CHALMERS
UNIVERSITY OF TECHNOLOGY

Exploring Artificial Intelligence use in Services Procurement

A case study at Volvo Group

Master's thesis in Management and Economics of Innovation & Supply Chain Management

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CHALMERS UNIVERSITY OF TECHNOLOGY
Gothenburg, Sweden 2025
www.chalmers.se

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Abstract

Procurement has evolved into a strategic function and emerging technologies, such as artificial intelligence (AI) are digitizing supply chains, constituting a major digital shift in all industries. Despite its potential, artificial intelligence is still both underutilized and under researched within procurement. While existing research focuses on general applications of AI in procurement, this thesis addressed the area of services procurement. By identifying pain points across an established services procurement process and evaluating how AI can address these, it aimed to explore how AI could be leveraged to enhance purchasing efficiency. Additionally, it explored how change management and technology acceptance strategies can support organizations in AI adoption.

The thesis has been conducted as a case study together with the Services Purchasing organization at the global transport- and infrastructure provider Volvo Group. Taking an explorative approach, unstructured interviews, primarily with line managers, and semi-structured interviews with buyers were conducted. Following a thematic analysis of the interviews, empirical findings were analyzed using theoretical frameworks developed through an extensive literature review. The theoretical frameworks covered AI.

The empirical findings identified pain points across different stages of the services procurement process, revealing both operational, organizational, and strategic challenges affecting the efficiency of the procurement organization. Applying the theoretical frameworks, the analysis showed how AI can support buyers and address several of the key pain points in the services procurement process. Leveraging AIs main capabilities of automation and smartness, the technology shows strong potential in e.g., automating request-for-quotation creation and contract management, enhancing decision making, and providing support in negotiations. Finally, trustworthiness, quality of output, job relevance, ethics, and confidentiality were identified as requirements for the further adoption of AI tools. Recommended change management strategies for successful AI adoption included among others having local AI champions, sharing success stories, and developing a clear vision and strategy.

Keywords: Procurement, Services Procurement, Indirect Procurement, AI, Automation, Smartness, Change Management, Technology Acceptance, Sensemaking

Acknowledgements

This thesis was carried out during the spring of 2025 and is the culmination of our master's degrees in Management and Economics of Innovation and Supply Chain Management at Chalmers University of Technology. It was conducted in collaboration with the Services Purchasing department at Volvo Group. We would therefore like to extend our thanks to both Chalmers and Volvo for giving us the opportunity to successfully finish our master's education with an interesting and rewarding thesis.

Specifically, we would like to thank our supervisor at Volvo Group, Majken Olsson, for her invaluable guidance, constant encouragement, and continuous support. Additionally, we would like to express our biggest gratitude towards all individuals who participated in interviews and that made us feel very welcomed and appreciated at Volvo Group.

Special thanks also to our supervisor at Chalmers, Sahil Ahmed, and our examiner at Chalmers, Patrik Jonsson, as well as everyone who has provided feedback and support throughout. Your insight has been well received and very valuable for the thesis.

Finally, as we end our studies, we would like to express our biggest thanks to our families and friends that have supported us not only throughout this thesis, but across all our years at Chalmers. We appreciate all of you and hope you will keep supporting us in our future endeavors.

Gustav Andersson & Adam Willner
Gothenburg, May 2025

Contents

List of Abbreviations vi
List of Figures vii
List of Tables viii
1. Introduction 1
1.1 Background 1
1.2. Introduction to Case Organization 2
1.3. Aim 4
1.4. Delimitations 4
2. Theoretical Frameworks 5
2.1. Indirect Procurement 5
2.2. Artificial Intelligence 6
2.3. AI in Procurement 7
2.3.1. Automation vs. Smartness 8
2.4. AI in Sourcing 9
2.4.1. Defining Specifications 9
2.4.2. Supplier Scouting 10
2.4.3. Request for Quotation 10
2.4.4. Negotiation and Selection 10
2.4.5. Contract Management 12
2.5. AI in Strategic Procurement 13
2.5.1. Spend Analysis 13
2.5.2. Procurement Strategy 14
2.6. Summary of Frameworks Regarding AI Applications in Procurement 14
2.7. Sensemaking 15
2.8. Information Technology Acceptance Models 17
2.8.1. Technology Acceptance Model 18
2.8.2. Unified Theory of Acceptance and Use of Technology 19
2.9. Change Management Models 20

2.9.1. The Eight Steps for Leading Change 20
2.9.2. The ADKAR Model 22
2.10. Diffusion of Innovation 23
2.11. Summary of Frameworks for AI Adoption 25
3. Methodology 27
3.1. Research Design of the Study 27
3.2. Research Strategy and Approach to Theory 29
3.3. Data Collection Methods 29
3.3.1. Unstructured interviews 30
3.3.2. Semi-structured interviews 30
3.3.4. Internal Document Analysis 32
3.3.5. Observations 32
3.4. Data Analysis Method 32
3.5. Literature Review 33
3.6. Ensuring Research Quality of the Study 33
3.7. Ethical Considerations 34
3.8. Limitations of the Methodology 34
4. Empirical Findings 36
4.1. Volvo SP Procurement process 36
4.1.2. Volvo SP Sourcing process 36
4.1.3. Volvo SP Strategic Procurement 37
4.2. Pain Points in the Services Procurement Process 37
4.2.1 Pain Points in Sourcing Process 38
4.2.2 Pain Points within Strategic Procurement 41
4.2.4. Summary of the Identified Pain Points in the Volvo SP Procurement Process 43
4.3. Themes Relating to Managing AI Adoption 44
4.3.1. Themes Related to the Sensemaking of AI 44
4.3.2. Themes Related to the Acceptance of AI Tools 46
4.3.3. Themes Related to Change Management 47
5. Analysis 49

5.1. Leveraging AI Technology to Address the Pain points 49
5.1.1. Addressing Pain Points in the Sourcing Process 49
5.1.2. Addressing Pain Points in Strategic Procurement 52
5.1.3. Summary of how AI can be Leveraged to Address Pain Points 53
5.2. Analyzing the Role of Sensemaking, Technology Acceptance, and Change Management in AI Adoption 54
5.2.1. Understanding Buyer's Sensemaking of AI 54
5.2.2. Requirements for the Acceptance of AI Tools 56
5.2.3. Strategic Plan for Change Management 58
6. Discussion 61
6.1. Identified Pain Points and what can be Addressed by AI 61
6.2. Supporting AI Adoption: Complementing Perspectives 64
6.3. Recommendations for Future Research 66
6.4. Recommendations for Volvo SP 67
6.5. Limiting Factors 67
7. Conclusion 69
References 70
Appendices 76
Appendix A - Semi-Structured Interview Guide 76

List of Abbreviations

AI	Artificial Intelligence
BDA	Big Data Analytics
DOI	Diffusion of Innovation
GTP	Group Trucks Purchasing
IoT	Internet of Things
ISTAM	Intelligent System Technology Acceptance Model
IT	Information Technology
ML	Machine Learning
NLP	Natural Language Processing
NLU	Natural Language Understanding
RFI	Request for Information
RFP	Request for Proposal
RFQ	Request for Quotation
SD&I	Services, Digital & Investments
SOW	Statement of Work
Volvo SP	Volvo Services Purchasing
TAM	Technology Acceptance Model
UTAUT	Unified Theory of Acceptance and Use of Technology

