last without the Super User” Senior Category Manager.

The third action to be mentioned is the importance of developing best practices to quicken the learning pace. Despite the case company being new to the tool, there are other companies that have long implemented ERAs as part of their sourcing process. Understanding these companies' experience, their challenges and how they overcame them will lead to the buyers not having to go through these challenges themselves and therefore not wasting money and time to acquire experience.

“We had a call with (omitted) [...] they have a thing actually, an e-auction dedicated procurement team that just does e-auctions. We talked about, you know, how you do it, learn about that. And then we've done the same thing with (omitted). We have that as our foundation to understand the do's and don'ts and the tools to use or a combination of those.” Super User

The Senior Category Manager also suggests as a way to develop best practices internally in the company, to create a simple and quick report where the key learnings from that e-auction are discussed by their Category Manager. The report should also inform what was the ERA's design chosen, positive factors and things to improve for next exercises: *“We are doing a one pager, where we describe how the e-auction went, because then everyone can learn from that and I think it's good, because when I want to do an e-auction, I can look and say “okay, these are the one-pages, these are the cases, how did it go here? Which one was applied? Which type of e-auction was applied? Why? What were the results?” One slide, one page, it doesn't need to be more than that. A brief description, so if I'm in doubt, I can always go and say, “that was a good idea, they did it like this and it worked”, so I think it is good to have the historical cases build up.”*

The last action mentioned by the interviewees was the importance of the suppliers knowing how to operate the system and have confidence in the tool to create bidding strategies that

brings the competition to a higher level. Getting suppliers to acquire this confidence can be done through quick training in the platform, but the Super User emphasizes that buyers have the responsibility of analyzing how the bids were done in each e-auction, identifying patterns and understanding what is still lacking in the supplier's side in order guarantee that all parties involved are utilizing the tool to its full capacity: *"We trained the suppliers in using and understanding the system beforehand, because they should be really comfortable using a system that's quite important in e-auction setting."*

"Hopefully, they'll [suppliers] know a little bit more about what it is about if they didn't know that before. And maybe we should use that to learn how to maybe better prepare the suppliers [...] It felt like they were ok prepared, but maybe they just didn't realize the fact that they would lose like that" Super User.

4.5.2 Informal learning

Besides the factors mentioned in the previous section, where learning comes from practical actions, in this section we gather other methods to acquire knowledge and experience with electronic reverse auctions.

The Super User, for example, states that the more the suppliers participate in ERAs events, the easier it will be for them to determine tailored strategies depending on the product or service that is being negotiated. Such familiarization with the tool over time happens with every innovation, since each new process, product or service has its own learning curve, which should be understood and planned for in order for the buying company to be able to speed the process of knowledge acquisition and retention: *"They [suppliers] might learn how to use the systems in different ways to their advantage rather than just participating without their knowledge."*

"Hopefully, it will also be advantageous to us, so that many of the errors that you might see unexperienced suppliers doing like buyer's remorse...they are not going to be unprepared, that's something we'll see less from experienced suppliers and just, they'll all know what to do and feel comfortable using it. So, I think we'll see different outcomes of that" Super User.

"As you progress your journey it comes easy as people know more and more, the stakeholders know more and more, the suppliers have been taught more and more." Super User.

He mentions one example of a supplier that was behaving differently than their competitors during the event. This supplier was experienced with electronic reverse auctions, but they knew they did not have prices competitive enough to win the tender. However, they still utilized the e-auction to understand how competitive they were compared to other suppliers. This strategic utilization of the tool is only possible if suppliers know their possibilities and what each type of ERA has to offer: *“One supplier [was] behaving a bit strangely [...] this behaviour is typically one that you’ll find in an experienced supplier where they would pretty much from the beginning know that they will not going to participate for winning, but they were going to use the whole e-auction to learn about the price level.”*

Still on the topic of learning curve, the Senior Category Manager compares the learning curve of an e-RFX and an e-auction. She states that the objective behind an e-RFX and its overall process does not differ much from the traditional negotiation methods, and buyers still want to receive proposals for their scopes and compare them, the only difference being that with a traditional negotiation, buyers send individual emails to each supplier and the people involved are only the ones copied in the email, whereas with an e-auction, all suppliers are invited at the same time and all of the buyers’ staff which have access to the system can visualize the communication done between the parties, thus facilitating the information sharing and prompt action of the people who needs to be involved. This means that the learning curve of an e-RFX is short, since there is not a change in the objective, only how it is achieved.

E-auctions, on the other hand, represent not only a new way of achieving a goal, but also the way people relate to the negotiation itself. It enables different negotiation strategies, and by allowing so much flexibility, each tender demands careful considerations regarding its design and no pre-determined formula can be applied in all situations the same way. Therefore, it takes much longer for the procurement professional to get acquainted with the tool’s nuances and comfortable enough to set up the events independently.

“The learning circle of an RFX is very short. You do the course, then you start using it, and that’s it. But the learning circle of an e-auction it’s, like I said before, which buttons I have in the tool, what I need to price, what I need to write ...it’s just to understand both the psychological aspects, and you build up your knowledge with experience, so the learning curve is very long [...] the RFX starts low and then it goes up. And then it kind of maintains at that level. You have some, you know, brush ups if you forget something, but the e-auction, it actually starts very slowly” Senior Category Manager.

“We in DFDS are very immature in using them [e-auctions] [...] So there's definitely lots of learnings to take from the outside” Sourcing Manager.

One of the ways to quicken the learning curve is by learning through repetition: the more events companies participate in, the more knowledge they will acquire regarding a specific topic. The buying company strongly believes that as suppliers become experience with the tool, they will feel more confident in utilizing it strategically, therefore reducing the natural resistance to innovation. Two out of the three suppliers that were invited for the latest case company's tender were unexperienced, not having participated in more than five ERAs in the past. Possibly, the case company's ERA was the first one for which they had been invited. The Market Maker conducted a thirty minutes training with each of the suppliers, and also were available in a Skype call during the event in case suppliers had any doubts or problems during the course of the event. However, a soft approach to learning is also necessary for suppliers to benefit from the e-auction process.

“We know that these ones are the ones that participated last time. And we can approach them again. And the process becomes easier because you don't have to train them again and again”
Head of Direct Procurement.

“As you do an e-auction you learn [...] I think every single time you will learn, you will learn how to do it better, you will learn also which type of auction made the most sense [...] I think as we do more, we will become more adventurous in the type of auctions we do. That's the aim”
Head of Direct Procurement.