List of Figures

Figure 1.1: Illustration of the Services Purchasing Organization 3
Figure 1.2: Sourcing process of Volvo SP 3
Figure 2.1: Illustration of the linear procurement process presented by van Weele & Rozemeijer (2022) 5
Figure 2.2: Visualization of the seven sensemaking properties by Weick (1995) 16
Figure 2.3: AI integration framework (Hendriksen, 2023) 17
Figure 2.4: Visualization of the TAM (Davis et al., 1989) 18
Figure 2.5: Visualization of UTAUT (Venkatesh et al., 2003) 19
Figure 2.6: Kotter's 8-steps of organizational change (Kotter, 2012) 21
Figure 2.7: Visualization of the necessary building blocks for individual change (Hiatt, 2006) 22
Figure 2.8: Diffusion of technology as an S-curve and normal distribution over time (Rogers, 2003) 24
Figure 3.1: Schematic overview of the research design 28
Figure 4.1: Sourcing process of Volvo SP 37
Figure 4.2: Overview of identified pain points in the procurement process 44
Figure 5.1: Visual overview of how AI can address the identified pain points 54
Figure 5.2: Visualization of the situation specific adaptation of the TAM and UTAUT 57
Figure 5.3: Overview of actionable next steps 60

List of Tables

Table 2.1: Summary of the theoretical framework on AI in the sourcing process 14
Table 2.2: Table summarizing the theoretical framework on AI in strategic procurement.. 15
Table 3.1: Table summarizing the unstructured interviews..... 30
Table 3.2: A table summarizing the semi-structured interviews..... 31

1. Introduction

This introductory chapter provides a background to the study and the research subject, an introduction to the study's' case organization, and presents the problem statement. It leads to the study's aim, delimitations, and specification of the issue being investigated. Additionally, it outlines the key research questions the study seeks to answer.

1.1 Background

The fourth industrial revolution, industry 4.0, constitutes a major digital shift in all industries (Jahani et al., 2021). Emerging technologies such as Artificial Intelligence (AI), Internet of Things (IoT) and Big Data Analytics (BDA) are digitizing the supply chain, driving automation and efficiency. Industry 4.0 further transitions supply chain operations into adopting more strategic approaches (Jahani et al., 2021), a shift that has been going on since the mid-90s (Gadde & Håkansson, 1994). Consequently, the notion of Procurement 4.0 has been introduced as a component of industry 4.0 (Jahani et al., 2021; Bienhaus & Haddud, 2018). Procurement 4.0 refers to the adoption of industry 4.0 applications within procurement, where AI, IoT and BDA will play big roles in the future. Bienhaus and Haddud (2018) highlight the potential of the procurement function as a key player in supporting the creation of new business models and product offers. They also discuss an extension of the procurement role, where collection, analysis and processing of organizational information will be necessary to make informed, strategic decisions.

Since procurement organizations are analytical in nature, handling large amounts of data every day, adopting AI could drive further improvements to the procurement process (Guida et al., 2023). The potential of applying AI in procurement is exceptional, however research on the integration of AI in procurement is still in early academic stages (Guida et al., 2023, Spreitzenbarth et al., 2024). Initial research shows AI can be applied across several parts of the procurement process, focusing heavily on strategic procurement and sourcing. Functionalities include enhanced spend analysis, supplier selection, negotiation support, contract management and many more (Allal-Chérif et al., 2021; Gottge et al., 2020; Guida et al., 2023; Spreitzenbarth et al., 2024). AI's contribution to these functionalities is twofold, enhancing operations using both automation and smartness (Cui et al., 2022).

With the shift towards strategic procurement, organizations have also started to acknowledge the increased importance of services procurement (Heinis et al., 2022). Services procurement, also referred to as indirect procurement, is estimated to account for at least 20 to 30 percent of an organization's total spend (Hofmann et al., 2019), with scholars emphasizing that it might even surpass the share spent on goods (Heinis et al., 2022). Throughout the report the two terms indirect procurement and services procurement will

be used interchangeably. The nature of indirect procurement makes it less tangible than direct procurement, difficult to evaluate, and subject to a greater number of stakeholders (Fitzimmons, 1998). Despite its importance and difficulty for organizations, research on indirect procurement is limited, with many researchers still focusing mainly on direct procurement (Heinis et al., 2022; Hofmann et al., 2019; Israel & Curkovic, 2020). As stated by Hofmann et al., 2019 "Thus, the state of the knowledge does not match the importance of the subject." (p.2). Similarly, the integrated research focus of AI and procurement focuses almost single handedly on direct procurement. Specific research on the integration of AI and procurement 4.0 within indirect procurement is lacking.

With AI making its way into procurement, it is important to consider what organizational challenges that come with the adoption of AI. Successful AI adoption is dependent on effective change management including organizational readiness, stakeholder engagement, and developing individual competence (Guida et al., 2023; Richey et al., 2023). Concerning indirect procurement, managing change is even more critical considering a broader range of stakeholders and less standardized processes (Fitzsimmons et al., 1998). Thus, the implementation of AI must be understood as an organizational transformation as much as a technological one, where change management plays a central role in aligning people, processes, and systems.

1.2. Introduction to Case Organization

The key business unit for analysis in this study is the Services Purchasing (SP) department at Volvo Group. Volvo Group is a global provider of transport- and infrastructure solutions ranging from trucks and buses to construction equipment and marine -and industrial engines. Volvo SP belongs to the Services, Digital & Investments (SD&I) unit, which in turn is part of the Group Trucks Purchasing (GTP) organization. Within Volvo SP there are five segments covering different topics within services and indirect procurement. The case organization Volvo SP mainly uses the term services when discussing both procurement of indirect material and services, hence why the two terms are used interchangeably throughout the report. See Figure 1.1 for an illustration of the organization.

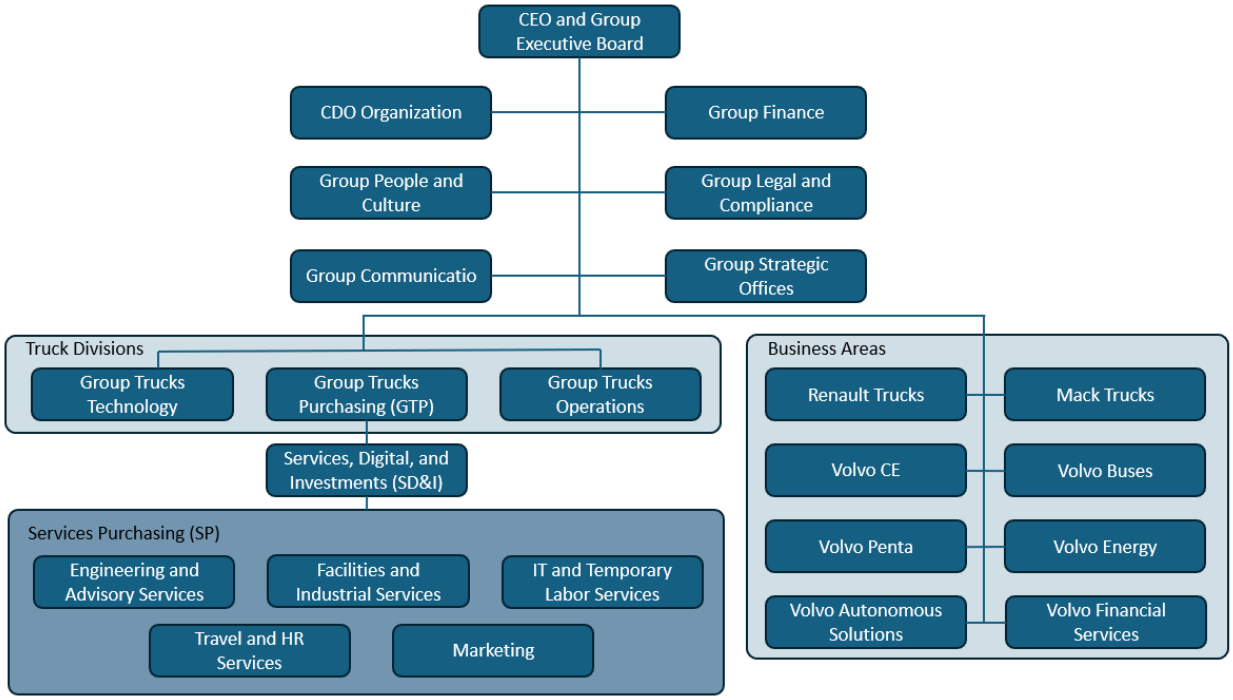

Figure 1.1: Illustration of the Services Purchasing Organization

Volvo SP currently adopts a traditional procurement process focusing mainly on two different sub-processes, S*ourcing and Strategic Procurement.* The sourcing process consists of six general steps: *Defining Specifications, Supplier Scouting, Request for Quotation* (RFQ), *Negotiation and Selection, Contracting, and Sourcing Governance,* and is visualized in Figure 1.2. In addition to sourcing, buyers manage relationships with suppliers and internal stakeholders. They also may hold multiple roles, e.g., as both an operational commodity buyer and a segment leader. As segment leaders, they have increased strategic responsibilities and these strategic activities outside of the sourcing process fall under the process of Strategic Procurement.

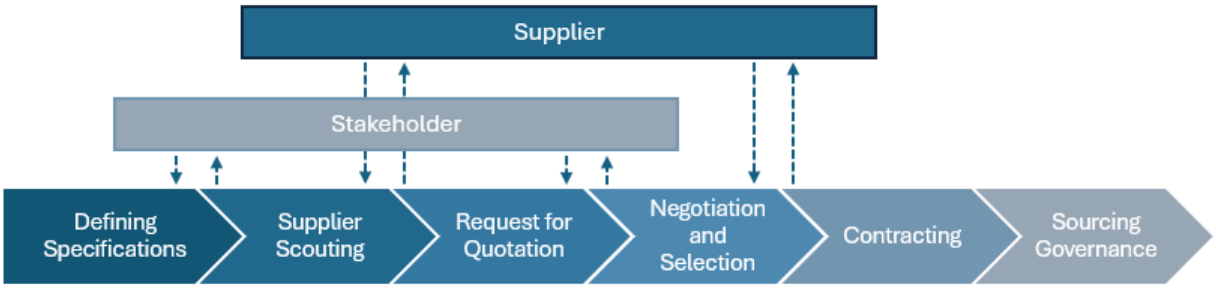

Figure 1.2: Sourcing process of Volvo SP

Despite having several digital tools and platforms supporting them in their day-to-day work Volvo SP believes too much time and resources are spent doing tasks that could be automated or supported by modern technologies such as AI. They do have access to some

rudimentary AI tools such as a contract analysis tool, a chat with your document tool, and an internal ChatGPT model. Their wish is however to gain a deeper understanding of their current pain points and how AI can be used to address the pain points, ultimately enhancing the efficiency of their services procurement process. Changing processes and adopting new technologies are often met with resistance in organizations. Managing change is a process of its own that only gets harder in larger organizations (Kotter, 2012). Therefore, Volvo SP is also curious to know how they can work with change management to support the adoption of AI.

1.3. Aim

The aim of this thesis is to explore how AI can be applied within services procurement. It specifically aims to identify pain points in the services procurement process, evaluate how AI can address them, and provide strategies for managing AI adoption. Thus, three research questions will guide the study:

RQ 1: What are the current pain points in the services procurement process?

RQ 2: How can AI address the pain points in the services procurement process?

RQ 3: How can services procurement units manage AI adoption?

1.4. Delimitations

The study is delimited to only evaluating how AI can be applied to address pain points in the current services procurement process. Hence, AI's potential applicability and efficiency enhancements outside of the pain points will not be studied.

Furthermore, the study will look at AI in procurement at the current state of adoption, meaning that future projects and advancements will not be considered.

2. Theoretical Frameworks

The following chapter presents relevant theory and theoretical frameworks that will form the basis for analysis and discussions of the study. It is structured into eleven different sections covering *Indirect procurement*, *Artificial Intelligence*, *AI in Procurement, AI in Sourcing, AI in Strategic Procurement*, Summary of Frameworks regarding AI Applications, Sensemaking, Information Technology Acceptance Models, C*hange Management Models, Diffusion of Innovation,* and *Summary of Frameworks for AI Adoption.*

2.1. Indirect Procurement

Procurement refers to the management of a company's external resources to enable effective execution of both primary- and support activities (van Weele & Rozemeijer, 2022). It differs from the traditional concept of purchasing in that it focuses on total cost of ownership instead of only price and functionality. The scope of procurement is therefore wider than for purchasing, incorporating both internal stakeholders and first-tier supplier management. Based on the traditional purchase process initially proposed by van Weele (2005), van Weele and Rozemeijer (2022) introduce the *linear procurement process,* illustrated in Figure 2.1, where the full scope of procurement is visualized.

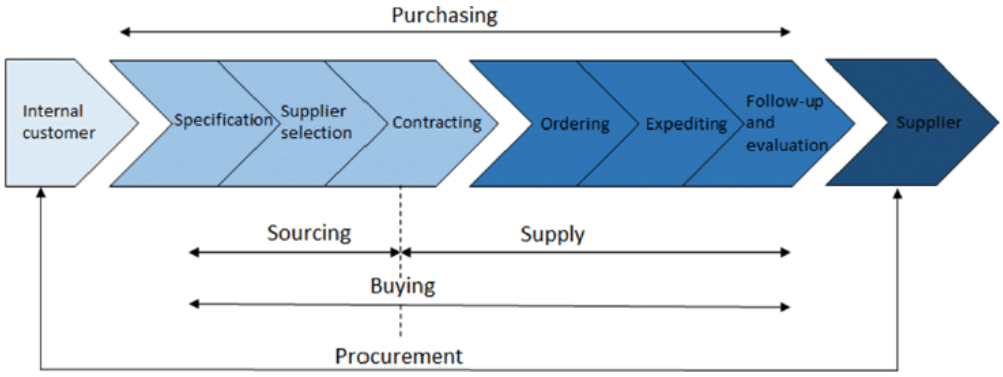

Figure 2.1: Illustration of the linear procurement process presented by van Weele & Rozemeijer (2022)

When discussing procurement, one usually distinguishes between direct- and indirect procurement (van Weele & Rozemeijer, 2022). Direct procurement refers to procurement for primary, revenue generating activities, e.g., materials for manufacturing, and is the area of procurement that receives most attention. Indirect procurement on the other hand refers to procurement of support activities, e.g., maintenance-, repair- and operations supplies, investment goods, and services. Comparing the two, indirect procurement is less tangible, making it difficult to define specifications, create detailed service-level agreements and evaluate performance (Fitzsimmons et al., 1998; van der Valk & Rozemeijer, 2009). Evaluating a supplier of goods through inspection is easy, while evaluating how efficient a contractor is in supplying plant security can be very difficult. Taking these problem areas

into account, van der Valk and Rozemeijer (2009) proposed adding two important sub-steps to van Weele's (2005) traditional purchase process when buying services. The first step involves developing an initial specification with a sufficient level of detail, and the second step focuses on obtaining information and input from suppliers to further detail the specification. Both sub-steps can be included in the scope of the specification process step in the traditional procurement process, signaling the importance of this process step when buying services (van Weele & Rozemeijer, 2022). Delke et al. (2023) further emphasizes the intangibility of indirect procurement by highlighting four personal skills that are of high importance for professionals. The four skills are cross-cultural awareness, communication, flexibility and agility, and change management.