Lastly, the Senior Category Manager highlighted that for buyers it is a key point to keep themselves updated with new technologies or developments in the existing system. The online platforms are constantly evolving and, along with it, possibilities to improve the way e-auctions are run are growing. An example of this is the current introduction of a BidMatrix: Until recently, the case company relied on the standard system to set up its events in the online platform, which means that the Market Maker pre-establishes the columns and variables available to be filled out by suppliers and buyers have to make their comparisons based on them, as mentioned in chapter two. With the BidMatrix, however, buyers have more liberty to set up their own variables, thus being able to create more complex handicaps and bonuses and make automatic calculations of cost-benefit, when the price is just one criterion among many.

The tender process for Marine Paints is a good way to illustrate how complex these calculations can be. With the standard system, suppliers inform their prices, and the system automatically

bonifies or penalize their offers based on the buyer's evaluation of the solutions they proposed. Nevertheless, a realistic comparison of Marine Paints proposals should also comprise the price breakdown for each specific coating layers, e.g. primer and tiecoat, how many applications of each layer are necessary, what are the financial benefits provided by each solution, e.g. less friction between the vessel's hull and water leads to less fuel consumption, how the paint performance deteriorates over time, meaning that a new application is necessary, among other factors. The complexity of such an evaluation would discourage buyers to conduct these negotiations through e-sourcing if the only option available of the system were the standard one. With the BidMatrix, however, these calculations are possible.

The tender mentioned above also illustrates that one of the main criticisms regarding ERAs, that they are focused solely on price, might have been true when technology was limited, and only very basic comparisons were available. However, as innovations start adding up to the existing systems, the range of possibilities provided by electronic reverse auctions increases and, as a consequence, it becomes feasible for more complex and more strategic contracts to be negotiated through digital procurement.

The Market Maker believes that the development of new technologies, such as automatization, robotics and artificial intelligence, will shape the way e-auctions are run and make the tool even more widespread. The idea is that the systems will become independent enough to compare offers on their own, based on the initial input from the buyer's and then suggest the best solution for each contract, thus freeing-up time that the procurement professional would normally spend on manual calculations to focus on alternatives to the existing scopes and more strategic activities in general.

"I think that what is going to happen is, robotic, automatization and AI and stuff like that, is going to be, system wise, the development is going to...that system will basically build everything for you, so just what would be the best e-auction type for you. And then the buyers simply will have to approve what is suggested by the system and the system will run everything for the buyers. So the only thing that the buyer will have to do is approve the setup, the strategy and then monitor the auction, so that is definitely the way I see these systems will be going forward" Market Maker.

Therefore, in the words of the Senior Category Manager, *"if there are some changes out there [...], you need to keep yourself updated."*

4.6 Feedback

The feedback dimension is the last of the six dimensions related to e-auctions' use identified throughout this study. It contains two secondary categories: follow-up with suppliers and follow-up with stakeholders. The data collected and grouped in this dimension have been gathered from all research participants in order to achieve a comprehensive overview of the feedback processes within the case company.

4.6.1 Follow-up with suppliers

Upon starting the data collection part of this research study, it became apparent that the case company does not have any form of structured feedback process in place after an e-auction is finalized. However, several interviewees admitted such a process would be advantageous for the company. As the Senior Purchasing Manager illustrated: *"It could be a quite good idea to have. I don't think we really asked them before."* The same opinion was likewise shared by one of the Super Users who stated: *"... it definitely is important if we get some feedback."*

The notion of relevance of providing the case company's suppliers with a feedback was generally shared across all procurement teams participating in the study. While the Head of Direct Procurement and one Senior Category Manager commented on the importance of giving feedback to the winner of the e-auction in terms of the service levels required, the majority of respondents discussed the feedback for companies not being awarded the contract in the e-auction. The Head of Direct Procurement also shared her opinion on giving feedback to these suppliers: *"... it's important to give feedback to those who did not win. Why, and be really upfront about it. Give honest feedback to those who didn't win about their service levels or whatever the factors were."*

Furthermore, one of the Senior Category Managers explained why it is necessary to contact the suppliers not winning the e-auction: *"I think you still need to communicate with the suppliers that didn't win the e-auction. I know that it is very obvious for them that they didn't win [...] Here, you may think 'oh, it's obvious for them that they didn't win it', but I think it's good to be followed up, you know? Give a call to all of them."* For example, the Supplier that has recently participated in an e-auction conducted by the case company expressed its discontent in regard to the level of feedback received: *"We would expect that a proper feedback should be given to safeguard that all relevant information was obtained and evaluated throughout the process leading to the auction."* Another Supplier added that a swift confirmation of the e-

auction result would be appreciated from the case company: *"A quick confirmation that either the order is secured or obtained by a competitor."*

The Senior Purchasing Manager also stressed the importance of spending time with the losing suppliers, especially if the supplier is incumbent: *"... it's quite important that we spend time with the losers of an e-auction especially if it is a current supplier, because there is also little time to do a new contract, we have to run the business. Some companies say, 'when I lost the contract why should I spend so much time on it.'"* This thought has been further supported by one of the Sourcing Managers who stated that the core of the supplier relationship management takes place in the period following the e-auction: *"... the whole supplier relationship management comes afterwards, but also for the parties that did not win the contract. If you want them to be, you know, engaged in your next tender, then you will have to spend some time with them."*

At last, one of the Super Users adhered to the above statements and commented: *"Yeah, I think it's important also to maintain your relationship with the losing parts and this e-auction because maybe next time they're the ones that's going to make the best price [...] you have to play it respectfully, right? [...] So you have to maintain your relationships anyway. So I think afterwards, there's a job in making sure that they still feel good about the DFDS when we have had these e-auctions."* On a similar note, the Market Maker suggested the companies initiating e-auctions to find the time to thank their suppliers for participation: *"So after the e-auction, I think a small important factor is to really take the time to give the supplier feedback, and to thank them for their participation"*

A number of respondents also commented on the relevance of getting a feedback from the suppliers following an e-auction. The Chief Transformation Officer has confirmed the significance of this type of feedback: *"... the feedback loop from the suppliers, that's actually important."* Among other participants mentioning the feedback from suppliers was the Senior Purchasing Manager who noted how important it is for the supplying companies to be able to explain to the company initiating the e-auction why the supplier was not competitive enough in the process: *"... it's important that when we are to start meetings with different companies, to tell them a little bit about our feelings and expectations. And also, they can tell us why they could not or did not want to go down."*

The Senior Category Manager went into greater details as to why collecting the suppliers' feedback would be beneficial for the case company and commented on how the company might

learn more about the perspective of its suppliers: *"I think it would be useful to actually collect the input from the suppliers, their experience, you will be able to use it to shape your argumentation, or shape your strategy, whether you are going for the e-auction or not, so you will learn a little bit more about the supplier perspective on the things and what they experience and maybe you will find that it probably wasn't good idea [...] I think it would be good to collect this information and to, not only by yourself, but for the whole team"*

The Category Manager suggested the reason for suppliers refusing to participate could be a personal choice and, in that case, it would be worth it if the supplier could share its opinion: *"... they [suppliers] might not be refusing from a company perspective, but as a person, 'I don't like this way', how to deal with that? So that I believe is also very important to share."* Having a platform for receiving suppliers' feedback was also deemed relevant by one Super User: *"... there could be some process and questionnaires and these things to share afterwards. It will be good for us as well. I mean, they can feel like we have been extremely arrogant and preparation wasn't good. So it would be nice to actually hear how they feel about it [...] We should probably, hopefully have that. We always appreciate feedback from suppliers on tenders, but we don't have like a defined process..."* On the other hand, one of the Sourcing Managers expressed her doubts about the suppliers' willingness to provide their feedback: *"... questionnaires would be nice but of course when you've dropped several suppliers because of this, then I don't see how they would be maybe willing to reply to it."*

4.6.2 Follow-up with stakeholders

The relevance of a feedback loop with the internal stakeholders have been discussed in a handful of interviews. According to the Head of Direct Procurement, the feedback from stakeholders is as significant as the feedback from the company's suppliers: *"I think that's important. Feedback in any form, I would say both from the supplier as well as the internal stakeholders, both need to feedback into how they experienced it."* The reason why this type of feedback could be beneficial for the company initiating an e-auctions is for the internal stakeholders to understand the role and their contribution in the e-sourcing process. As the Head of Direct Procurement explained: *"... there is important to get feedback to the stakeholders to make sure that they understand their role and how it contributed or did not contribute."*

Moreover, the Category Manager has also found the feedback from the internal stakeholders beneficial since they may not be satisfied with the e-auctioning process or their role in it: *"I do believe [...] that you get wiser and I believe you have to share with the colleagues. But then you have also [...] internal stakeholders that might not like it or, okay then that could also be very beneficial."*

5. Discussion

This research was conducted with the objective of understanding the key factors that lead to an optimum outcome of an electronic reverse auction after an event was conducted. The literature, the interviews and the questionnaire were all utilized in the development of a framework, created based on all the knowledge acquired.

Having considered the elements, the enabler and the facilitators of ERAs and the linkages between these variables, a visual representation of the framework can be developed, and it is shown in Figure 6.

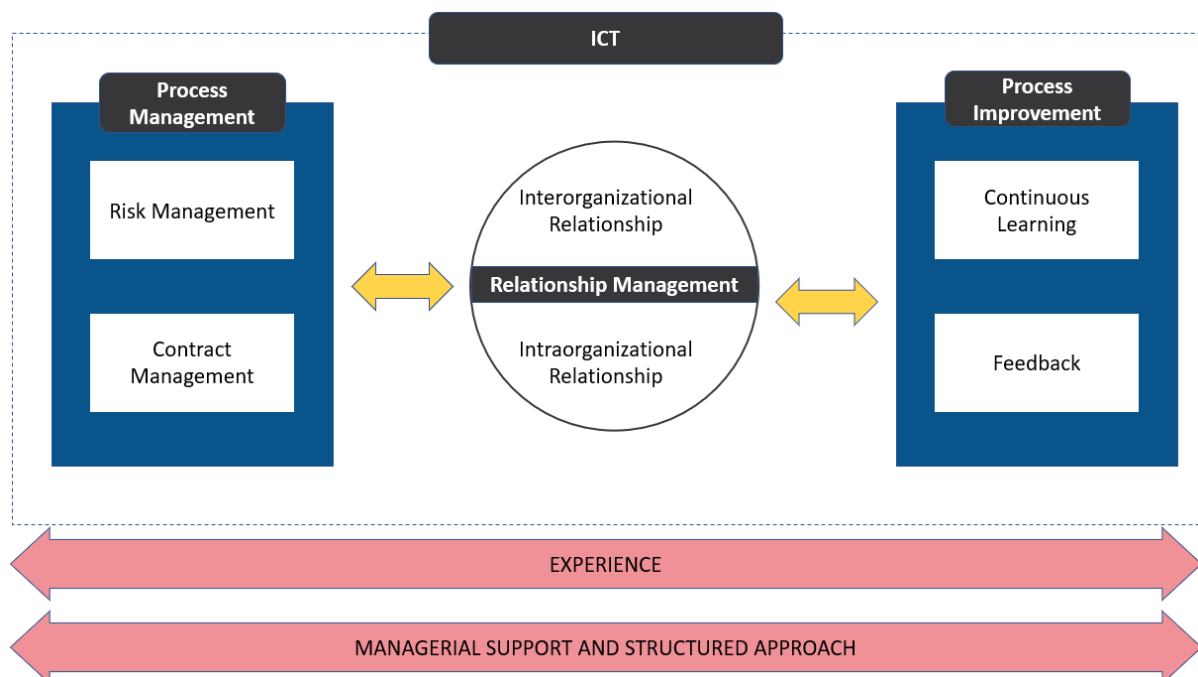


Figure 6 - ERAs post-adoption framework

5.1 The elements of the framework

5.1.1 Process Management

Risk Management and Contract Management refer to how thoroughly and precisely the tender process is run, and both are concerned with ensuring that the buying company is safeguarded against the risks identified to be related to electronic reverse auctions and that the agreement achieved with the winning supplier is honoured as specified in the previous phase. Therefore, these dimensions can be grouped together in the first element of the framework: *Process Management*, which focuses on the quality of the tender execution until its final phase, meaning

that the purchasing process is cost-effective, follows the company's strategy and specification and does not require too much time investment from the buyers.

In the figure below, the categories highlighted in bold letters represent factors that were not discussed in the literature revised, due to the focus on the supplier's perspective, but were mentioned during the interviews and/or questionnaire. They represent, therefore, additions to the existing literature.

Process Management	
Risk Management	Contract Management
<ul style="list-style-type: none"> • Winner's curse • Ensuring Competitiveness • Hidden Costs • Quality of Service 	<ul style="list-style-type: none"> • Managing Contract • Supplier Evaluation

Figure 7 - Process Management

5.1.1.1 Risk Management

Winner's curse and Quality of service

In the literature, Carter et al. (2004) mention that one the main risks associated with ERAs is the winner's curse, where suppliers might bid too low in the heat of the moment of an e-auction and not being able to fulfil their part of the agreement once the contract is in place, jeopardizing the quality of the service and creating the risk of financial instability to the supplier. Manoochehri and Lindsay (2008) add that this risk is higher when it is challenging for suppliers to accurately calculate the costs associated with product or service. Another possible cause of winner's curse is that sellers feel stressed and pressured during an event, resulting in them losing track of their strategy and just focusing on winning the contract.