The varied and fragmented nature of indirect procurement has led to smaller companies leaving indirect procurement operations in the hands of the internal user departments (van Weele & Rozemeijer, 2022). However, large international companies have disclosed great savings by having special improvement programs and dedicated indirect procurement functions (van Weele & Rozemeijer, 2022). The importance of the field of indirect procurement is also highlighted by Hofmann et al. (2019) who describes that despite its significance it is an under researched field, both in practice and in academia. Further, both Hofman et al. (2019) and Delke et al. (2023) singles out the need to study emerging digital technologies, like AI, since it is a critical trend within procurement. Answering questions regarding what, where and how big data can be leveraged using AI to optimize and automate the process of buying services is singled out as critical. Important topics include selecting the best service offer and evaluating different service providers (Hofman et al., 2019). This trend within procurement is a consequence of industry 4.0 and therefore often referred to as procurement 4.0 (Bienhaus & Haddud, 2018). Driven by technologies like AI, big data and IoT, procurement 4.0 transforms procurement, enabling an even further shift from operational tasks to strategic activities (Bienhaus & Haddud, 2018).

2.2. Artificial Intelligence

Defining Artificial Intelligence is a strenuous task and there is no common definition. Broad definitions equate AI with algorithms, while strict definitions equate AI with computers imitating inherent human intelligence, causing confusion around what AI really is (Sheikh et al., 2023). The applications of AI are many, including a wide range of techniques and technologies that can analyze data, recognize patterns, automate tasks and support decision-making (Sheikh et al., 2023). To encapsulate all present applications qualifying as AI, while still making room for future changes to that qualification, Sheikh et al. (2023) describe AI as, "systems that display intelligent behavior by analyzing their environment and taking actions – with some degree of autonomy – to achieve specific goals" (p. 20). The definition is broad and inclusive, since Sheikh et al. (2023) believes there needs to be room for future advancements and developments within the field of AI. Hence, when discussing AI

throughout this report a broad definition of AI will be used capturing every different definition and application. AI technologies and techniques will be referred to in the same way as they are discussed in the research papers. When a research paper only discusses AI on a general level, not referring to specific technologies, only the term AI will be mentioned. However, if the research paper discusses specific technologies, e.g., generative AI or machine learning (ML), these terms will be used. This is also important, since the field of AI applications within procurement is not mature enough to exclude research that does not fit a specific definition of AI (Spreitzenbarth et al., 2024).

2.3. AI in Procurement

The analytical and data-driven nature of procurement departments indicates that the adoption of AI will be a crucial step in driving further improvement in the procurement process (Handfield et al., 2019). Early insights show great applicability, but as AI is becoming recognized and researched within other business processes, current academic literature on AI in procurement is still in very early stages (Spreitzenbarth et al., 2024). Existing research is mainly published in technical journals or conferences, while publications in major academic journals with a procurement focus are few. Literature focusing on generative AI applications within procurement is even more scarce. Ooi et al. (2025) only briefly mentions procurement when evaluating the potential of generative AI across several disciplines. Research on generative AI in supply chain management still almost exclusively comes from 'grey literature', referring to studies not published in peer-reviewed journals. However, there is no doubt that generative AI can transform the way we collaborate and communicate, enhancing the efficiency of our supply chains and procurement organizations (Wamba et al., 2023).

Systematic literature reviews on the topic of AI in procurement are also scarce, with Guida et al. (2023) and Spreitzenbarth et al. (2024) being among the most recent and well cited ones. Guida et al. (2023) map out both current research on –and real-world tools and offerings within AI in procurement along an established processual view. The process is structured around three main phases, the sourcing phase, the supply phase and the overarching strategic purchasing phase. It is similar to the linear procurement process (van Weele & Rozemeijer, 2022) and the procurement process of Volvo SP, where strategic purchasing corresponds to strategic procurement. Spreitzenbarth et al. (2024) on the other hand adopts a mixed-method approach focusing on both use-case studies and expert interviews with industry professionals. The findings are organized around 11 'use-case clusters' across three different levels of procurement similarly to Guida et al. (2023), the strategic level, the tactical level and the operational level. Considering the scope and focus of this study, the processual view of Guida et al. (2023) is believed to support the analysis of the procurement process of Volvo SP in the best way. However, the flexible and ad-hoc nature of indirect procurement indicates that one should not limit themselves to only

process thinking, hence the clusters and levels approach of Spreitzenbarth et al. (2024) serves as a complement to the process view of Guida et al. (2023).

Mapping out the AI-based functionalities described in the reviewed research papers Guida et al. (2023) found 80 different functionalities of which 47 could be linked to the strategic purchasing phase, 32 to the sourcing phase, and only one to the supply phase. Amongst others, some of the functionalities described in the strategic purchasing phase are spend analysis, risk management, and supplier performance management. The functionalities described in the sourcing phase mostly revolve around decision support in supplier selection, support in negotiations, contract management, and support in defining specifications and RFQs. The benefits of applying these AI-based functionalities mentioned by Guida et al. (2023) range from higher visibility and control, reduced risk, and better negotiation and supplier selection, to better communication with suppliers, less time spent on non-value adding tasks, and monetary savings. However, several challenges were also identified, such as the availability and systematization of data and the internal analytical skills of the purchaser.

The functionalities described by Guida et al. (2023) are similar to the AI use-case clusters presented by Spreitzenbarth et al. (2024), as well as the predominant AI use domains described by Burger et al. (2023). Most AI use case clusters presented by Spreitzenbarth et al. (2024) are on the strategic- and tactical level, which are the corresponding levels to the strategic purchasing- and sourcing phases of Guida et al. (2023). On the strategic level Spreitzenbarth et al. (2024) highlights support in forming procurement strategies, strategically managing suppliers and supplier sustainability. The highlighted clusters on the tactical level are supplier pre-qualification, cost analysis, negotiation support, automated negotiation, and supplier selection. Burger et al. (2023) reaffirm the findings of Guida et al. (2023) and Spreitzenbarth et al. (2024) mentioning negotiation support, cost analysis and supplier selection as the predominant domains for AI use within procurement.

2.3.1. Automation vs. Smartness

An important distinction when discussing the application of AI within procurement is what Cui et al. (2022) refers to as automation versus smartness. Automation, using AI techniques to automate processes, and smartness, using smart AI algorithms to simulate intelligence, are the two cornerstones of AI's ability (Cui et al., 2022). Other scholars make similar distinctions, where it is also referred to as, e.g., automation versus enhanced decision support, or automation versus augmentation (Guida et al., 2023; Handfield et al., 2019; Spreitzenbarth et al., 2024; Srai & Lorentz, 2019; van Hoek, 2024). Which type of process enhancement should be the focus for future research and practice is, however, not clear. Van Hoek (2024) even asks the question 'do you automate what you master, or do you master what you automate?'. Some argue that automation alone could be harmful for procurement

performance, and that the real benefits come only when automation is supported by smartness (Cui et al., 2022). Others argue that the adoption of AI in procurement will further shift the focus from operational procurement to strategic procurement by freeing time for buyers and improving analytical capabilities (Allal-Chérif et al., 2021; Bienhaus & Haddud, 2018; Gottge et al., 2020). Within the focus group of procurement managers interviewed by Guida et al. (2023) opposite statements on AI adoption in procurement reflect these different views. One manager firmly believed the first approach is to simplify and reduce workload, by automating processes. Only then can firms move towards more strategic activities. While another manager was certain the advanced tools offered within the AI scope will be used to support major, strategic decisions. Increasing operational efficiency might be possible, but the real impact will be in analytics and strategic activities (Guida et al., 2023). Although there seems to be a dichotomy between automation and smartness, related to what is most beneficial and regarding what to prioritize when adopting AI, most scholars tend to end up preaching the joint benefits of combining the two capabilities (Althabatah et al., 2023; Burger et al., 2023; Cui et al., 2022; Guida et al., 2023).