The case company's representatives participating in this study, on the other hand, agree with Tassabehji et al. (2006), and affirm that suppliers should be responsible for their price calculations. They inform that they are aware of such risk, but at the same time while its impact

would be high, the probability of it happening is low, since winner's curse has also a profound negative impact on supplier's financial stability and market credibility.

Moreover, this study revealed, by including the buyer's perspective, that the conditions regarding the bidding process are similar to a traditional tender and the buyer's objective is the same for both: negotiating a contract at the most competitive prices. Therefore, no impact should be felt by suppliers in what concerns their price calculations or the quality of execution of the contract. If anything, e-auctions increase the transparency as to why the prices are reducing, given that suppliers can see the price levels in real time. Arguably, in a traditional negotiation where this visibility is not possible, suppliers would have grounds to question the buyer's reasoning for asking for discounts, leading to a mistrustful relationship.

The alternative raised by the literature, of setting up a minimum price to ensure supplier's profits with the contract (R. Tassabehji et al., 2006) is also not perceived as a feasible solution by the interviewees, who alleged that although buyers must know the overall price structure of their negotiations, the suppliers are the ones who hold the necessary information for a price breakdown and buyers defining a minimum price could lead to incorrect margins. Also, if more than one supplier achieves the minimum price, it would be difficult to define the winner.

The representatives of the case company also argue that such situation is not exclusive to electronic reverse auctions and suppliers might feel pressured to reduce their prices even during a face-to-face negotiation. If they do not have their calculation well aligned previously to the meeting, they might feel tempted to accept a request for discount. In addition, the monitoring of the quality of the service should be common practice regardless of the type of negotiation utilized, since non-performance and financial instability can occur to any supplier who does not have a good management of their cost structure.

Ensuring competitiveness

Competitiveness was mentioned in the literature one of the criteria for defining when a tender should be run through e-auction or a normal negotiation (Wagner and Schwab, 2004). Since previous authors focused on the suppliers' perspective, not much was critically discussed regarding the importance of competitiveness to buyers and how they can increase the number of available suppliers in order to strengthen competition amongst them.

This study observed that to increase competition for an e-auction, buyers must look outside the borders of their traditional suppliers and invite as many competitors as possible for an event,

with the additional benefit of forcing suppliers to participate in e-auctions, thus becoming more experienced, which will lead to less resistance and better offers. It is then necessary to focus on the development of new possible suppliers. The interviewees suggest that awarding multiple suppliers is a feasible solution to ensure competitiveness, with the added benefits of 1) keeping suppliers motivated to participate in future ERAs, 2) strengthening the relationship with a bigger number of suppliers, given that a more distant relationship is one of the main concerns regarding the tool, 3) increasing the pool of available suppliers by qualifying suppliers who otherwise would be unexperienced in providing for the company, 4) taking advantage of each supplier's competitive advantage, considering that one supplier might be better at one aspect of the contract, while the second supplier specialized in the other and 5) reducing the risk of dependency with a single supplier in case of financial instability or non-performance.

Caution, however, is advised when splitting the winners results in a non-attractive contract for either of the bidders, with too low volumes to justify the investment from the supplier's side, going against the second criterion for negotiations through e-auctions: auction volume.

Hidden costs

The construct of hidden costs was found to be underdeveloped in the literature review. On the contrary, the previous researchers were emphatic when alleging that electronic reverse auctions only regarded the final price, leading to a narrow view of what comprises a contract's costs. (Hawkins et al, 2010; Manoochehri and Lindsay, 2008; Jap, 2003; Hartley et al, 2006)

This study shows, however, that buyers invest a great amount of time in creating fair comparative models for the proposals, where other factors are quantified in order to reflect the quality of the solutions offered, either with explicit costs that are common to the tender or uncovering hidden costs that might not be foreseeable without careful consideration and knowledge of the market. Such caution with the identification of hidden costs must be constant even after an event, since they can be incurred after the contract signature.

5.1.1.2 Contract Management

Monitoring contract

The data collected indicates that after the contract's signature, the procurement function ceases to be responsible for the sourcing process and the agreement is then handed over to the internal

stakeholders, who must then ensure that the contract is being fulfilled. During this hand-over process, procurement professional must orient the internal stakeholders as to how the contract should be monitored, what are the critical factors and establish a communication and information flow, so that any possible misalignments can be quickly addressed without damages to the contract's performance. Special care must be taken in case the winner of the e-auction is not the incumbent supplier, so as to guarantee that there will be no bias from the stakeholder's side with a new, non-preferred supplier.

An effective monitoring of the contract is in itself a safeguard against the previously identified risks: loss of Quality of service and Hidden costs, since any non-conformance with the contract will be quickly resolved.

Supplier evaluation

Evaluating the suppliers after the contract signature is as important as monitoring the contract. To the same level that monitoring the contract will address misalignments regarding the agreement previously established, evaluating the suppliers will identify not only the supplier's performance in fulfilling their part of the agreements, but also other factors that impact on their stability and reliability as a business partner, e.g. financial performance, investment in research and development, governance and compliance, among others.

This evaluation could be used to negotiate further discounts in the duration of the contract or in future e-auctions, as a source of information to define better fitting bonuses and handicaps for the tender. Also, in cases where the buyers opted for a 'splitting winners' strategy, this evaluation might be an instigator to the 'second winner' so that they have a performance reference and can improve their own processes accordingly.

In conclusion, evaluating suppliers is a way to reduce the risks brought by winner's curse and loss of competitiveness.

5.1.2 Relationship Management

The dimensions Interorganizational and Intraorganizational Relationships are both concerned with the effectiveness and quality of the communication between the procurement professionals and their internal stakeholders and suppliers. Some categories concern both Inter and Intraorganizational relationships, such as Change Management and Overcoming

Resistance. The literature consistently mention the suppliers' belief that the process was not run fairly and that buyers are acting opportunistically, later retaliating by decreasing the level of service quality or by charging extra whenever the chance presents or due to the decrease in the interpersonal communication between the parties, since with an e-auction, the negotiation is done electronically, without a presential interface (Jap, 2003; Emiliani and Stec, 2004)

The case company's representatives, on the other hand, are aware of the supplier's perception of opportunistic behaviour and emphasize the importance of 1) a throughout communication before an e-auction takes places, informing how the suppliers will be evaluated and ensuring that when the e-auction is run, the suppliers are being compared on equal terms and 2) fulfil their promises during the RFQ phase and actually award the contract to the winner of the e-auction.