Burger et al. (2023) goes deep into hybrid intelligence, defined as combining human and artificial intelligence to achieve greater results than can be accomplished separately. In a way it is the pinnacle of the automation versus smartness dichotomy, where the two AI capabilities are merged together by also applying human intelligence. When discussing hybrid intelligence, it is established that it is possible to automate standard activities, replace most human intelligence with AI, and augment unique human skills that are still superior using AI. However, while the applicability and upside of hybrid intelligence is showing great promise, research and employed practices are still developing (Burger et al., 2023).

2.4. AI in Sourcing

The following section describes several applications and functionalities of AI in different parts of the sourcing process. Subsections are separated to fit the general sourcing process of the case company, excluding the *sourcing governance* process step since it is an internal approval step at Volvo and research on corresponding process steps was not found.

2.4.1. Defining Specifications

Research on how AI can be applied to enhance the defining specifications step of the sourcing process is limited. However, Gottge et al. (2020) present practical implications of industry 4.0 technologies on the purchasing process. Based on three separate case studies primarily centered on direct procurement, they found two practical implications regarding the defining specifications sub-process: an expanded product scope and supplier-involved specifications. An expanded product scope is the consequence of increased innovation and collaboration, where more digital products require shorter life cycles. Shorter life cycles in turn require the involvement of suppliers in defining product -or project specifications.

Gottge et al. (2020) also discusses IoT-based platforms where modern-day technologies, e.g., AI, can be used to streamline collaboration and supplier involvement.

2.4.2. Supplier Scouting

Guida et al. (2023) refers to supplier scouting as the process of scouting for new suppliers and explains how it has been neglected in AI-research. Meanwhile, the complexities of supplier scouting are addressed by different information technology (IT) providers and applications on the market. So-called web crawlers, that continuously and systematically scan the web for information, are mentioned as a tool to enhance supplier scouting (Guida et al., 2023). Guida et al. (2023) even proposes a future research direction to study the fit between AI and information processing theory in supplier scouting.

Similarly to the supplier scouting mentioned by Guida et al. (2023), Spreitzenbarth et al. (2024) discusses the AI use-case cluster of supplier pre-qualification. With a little less focus on finding new suppliers, supplier pre-qualification refers to evaluating suppliers before initiating a formal tendering or sourcing process. Supplier pre-qualification complements supplier scouting, even if the scouting only focuses on an existing supplier base. Spreitzenbarth et al. (2024) discuss several AI and ML techniques mentioned in research, e.g., fuzzy neural networks or natural language understanding (NLU), that can support supplier pre-qualification. NLU especially, is used by Volkswagen Group who use it to optimize bidder's lists by analyzing specifications and pre-configuring tenders (Spreitzenbarth, 2024). Allal-Chérif et al. (2021) also mentions the use of chatbots at the request for information (RFI) stage. The advantages of using a chatbot are that it can contact more potential suppliers, follow up on the complete set of requirements and uphold good relationships with firms, selected or not (Allal-Chérif et al., 2021).

2.4.3. Request for Quotation

AI can also be applied in the RFQ stage of the process. Cui et al. (2022) points towards surveys revealing that at least 60 percent of companies already use AI to automate the RFQ process. The main AI technique used are chatbots that mimic human interactions, relieving procurement professionals of manual administrative tasks. For example, Cui et al. (2022) explains how the Chinese IT giant Alibaba offers a premium service that integrates chatbot features and streamlined communication to automate the RFQ process.

2.4.4. Negotiation and Selection

Perhaps the most researched field of applying AI in procurement is supplier selection (Burger et al., 2023; Guida et al., 2023; Spreitzenbarth et al., 2024). Out of the 32 AI-based functionalities connected to the sourcing phase, presented by Guida et al. (2023), 17 focused on decision support in supplier selection. If the process of negotiation is also included, the number of AI-based functionalities increases from 17 to 21. Three out of the five AI use-case

clusters on the tactical level, presented by Spreitzenbarth et al. (2024), also fit the process step of negotiation and supplier selection.

Negotiation

Spreitzenbarth et al. (2024) presents two different clusters focusing on enhancing negotiation, negotiation support and automated negotiation. An AI negotiation support system can take different forms. In highly competitive situations it can examine and break down several different offers and recommend an optimized auction setting. When competition is less intense a human buyer can be supported with in-depth analysis of the offers. AI can also be used to support negotiations with missing information, address complex scenarios with knowledge representing and reasoning, as well as support buyers with negotiation tactics tailored for a specific situation (Spreitzenbarth et al., 2024). Similarly, Guida et al. (2023) discusses an application where an AI-based negotiation coach can support a buyer in preparing for traditional face-to-face negotiations. Furthermore, Richey et al. (2023) mention how generative AI capabilities, such as text generation, also can be used to support buyers with negotiation tactics and support.

Automated negotiation systems using AI show great potential in contexts where conventional human negotiations are inefficient and time-consuming (Spreitzenbarth et al, 2024). For example, the American retail giant *Walmart* piloted an automated negotiation software for so called "cookie-cutter" items back in 2021 in collaboration with start-up *Pactum* (Van Hoek et al., 2022). The AI-based software included a chatbot negotiating with human suppliers and resulted in large cost savings and a diminished need to hire new personnel. While there are several technical approaches leveraging AI to automate and improve negotiations, they are dependent on the ability of the system to understand and interpret a counterpart (Spreitzenbarth et al., 2024). There is also skepticism among experts regarding fully automated negotiations. Concerns are both ethical and operational, since autonomous negotiation agents are held to different standards and treated differently by a human counterpart (Spreitzenbarth et al., 2024). Cui et al. (2022) show that automation alone i.e., using a chatbot to inquire about prices automatically instead of in person, yields higher prices than traditional human versus human interactions. Equipping the chatbot with smartness i.e., signaling the use of smart AI algorithms to support negotiation directly results in better performance. The best results are achieved when automation and smartness are used in combination to support a buyer in negotiations. The study of Cui et al. (2022) shows that automation without smartness can backfire on performance. Their findings suggest that companies need to make sure to improve prediction accuracy of their recommendation systems and smart controls before trying to increase autonomy.

Herold et al. (2025) recently published one of the first studies connecting generative AI and procurement in a major academic journal, *Journal of Purchasing and Supply Management*.

The experimental study focuses on how generative AI can reshape the buyer-supplier negotiations of today. By letting a custom-trained ChatGPT-based chatbot act as the buyer in a set of interactive negotiation simulations, similar to Cui et al. (2022), they could analyze how different negotiation approaches yielded different results. A competitively prompted chatbot leads to greater price discounts and quicker negotiations compared with a chatbot prompted with a collaborative approach. However, suppliers trust is higher for a collaborative chatbot resulting in increased satisfaction over outcome and desire to interact in the future (Herold et al., 2025).

Supplier selection

The research field of using AI in supplier selection mainly focuses on selection of suppliers already integrated into the firm's existing supplier base (Guida et al., 2023). Various techniques and methods exist that leverage the potential of AI to process and analyze large amounts of data to optimize supplier selection and support decision-making (Allal-Cherif et al., 2021; Guida et al., 2023; Spreitzenbarth et al., 2024). Asthana and Gupta (2015) propose a model that integrates generic algorithms and artificial neural networks to optimize supplier performance parameters and rank suppliers based on the parameters. Others focus on using different AI techniques to enable and optimize multi-criteria analysis and decision-making, supporting buyers in evaluating proposals in complex scenarios (Hamdan and Jarndal, 2017; Luan et al., 2017; Spreitzenbarth et al., 2024; Yeh and Chuang, 2011). Multi-criteria analysis allows buyers to evaluate and rationalize decision-making not only related to the cost criteria, but also across criteria such as quality, sustainability, and reliability (Spreitzenbarth et al., 2024). However, as mentioned, research on improved supplier selection through AI mainly focuses on decision-making and the firm's existing supplier base.

Richey et al. (2023) also mentions how generative AI can revolutionize procurement organizations in several application areas, specifically supplier selection and evaluation. It can create opportunities for supplier selection and evaluation to become even more automated and supported by generative AI. Applying capabilities such as text generation is believed to enhance procurement performance by providing e.g., in-depth supplier evaluations (Richey et al., 2023).

2.4.5. Contract Management

Leveraging AI to improve contract management is discussed in literature by several scholars (Aziza et al., 2023; Guida et al., 2023; Moretto et al., 2017; Priyadarshni, 2024). Guida et al. (2023) maps three functionalities described in research papers directly connected to contract management, with IT providers offering even more functionalities. Several authors (Aziza et al., 2023; Priyadarshni, 2024) discuss the future of contract management in the light of AI and promise enhancements in both efficiency, accuracy, and decision-making. Aziza et al. (2023) focuses on the oil and gas sector, a sector with highly complex, high-value

contracts requiring thorough processes and risk management. In that sector AI has been used to automate contract management, reducing manual work and enhancing accuracy (Aziza et al., 2023). Fed with input data, historical data and predefined templates, the automated AI support uses ML and natural language processing (NLP) to draft contracts. It both ensures consistency and reduces risks of errors in the contracts (Aziza et al., 2023, Priyadarshni, 2024).

Apart from automating contract management, AI-powered contract analysis is an efficient way to review and analyze contracts (Aziza et al., 2023; Priyadarshni, 2024). Using similar techniques as contract automation, ML and NLP, contract analysis tools can extract and compare important information against standards and legal requirements. With these tools, buyers and contract managers can take proactive actions, receiving risk analysis as well as trend -and pattern recognition (Aziza et al., 2023; Priyadarshni, 2024). Moretto et al. (2017), one of the seminal papers discussing industry 4.0 applications in procurement, provides insights into how BDA can improve contract management. Big data can provide necessary information to manage complex contracts that require continuous monitoring. One case company in Moretto et al. (2017) paper use it to simultaneously compare different complex contracts to streamline the internal process. Table 2.5 summarizes the theoretical framework on AI in the sourcing process concerning contract management process step.

2.5. AI in Strategic Procurement

In the established literature review by Guida et al. (2023), most AI functionalities described in research concern the strategic purchasing phase of the procurement process. Amongst the most described functionalities are, for example, spend analysis and supplier performance management. Spreitzenbarth et al., (2024) also presents three AI use-case clusters on the strategic level, focusing on procurement strategy, supplier management and sustainability. A summary of the theoretical framework concerning AI in strategic procurement can be found in table 2.9.

2.5.1. Spend Analysis

Analyzing spend to proactively identify savings and manage supplier risk is an essential part of working strategically as a buyer (Spreitzenbarth et al., 2024). However, spend analytics is the procurement analytics process in greatest need of insights and current practices provide limited insights (Handfield et al, 2019). Guida et al. (2023) describe nine functionalities directly connected to using AI in spend analysis and position the process as an integral part of the strategic purchasing phase. Using AI in spend analysis is also mentioned by Spreitzenbarth (2024) as part of several AI use case clusters. By leveraging big data and AI, generating strong visuals and analyzing data based on human queries, a new level of insights can be drawn (Handfield et al., 2019). Specifically, the combination of real-time analysis, visual representations and integrated data, both internal and external, will increase the

scope of analyzing spend. One of the case companies analyzed by Moretto et al. (2017) used structured big data to identify problem areas and fragmented spend among their suppliers. The analysis rationalized their spending and by acting on the results they managed to create expected savings of six percent.

2.5.2. Procurement Strategy

One of the AI use-case clusters on the strategic level is procurement strategy (Spreitzenbarth et al., 2024). Decision support and advanced analytics techniques, e.g., fuzzy networks and different ML approaches, used in other application areas are also applicable in supporting procurement strategy. Furthermore, Spreitzenbarth et al. (2024) discusses both agent-oriented-, knowledge-based systems, and recommender systems. Specifically, German industrial giant *Siemens* adopted a recommender system that learned from teams' historical decisions and suggested future, improved actions. Another application that is not generally discussed in digital procurement literature is the use of an enterprise version of ChatGPT. Spreitzenbarth et al. (2024) refers to such an application as intelligent procurement assistant capable of advising chief procurement officers in decision-making. Whether to approach a project through single sourcing or to competitively challenge multiple suppliers is one of many ways an enterprise version of ChatGPT can support strategic decision-making (Spreitzenbarth et al., 2024).

2.6. Summary of Frameworks Regarding AI Applications in Procurement

This section provides a summary of the frameworks regarding AI applications in procurement. Table 2.1 shows the full theoretical framework covering AI in the sourcing process, emphasizing different AI applications and key references for each of the covered process steps. Similarly, Table 2.2 shows the full theoretical framework covering AI in strategic procurement, including the strategic functions of spend analysis and procurement strategy. Together, these frameworks will form the basis for discussions and analysis in later parts of the study.

Table 2.1: Summary of the theoretical framework on AI in the sourcing process

Process Step	AI Applications	Key References
Defining Specifications	Enhanced supplier collaboration via smart platforms; supports defining scope in short product/project cycles	Gottge et al. (2020)

Supplier Scouting	Web crawlers, chatbots, and other AI tools support discovery and pre-qualification of suppliers	Allal-Chérif et al. (2021); Guida et al. (2023); Spreitzenbarth et al. (2024)
Request-for-Quotation	AI chatbots can automate the RFQ process, streamlining communication and reducing manual effort	Cui et al. (2022)
Negotiation & Selection	Different AI techniques can support with negotiation tactics, automated systems, complex decision-making and supplier evaluation	Cui et al. (2022); Guida et al. (2023); Herold et al. (2025); Richey et al. (2023); Spreitzenbarth et al. (2024);
Contract Management	Big data, ML and NLP to enhance contract analysis and automation, comparing complex contracts against standards and legal requirements, reducing risks and ensuring consistency	Aziza et al. (2023); Priyadarshni (2024); Moretto et al. (2017)

Table 2.2: Table summarizing the theoretical framework on AI in strategic procurement

Strategic Function	AI Applications	Key References
Spend Analysis	Leveraging big data, AI, and visual tools to increase spend analysis scope, analyze spending patterns, and identify risks and opportunities	Guida et al. (2023); Handfield et al. (2019); Spreitzenbarth et al. (2024); Moretto et al. (2017)
Procurement Strategy	Advanced analytics (ML, fuzzy logic), agent-based systems, recommender systems, and intelligent assistants	Spreitzenbarth et al. (2024)

2.7. Sensemaking

In answering *RQ 3: How can services procurement units manage AI adoption*?, three perspectives will be analyzed. First of these is sensemaking which is defined by Weick (1995) as "the ongoing retrospective development of plausible images that rationalize what people are doing" (p. 15) and highlights the idea that sensemaking is ongoing, retrospective, focused on plausibility, and rooted in action to rationalize or explain events, disasters, or, in this case, AI technology. In short, sensemaking theories will be used to explain how buyers interpret and give meaning to AI in services purchasing.