This study demonstrated that, while the case company executes the first stage according to the best practices, there were situations where, after an e-auction, the winner did not get the contract, which turned to be harmful for the buyer's image in the market and lead to mistrust in the way they operated ERAs. The main reason for this situation was that the internal stakeholders were not completely in agreement with the selection and saw the e-auction as a threat to their influence in the final result and did not accept the result of the event.

Therefore, from the *intraorganizational management* perspective, it is important that buyers implement a *change management process* to gather their internal *stakeholders' collaboration*, with a focus on *overcoming the resistance* resulting from their perceived loss of control in the final result. Demonstrating the ways that ERA *create value* to the stakeholders, e.g. by aggregating the information in a single database or enabling more visibility of each step of the process is a good way to demonstrate these benefits and improve their support both in the preparation of the RFQs and their agreement with the final results, in the pre-adoption and post-adoption phase.

Nevertheless, this study contradicted the argument that the *interpersonal communication* is lost due to the digitalization of the negotiation process provided by e-auctions. They reason that one of the most important criteria for initiating an e-auction is that the product or service can be thoroughly specified, which requires intense personal communications with the suppliers in order to understand the proposals and/or demand modifications so that there is a better fit with the scope initially submitted. A long preparation process actually proved to be one of the main complaints mentioned by the suppliers in the questionnaire, and during this process, several

personal interactions are taking place, be them face-to-face meetings, phone or Skype calls or e-mail exchange. That, coupled with the buyers' perception that there was even more interaction than in a traditional negotiation, corroborates to the argument that there is actually more opportunity to develop the buyer-supplier relationship with the use of ERA.

Hence, from an *Interorganizational Management* perspective, guaranteeing that the 'winner gets it all' strategy is fulfilled when applied, meaning that the winners will actually be awarded the contract is an important step in giving credibility to the bids, leading to *trust-building* between the parties. Similar to the Intraorganizational Management, for a good Interorganizational Management, procurement professionals must establish a change management process, also focused on overcoming resistance by demonstrating the *supplier's benefits* with the implementation of e-auctions.

It can be perceived by the discussion above that Interorganizational and Intraorganizational Relationships are both concerned with the quality of the relationships with buyers, suppliers and internal stakeholders and how the procurement professional must manage them in order to have all the parties on board and willing to participate in the ERA. Therefore, both dimensions were grouped together in the second element of the proposed framework: Relationship Management.

Relationships Management	
Interorganizational Relationship	Intraorganizational Relationship
<ul style="list-style-type: none"> • Interpersonnal communication • Trust-building • Supplier's benefits • Change management • Overcoming resistance 	<ul style="list-style-type: none"> • Creating value • Internal collaboration • Change management • Overcoming resistance

Figure 8 - Relationship Management

5.1.3 Process Improvement

Process improvement has been identified as one of the building blocks of a prosperous post-adoption stage of electronic reverse auctions. It contains the two dimensions of continuous learning and feedback and just like the process management, it is found to have a direct reciprocal influence on both, interorganizational and intraorganizational relationships.

5.1.3.1 Continuous Learning

The prevalent themes categorized under the dimension of continuous learning are the formal and informal ways of learning. The emphasis has been placed on the learning curve of both, procurement personnel of the buying organization, as well as its suppliers who will be participating in future e-auctions. There has been an apparent lack of focus of the academia on the post-adoption stage of electronic reverse auctions compared to the focus on the training during and prior the adoption phase. The data collected during the span of this study in general supported and occasionally expanded the earlier findings in the academic literature, although, needless to say, the bulk of the earlier research is concerned with training and learning during the implementation phase of electronic reverse auctions.

Concerning the formal learning process, this research revealed that an extensive training of the procurement personnel was necessary in order to not repeat the situation from the past when the training was exercised rather poorly and led to the fading interest in the e-auctions. Following a structured training process, buyers are now believed to make better decisions, show more confidence as well as willingness to use the tool. This is in line with the research conducted by Carter et al., (2004), who identified training and education as some of the effective ways to overcome the initial resistance to online auctions. The same strategy is found to work as well with the resistance shown by suppliers. In addition to overcoming resistance from buyers and suppliers, an extensive training is also found to increase the adoption rate of electronic reverse auctions (Carter et al., 2004).

The next step taken by the case company was then to establish a focus team within the procurement department that keeps track of best practices related to the electronic reverse auctions. Forming a specialized team within a company initiating e-auctions is once again in line with the research by Carter et al., (2004). According to the researchers, sharing of success stories and best practices can motivate and increase the adoption rate of e-auctions among the adopting company's personnel. In the case company it received increased attention also in

order to learn from the competitors and industry's pioneers in using the e-auctions. Lastly, the case company aims to increase its suppliers' awareness of the tool and train them in order to secure more competition during the actual event.

When it comes to informal learning, the study argues that suppliers are able to learn by doing, which is a process eventually resulting in the suppliers being more confident and elaborate on their bidding strategies. Besides, the interviewees commented on the considerably long learning curve associated with the electronic reverse auctions for the buyer company because of the complex and often flexible settings and negotiation strategies. In order to accelerate the learning curve, the case company plans to promote the learning through the repetition concept according to which the more events are conducted, the more knowledge is accumulated at the case company's disposal. The learning through repetition could also apply to suppliers and, in turn, reduce their potential resistance to the tool. On top of that, the respondents argue that the main goal for the case company is to keep itself updated with the new technologies and developments linked to e-auctions.

This study collected traces of evidence indicating that continuous learning will rise in magnitude. Both market maker and several respondents from the case company suppose the bidding strategies of suppliers are going to change with them getting more experience and better access to technologies. Therefore, it is recommendable for the companies initiating e-auctions to develop a structured learning process that will aim to better accustom the parties for the future challenges.

5.1.3.2 Feedback

The main topics concerning the feedback addressed during the data collection stage of this study have been the role of suppliers' experience, feedback given to the supplier not being awarded the contract, as well as the contribution of the internal stakeholders. The results have indicated that both, feedback given to and received from the suppliers, and feedback given to and received from the internal stakeholders play an important role in the post-adoption stage of electronic reverse auctions. The findings in this section of the study in general support the earlier research in the field of electronic reverse auctions. However, similarly to the research concerned with e-auctions and continuous learning, the research on the feedback mechanisms in the post-adoption stage of e-auctions is rather scarce and in need of a further future research

(Rothkopf and Whinston, 2007). This study takes the point of departure in the earlier research and aims to contribute to its further development.

In general, the study found feedback given to the suppliers following an e-auction to be relevant. This finding applies equally to the feedback provided to the winning suppliers as well as to the suppliers that were not successful in the e-auction. Teich et al. (2004) provide evidences of the importance of feedback given to the suppliers participating in e-auctions and find out that the way the feedback is provided may have a significant impact on the outcome of an e-auction. Their research is, however, focused on the implementation phase of e-auctions, unlike this study that concentrates on the period after an e-auction is finalized. Additionally, the research by Teich et al. (2004) does not consider the feedback received from the suppliers, which is another research gap that is challenged in this work.

Regarding the feedback given to the participating suppliers following an e-auction, it was found out that while the case company representatives confirmed that the proper communication following an e-auction is necessary, the suppliers involved in e-auctions with the case company stated they would appreciate a more proper and swift feedback from the case company's side. Several study participants have also commented on the necessity to receive the feedback from the suppliers engaged in e-auctions. The suppliers' feedback was found to be useful for learning about their competitiveness, perspectives on specific e-auctions, or sharing their opinions and experiences.

Based on the data collected from the case company, it is suggested that a feedback mechanism involving the suppliers participating in e-auctions, whether they have or have not been awarded the contract, would have a profound impact on the interorganizational relationships between the company initiating an e-auction and its suppliers. According to the literature, electronic reverse auctions are prone to trigger the suppliers' suspicion of an opportunistic behaviour by the buyer. In such cases, the suppliers will be less likely to share information or take part in future collaborative projects with the buyer (Kwak, 2002; Tassabehji et al., 2006). The case company could, therefore, face this challenge by improving the quality and the amount of feedback provided to its suppliers.

Furthermore, it was previously discovered that suppliers may feel unable to make use of their capabilities and people-to-people skills in e-auctions as compared to face-to-face negotiations (Jap, 2003). This finding is in line with the input received from one of the suppliers participating in a recent e-auction with the case company. Since initiating an e-auction may

therefore result in a dissatisfaction at the suppliers' side, it could be crucial for the buying company to engage in timely and open feedback and communication with its suppliers during as well as after the event. The research conducted by Kaufmann and Carter (2004) underlines the appropriateness of explanations and follow-ups with the suppliers active in the electronic reverse auctions, since any suspicion of unethical behaviour on the buyer's side by the suppliers has a destructive impact on the relationships among the parties. By giving its suppliers a platform to share their opinions and experiences following an e-auction, the case company would have a good chance of preventing similar misunderstandings.

The relevance of internal feedback mechanism was examined by Hawkins et al., (2010), who have focused on the positive experiential feedback of the personnel initiating e-auctions. Their research revealed that practitioners are motivated predominantly by their positive experiences with the e-auction tool, but they can also be discouraged upon a negative experience (Hawkins et al., 2010). This study built on the earlier research and incorporated the perspective of the internal stakeholders and their feedback regarding the e-auctions. It was revealed that the procurement employees find the feedback to and from their internal stakeholders beneficial and relevant. Because of the feedback provided to these stakeholders, the procurement department, as the initiator of e-auctions, would be able to better communicate the role and the contribution of stakeholders in the e-sourcing process. By providing the feedback, the internal stakeholders could also better communicate their thoughts on the electronic reverse auctions.

Process Improvement	
Continuous Learning	Feedback
<ul style="list-style-type: none"> • Formal Learning • Informal Learning 	<ul style="list-style-type: none"> • Follow-up with suppliers • Follow-up with stakeholders

Figure 9 - Process Improvement

5.2 Relationship Management and Process Management

Relationship management is connected with the Process Management by influencing the buyer's ability to manage the risks and contract associated with electronic reverse auctions.

Good *interpersonal communication*, for example, have a positive impact in how quick and uncomplicated the process management is, given that a closer relationship with internal stakeholders and suppliers lead to more intensive collaboration and sense of partnership. A more intensive relationship will then facilitate *trust-building* between the parties involved, which reduces the risk that suppliers will perceive opportunistic behaviour related to the execution of an electronic reverse auction. Jap (2003) associated such perception with suppliers sharing less information, which is crucial for identifying hidden costs and managing the contract to ensure the quality of the services previously agreed, since the input from suppliers is necessary on both cases. Moreover, a good communication with suppliers, where buyers make clear on what terms the proposals will be evaluated during the e-auction and take the time to train the bidders in the platform and explain to them what the expectations are, gives more confidence to suppliers during the event, reducing the risk of winner's curse.

A similar reasoning can be associated with the internal stakeholder perspective, and buyers should take extra care to demonstrate how the implementation of ERAs can create value to the business and the stakeholders as a way to engage them and create enthusiasm towards the tool. Engaged stakeholders will result in a more effective contract management, since it is the stakeholder's input that alert the procurement professional that there is a misalignment in the first place. In addition, engaged stakeholders make it easier to *ensure competitiveness* since they will be more open-minded in accepting a new supplier.

5.3 Relationship Management and Process Improvement

The impact of continuous learning is found present on both, interorganizational and intraorganizational relationships. Namely, change management and overcoming resistance are relational categories that are tied with the continuous learning dimension for both, external and internal relationships. Creating value for the company as well as the promotion of internal collaboration are then another set of factors advocating the linkage between intraorganizational relationships and continuous learning. The reciprocity of this connection is displayed when the nature of interorganizational and intraorganizational relationships shapes the way, i.e. intensity and promptness, the continuous learning processes are developed and adhered to.

In regards to the feedback dimension of process improvement, the internal relationships within the buying company are often found to be the roots of the decline in the interorganizational relationships with its suppliers (Emiliani, 2004). For that reason, the research suggests to at first to focus on improving the intraorganizational relationships before trying to improve the interorganizational relationships. Even though the aim of this study was neither to confirm or disprove these findings, it was shown that intraorganizational relationships may, in fact, act as an important factor in the post-adoption period. Several respondents stated that some of the e-auctions can be occasionally driven by these stakeholders, so to have process for dealing with internal feedback and increase the understanding of the factors affecting the stakeholders' satisfaction could indeed have a beneficial impact on the overall process and create value for the company.

Lastly, the findings in this study did not contradict the earlier limited research in the field of feedback process in the electronic reverse auctions. Referring to the conceptual model proposed, the results of the data analysis indicate the theorized linkage of feedback as part of the process improvement category and the relationship management. The discovered reciprocal impact between the two categories appears to be particularly strong in the topics of interpersonal communication, trust-building and overcoming resistance of the suppliers for the interorganizational relationships, as well as in overcoming resistance of the internal stakeholders, creating value for the company, and internal collaboration in the intraorganizational relationships. On the contrary, the relationship management is expected to have an influence on the willingness of suppliers and internal stakeholders to provide a feedback, or act upon a feedback received.