Weick (1995) explains sensemaking in organizational contexts as characterized by seven properties: it is grounded in identity construction, retrospective thinking, enactive of its environments, social, ongoing, focused on extracted cues, and driven by plausibility rather

than accuracy, see Figure 2.2 for an explanation of the different properties in relation to change. However, it is important to note that sensemaking does not account for why some events, technologies, or experiences are perceived as meaningful while others are not (Helms Mills et al. 2010).

Seven Properties of Sensemaking in Organizations	
Identity Construction	Who we think we are matters for how we make sense of change
Retrospection	We make sense of thing by reflecting on past changes
Enactment	We partly create the environment in which we try to make sense of the change
Social	Making sense of change is a social process
Ongoing	Making sense of change is a continuous process
Cues Extraction	Sensemaking of change focuses on small pieces of information to make sense of a bigger picture
Plausibility over Accuracy	Making sense of change is more about finding a believable story than objective truth

Figure 2.2: Visualization of the seven sensemaking properties by Weick (1995)

Applying the lens of sensemaking to AI, Hendriksen (2023) argues that AI integration into supply chain management research is not only disruptive in a technological way but is also disruptive to many social processes in the supply chain, thus highly influenced by human sensemaking of AI technology. Hendriksen (2023) explains that integrating AI into supply chain operations can mainly be done in two key dimensions: the level of AI integration across the supply chain, and the role of AI in decision-making. He calls this the AI Integration (AII) framework, see Figure 2.3.

AII Framework	**Partial Integration**	**Full Integration**
Assistive Role	**Human Sherlock - Robot Watson** AI provides insights for specific supply chain activities. Humans do all the decision-making and AI does all the footwork.	**Robot Cartographer** AI provides end-to-end visibility and generates insights for decision-making. Humans still do all the decision-making and strategic work.
Autonomous Role	**Chess Grandmaster** AI has full power over specific process steps including decision-making power. However, humans will retain final decision-making power.	**Artificial Ecosystem** AI has full authority to do all tasks end-to-end with minimal human intervention

Figure 2.3: AI integration framework (AII) (Hendriksen, 2023)

In this framework, Hendriksen (2023) describes each quadrant in the matrix as a state of partial to full AI integration and whether AI has an assistive or autonomous role in the supply chain. However, the author argues that the true impact of AI depends on more than just these two dimensions; it is dependent on how individuals perceive and interact with these systems. Therefore, he emphasizes the human sensemaking process of understanding AI as an important aspect of AI integration. This process is shaped by individuals' experiences and acceptance of AI and ultimately decides whether AI is seen as a tool, an actor, a partner, a threat, a competitive capability, a factor for production, or as a relief in supply chain operations. For instance, an AI positive procurement manager might see it as a strategic tool and competitive capability, and an AI skeptical buyer might see it as a threat to job security. Two diverging perspectives that shape not only how AI is interpreted, but also how it is used, trusted, or resisted within procurement practice.

2.8. Information Technology Acceptance Models

The second perspective in the analysis of *RQ 3: How can services procurement units manage AI adoption?* is information technology acceptance models. Here, two models for IT acceptance, the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) will be used to analyze requirements for further adoption of AI tools (Davis et al., 1989; Venkatesh et al., 2003). This chapter aims to examine these models and explore how they can be applied to the adoption and acceptance of AI tools.

2.8.1. Technology Acceptance Model

One of the most widely used technology acceptance models is TAM, originally developed by Fred Davis in 1989 to predict and explain user acceptance of IT systems (Davis et al., 1989). Its enduring relevance and widespread application have been noted by several researchers (Marangunić & Granić, 2015; Vorm & Combs, 2022). The model suggests that actual system use is a determinant of behavioral intention and attitude, which are defined as a user's motivation or readiness to perform a specific behavior and as a user's overall evaluative judgment (positive or negative) about using a system. These are in turn determinants of perceived usefulness and perceived ease of use (Davis et al., 1989) as visualized in Figure 2.4.

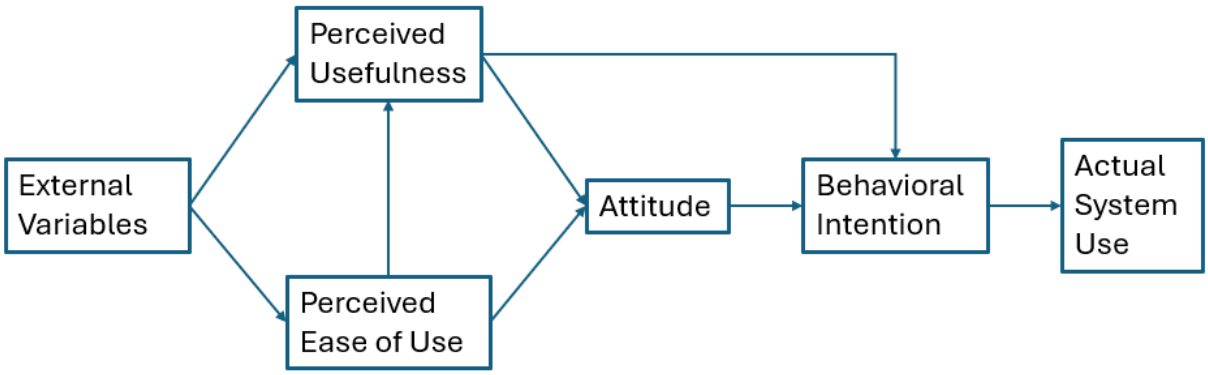

Figure 2.4: Visualization of the TAM (Davis et al., 1989)

Davis et al. (1989) explains that perceived usefulness is the degree to which a person believes that using a system will enhance their job performance and perceived ease of use as the degree to which a person believes that using the system will be free of effort. In the TAM, perceived ease of use is an antecedent of perceived usefulness indicating that an easy-to-use system can be seen as more useful to users. Furthermore, Davis et al. (1989) saw that in some cases, when a system is perceived as useful, it may directly influence behavioral intention without necessarily forming an intervening attitude. This explains the direct path from perceived usefulness to behavioral intention in Figure 2.4.

Extending research to TAM has often focused on antecedents to both perceived usefulness and perceived ease of use shown as external variables in Figure 2.4. Examples include subjective norm, image, job relevance, output quality, and result demonstrability as antecedents to perceived usefulness (Venkatesh & Davis, 2000). Moreover, external control beliefs, computer self-efficacy, computer anxiety, computer playfulness, perceived enjoyment, and objective usability are antecedents to perceived ease of use (Venkatesh & Bala, 2008). Extensions to the TAM also take away the attitude step in the model arguing that perceived usefulness has a stronger direct effect on behavioral intention than through

attitude. Keeping the attitude step, therefore, adds unnecessary complexity without improving explanatory power (Venkatesh & Davis, 2000).