5.4 Enabler

An enabler can be defined as something or someone that makes it possible for a particular thing to happen or be done (Cambridge English Dictionary, 2019).

The research conducted for this paper discussed how in the early days of e-auction development, browser technology was still in its infancy and was not reliable enough to conduct complex and demanding online tasks. Consequently, there was not much investment and support for the tool at that time (Kuo et al, 2004).

With the creation of more sophisticated systems, new developments could be made in the online platforms that support e-auctions, allowing more services and options to be included in

the tool. An example of such developments is the aforementioned BidMatrix, a new solution available at the Market Maker's platform that makes it possible more complex comparisons between suppliers, where several different factors other than price are analyzed.

Moreover, the Market Maker predicts that new technologies are already being developed and their integration to the e-auctions will result in even more advanced system, enabling even more complex comparisons, more flexibility in the choices buyers can make when setting up the events and ultimately, being autonomous enough to conduct the last stage of the sourcing process itself, freeing up time for procurement professionals to focus on more strategy activities.

Considering that an important reason for the existing resistance towards the tool is the perception that there is an unbalanced focus on price, such developments are crucial for a wider dissemination of ERAs. In conclusion, it can be safely stated that the development of information technology, here called Information and Communication Technology (ICT) is an enabler of electronic reverse auctions.

5.5 Facilitators

5.5.1 Experiences

Facilitators are described as something or someone that helps to make something happen, or that makes it easier (Cambridge English Dictionary, 2019b). With this research, it was evidenced that, albeit not a pre-requisite for the implementation of ERAs by buyers or as a qualifier for suppliers participating in an event, experience (know-how/practice/maturity) is a facilitator of e-auctions.

There are methods to quicken the process of acquiring knowledge, either with formal learning, sharing of best practices and 'learning through repetition'. The latter refers to an aspect of experience building that is difficult to manage or act upon but is perceived to be important regarding how much effort buyers must make in order to implement ERAs. The benefits associated with a mature e-auction process are a) less time spent on the preparation phase, e.g. with the training of suppliers or engagement of internal stakeholders and b) Familiarity with the system, for buyers, will lead to faster set ups of events and a more tailored sourcing strategy for the individual categories.

For suppliers, experience leads to more confidence in their bidding strategy during the events, reducing the risk of winner's curse and loss of quality of service and the overall supplier's resistance towards ERAs. Arguably, less resistance from suppliers would lead to less suppliers refusing to participate in the e-auction, ensuring more competition by increasing the number of competitors.

Lastly, the Market Maker adds that more experienced suppliers actually like ERAs, because it is a 'free' way for them to understand their market and how competitive they are compared to other companies within the same sector in real time, which otherwise would require expensive and time-consuming market analysis tools.

5.5.2 Managerial support and structured approach

Managerial or top-down support has been identified as the second facilitator of electronic reverse auctions at the buying companies. Numerous respondents have commented on the previously unsuccessful effort to initiate the e-auction project at the case company. The lacking or insufficient managerial support has been frequently marked as the main reason of why the usage of electronic reverse auctions did not achieve popularity among the case company's personnel once it was put forward for the first time. In addition, the shortage of structure in handling the e-auction processes has been often cited as a factor contributing to their initial failure.

Without the support from management, the users of e-auction tool may not experience the same level of confidence, motivation and commitment to maintain the e-sourcing initiatives. What is more, the lack of structured approach prevents building a company level risk and contract management strategies during and after the e-auction events. It is also presumed it may essentially limit any kind of continuous learning initiatives or establishing a common feedback mechanism. The lack of managerial support could also display when it comes to long-term planning, visions and forecasts on the usage of the modern technologies in procurement or in a given industry. Lastly, there is an assumption of an increased risk of power shifting from the procurement department towards its internal stakeholders as well as the company's suppliers as long as the purchasing personnel decisions are not firmly backed up by their superordinates and established processes.

Therefore, it is conceptualized that both managerial support and structured approach towards e-sourcing activities act as a facilitator in the post-adoption stage of electronic reverse auctions.

Together with the aforementioned experiential facilitator, they both have an impact on all major dimensions of the proposed model and will continue to shape the post-adoption phase of e-auctions at the buying companies.

6. Conclusion

6.1 How can buyers prepare for a post-adoption stage of online reverse auctions?

The framework developed in this study will aid buyers in not only identifying which are the key factors to monitor and manage after an e-auction, but also in understanding how they are interconnected, so that the post-adoption management can be tailored to the company's specific needs. For that reason, the suggested framework contains three major elements including process management, relationship management and process improvement. Consequently, these three cornerstones of the framework are interlinked with each other by the network of facilitators, namely experience and managerial support together with a structured approach. Lastly, the whole framework and its actors are permanently dependent on its enabler, information and communication technology.

In order to be able to dive into the details of the framework proposed, the following subquestions have been answered to support and further develop the relevance of the findings to researchers as well as practitioners.

6.1.1 What are the key factors associated with the post-adoption phase of ERAs that could jeopardize the results achieved?

Through this study it was found out that supplier's non-performance in the period following an e-auction poses major risks to the quality of the product or service negotiated. Despite arguments reasoning that such risk is also present in a traditional negotiation process, its probability increases slightly in case the supplier who won the contract was unexperienced with electronic reverse auction and was caught in the competitive atmosphere during the event.

In addition, if the company chooses for a winner-gets-it-all strategy, the market's perception on how ethically and fairly the organization runs its e-auctions could be jeopardized in the longer term in case the company decides to award the contract to a supplier who was not the winner of the event. Either for errors in the scope delimitation strategy or from an unexpected change of mind from the internal stakeholders, not fulfilling their part of the agreement could induce the perception that ERAs are being utilized opportunistically.

Lack of support from internal stakeholders also proves to be damaging to the sourcing efforts developed by the procurement professional, since it leads to lack of communication between

the departments. Considering that the internal stakeholders are responsible for the contract after the contract is signed and, therefore, in charge of monitoring the contract for possible misalignments with its execution, lack of support leads to non-detection of such misalignments, blinding procurement professionals to risks or hidden costs.

This study also proves that when an electronic reverse auction awards a new supplier, either because the product or service is a new requisition or because of a change in the provider of the scope, an especial care should be taken to guarantee a smooth transition period so that all the parties involved have received sufficient communication and are on board with the new contract.

Next, it was established that a lack of structured approach to continuous learning and training for buyers' employees and their suppliers participating in e-auctions could be another challenge in the post-adoption stage.

One of the reasons why buying companies should aim their attention to continuous learning in the post-adoption stage is because of its ability to increase the adoption rate of electronic reverse auctions. While companies currently use this knowledge to their advantage mainly in the implementation phase, upon collecting the data it became evident that the companies continue to face resistance from a portion of its suppliers and internal stakeholders after the e-auctions are implemented.

Moreover, the advancements in the field of modern technologies suitable for e-sourcing pose a risk of suppliers gaining the upper hand in their relationships with buying companies. By underestimating the benefits of training and continuous learning, buyers may expose themselves to a threat of not being able to anticipate and compete with the potentially newly formed strategies of suppliers that might have an earlier access to modern technologies or advanced analytics.

Lastly, it was revealed that buyers may not have any proven feedback mechanisms in place. Both the suppliers participating in e-auctions and the internal stakeholders are typically receiving a limited feedback mostly related to the preparation stage of e-auctions. However, there might be an absence of a common platform for sharing feedback during and after an e-auction event takes place, including the feedback given to suppliers and stakeholders, as well as the feedback received from these parties.

The jeopardy of not having such platform, or at least having an option for the participant in e-auctions to share their experiences and impressions, is the potential build-up of resistance towards the e-sourcing tool. In case the suppliers and the internal stakeholders were found dissatisfied with how certain events came about, by gathering this knowledge buying companies would be able to act upon it and improve. Similarly, by providing feedback to their suppliers and stakeholders, buyers might, in turn, educate these parties and better prepare them for the future electronic reverse auctions.

6.1.2 How could the case company improve the processes in the period following an e-auction?

Based on the input collected from the procurement representatives, market maker and the suppliers, it is recommended that the case company improves and further develops its processes regarding e-auctions in several areas. These areas include relationship building, supplier evaluation, change management, continuous learning and feedback mechanisms.

Regarding the possibility of suppliers' non-performance and following the framework developed, it becomes evident that efforts towards relationship-building will have a positive impact in the other two elements as well. Hence, to deal with such possibility, investments in the relationship with the interested parties should be made. Establishing recurrent follow-up meetings with internal stakeholders is a way to keep the flow of communication between the responsible parties and maintain a good level of interpersonal communication.

Interpersonal communication is also connected with trust-building, therefore structuring a good communication flow between the departments is a way to engage the stakeholders into the e-auction process, thus reducing the possibility that they might not agree with the ERA's result. It also makes it easier to collect information from the suppliers, crucial for the supplier evaluation through a scorecard, keeping the organization updated regarding the market practices, having the suppliers act quicker in case of urgent problems with the contract and collecting the supplier's input when managing the transition between suppliers.

Looking at the other factor within relationship management, interorganizational relationship, an effective and sincere communication with the suppliers will also lead to improvement in the two other elements of the framework. Keeping the relationship with a wide range of suppliers is a way to ensure competitiveness for future e-auctions and have a safeguard in case of supplier non-performance.

Regarding the improvements in the continuous learning area, the intentions of the case company's current training practices appear to be rather short-term and paying limited attention to the period after an e-auctions is finalized. The case company shall establish a standardized and structured process that would include future trainings and workshops in order to familiarize its personnel with the contemporary trends and developments in the field of e-sourcing. It may be further relevant to establish seminars in cooperation with the market maker in order to better accustom for the advanced bidding strategies of experienced suppliers.

At the same time, the case company will need to continue providing trainings for the suppliers that do not have a previous with e-auctions. By increasing the knowledge of these suppliers, the case company would make efforts to maintain its supplier base and not discard potential suppliers based on their lack of experience and preconceptions about the e-sourcing tool.

In order to maintain the quality of the interorganizational relationships, the case company is accordingly expected to bring into focus a trust-building initiative that would ideally include a feedback mechanism, ensuring that both, the case company and its buyers, have a possibility to communicate in the most transparent and effortless way possible. Such feedback platform would be available to all parties involved in the e-auctioning process, both during and post-event. The inputs gathered shall be examined internally within the procurement department and the responsible management. Once a proper evaluation of the feedback received is conducted, the conclusion may be shared with the provider of the input.

On the other hand, the feedback given to the case company's suppliers and internal stakeholders shall have an educative character and clarify the reasons why a specific contract is awarded in a transparent and understandable manner. The type and amount of feedback provided to the e-auction participants is to be consulted with the feedback recipients at least in the beginning of the process in order to ensure relevance and appropriateness.

6.2 Managerial implications

This study has practical implications for the top and middle management involved with procurement processes. The proposed framework, together with the suggested improvements in procedures, aim to assist the management at the buying companies utilizing electronic reverse auctions to better prepare for the post-adoption period. In detail, the framework enables the companies to broaden their knowledge about the e-auction tool and to evaluate their current

processes linked to electronic reverse auctions. The management may likewise consider the recommendations for improvements of the processes as proposed in this study.

Overall, the suggested framework offers the management of the buying companies a unique tool and perspective of viewing the post-adoption stage of electronic reverse auctions. The lack of correspondent research in the area may further amplify the relevance of the proposed framework to the managers.

6.3 Limitations of the research

The study strategy selected for this research is a single case study, which on the one hand allowed for an in-depth evaluation of the case company's unique implementation trajectory regarding electronic reverse auctions, but on the other hand potentially restricted the possibility of comparing the results obtained from other cases. An illustration of such limitation is that the company evaluated have not yet conducted a pure electronic e-auction, where no face-to-face meetings or eRFx interactions take place prior to the event, which possibly could result in different findings, since with this level of ERA integration, the buyer-supplier relationship is reduced to the online platform until the supplier selection.

Furthermore, the application of certain aspects of quantitative research could serve to further verify and bring more relevance to the study findings. The framework resulting from this study provides guidance to practitioners on what are the key factors pertaining ERAs that influence the results during the post-adoption. However, the practical implementation of such framework was not discussed thoroughly, e.g. how to develop a change management process aimed at the ERA implementation.

6.4 Further research

Despite the aforementioned research gap in the post-adoption stage of electronic reverse auctions and authors' efforts to contribute in filling this gap, it is acknowledged that there is a potential for a substantial amount of future research in this area. The next research projects could take the departure in this study and confirm or further develop the suggested framework by involving more buying companies and cases, or by increasing the time span for the project, allowing for the measurement and control of developments over longer time. It may be likewise relevant to approach the research of the post-adoption period from a significantly different

perspective, for instance by conducting a quantitative study or action research instead of a case study.

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