Specific extensions to TAM regarding AI acceptance have focused on trust and trustworthiness as antecedents to behavioral intention (Vorm & Combs, 2022). The authors suggest that transparency could be used to build trust and should be viewed as an antecedent next to perceived usefulness and ease of use regarding intelligent systems, calling the new model Intelligent System Technology Acceptance Model (ISTAM). However, the empirical support for this remains low because of the novelty of it.

2.8.2. Unified Theory of Acceptance and Use of Technology

Limitations of models and theories such as TAM have led to several extensions and modifications of such models and theories with the UTAUT emerging as the most prominent and widely cited theory for acceptance and use of technology (Hasija & Esper, 2022). The UTAUT combines earlier models and theories into a unified approach to predicting a user's use of system within a given context. The model was specifically developed through a review and integration of eight prominent models and theories (Venkatesh et al., 2003). See Figure 2.5.

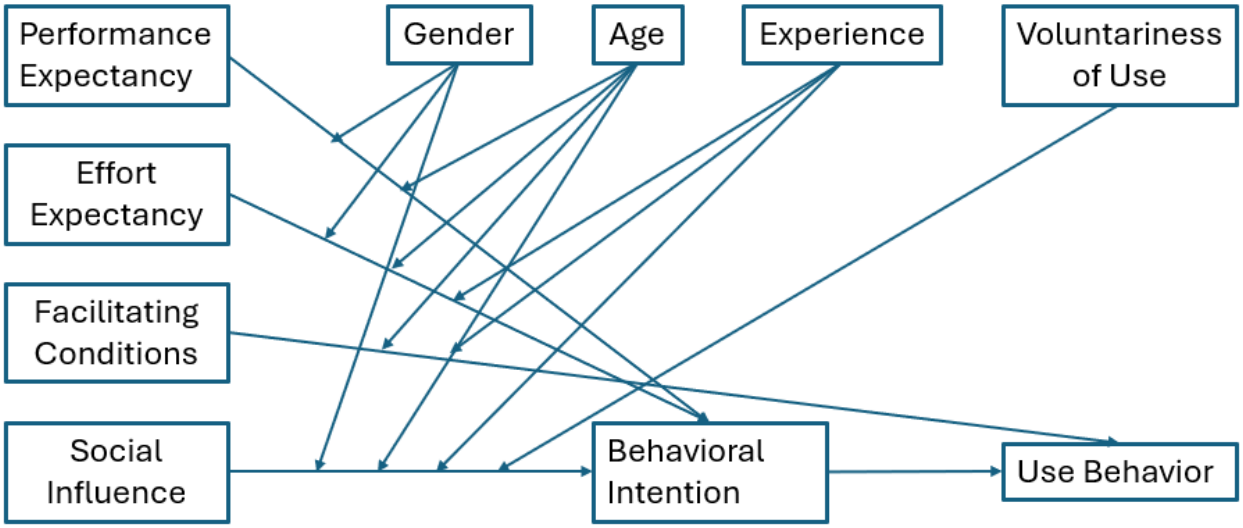

Figure 2.5: Visualization of UTAUT (Venkatesh et al., 2003)

UTAUT consists of four determinants of behavioral intention and usage, namely: performance expectancy, effort expectancy, social influence, and facilitating conditions. Performance expectancy and effort expectancy closely correspond to perceived usefulness and perceived ease of use in TAM, respectively. However, UTAUT extends beyond TAM by incorporating organizational and social factors, such as facilitating conditions and social influence, as antecedents to both behavioral intention and use behavior. Social influence is defined as the degree to which others' opinions (e.g., peers, managers) affect an individual's decision to use a technology, and facilitating conditions are defined as the extent to which

supporting infrastructure (e.g. resources, training, technical support) is available to enable usage. Furthermore, age, gender, experience, and voluntariness of use are seen as moderators of the relationships between the core antecedents to behavioral intention or use behavior (Venkatesh et al., 2003).

Concerning how UTAUT's applicability to acceptance of AI tools, Hasija and Esper (2022) adds to the 'social influence' aspect of the UTAUT, arguing for establishing AI trustworthiness as an important extension regarding AI adoption. This research is especially relevant since it looks at AI adoption in supply chain management. The extension relies on two fundamental aspects: facilitating acceptance of AI by emphasizing trust in the early stages of adoption (priming), and trust by promoting AI use and support post AI adoption (reinforcing).

2.9. Change Management Models

The third perspective in answering *RQ 3: How can services procurement units manage AI adoption?* is with the aid of two change management models. Change management refers to the process of planning, leading, developing, evaluating, assessing, supporting, and sustaining change initiatives, and ultimately consists of models and strategies to help employees accept new organizational developments (Phillips & Klein, 2023). This thesis will discuss two change management models, namely the eight steps of leading change by Kotter (2012) and the ADKAR model by Hiatt (2006). These models provide two different perspectives on organizational change. Kotter's eight steps focus on a top-down organizational approach, and ADKAR on the individuals in the organization as the primary drivers of change initiatives. Both perspectives will be important to consider for the adoption of AI in services procurement.

2.9.1. The Eight Steps for Leading Change

John Kotter's article presenting his eight steps for leading change from the Harvard Business Review in 1995 is one of the most widely known and recognized organizational change models (Appelbaum et al., 2012; Pollack & Pollack, 2015). His following book *Leading Change* from 1996 has been revised over the years, with the last version from 2012. In this book, Kotter (2012) writes that for leaders to successfully manage change, they need to follow eight steps. The first three steps create a climate for change, the next three focus on engaging and enabling the organization, and the two last steps sustain and embed the change into the culture. The eight steps are summarized in Figure 2.6 below:

Figure 2.6: Kotter's 8-steps of organizational change (Kotter, 2012)

According to Kotter (2012), organizational change begins by creating a sense of urgency to motivate people that change is inevitable. This is followed by building a strong team to guide the change as well as developing a clear vision and strategy and communicating it widely to align everyone. The model then emphasizes empowering employees for broad-based action by removing barriers, encouraging risk-taking, and supporting new ideas. Visible short-term wins are generated early to build momentum and help drive change further. Progress is then sustained by consolidating gains and pushing for continuous improvement. Finally, the new behaviors and successes are anchored in the organizational culture to ensure lasting change.

In the revised version from 2012, Kotter (2012) updated the change model to fit the 21-century, emphasizing that while the steps remain the same, change is now a continuous process rather than a linear one. This was later validated in an action research study by Pollack and Pollack (2015). Kotter (2012) also writes that change efforts can overlap and reinforce one another while also being driven by employees at all levels of the organization. In other words, allowing for greater flexibility in the step-by-step process and reducing the emphasis on a top-down approach to change management.

Although Kotter's change model is widely adopted and recommended as a good management model for leading change, it has been the object of some academic scrutiny. Firstly, it has

been criticized for its limited empirical validation. Appelbaum et al. (2012) argues that despite its many citations in academic literature Kotter's change model lacks rigorous empirical fundaments and is based solely on the author's own research experiences and personal business. It notably does not refer to any external sources of information. However, Appelbaum et al. (2012) also acknowledge that the model was not originally intended for an academic audience, and they proceed to validate each of the eight steps, ultimately concluding that it remains a valuable and recommendable framework for practitioners.

A second critique of Kotter's model is its prescriptive nature. While Kotter (2012) argues that skipping any of the eight steps will lead to failure, this approach contrasts with contingency theories, which reject the notion of a single "best way" to manage organizational change (Burnes, 1996). The author argues that if organizations are faced with a situation where rigid, prescriptive approaches run counter to organizational culture, it comes as no surprise that change efforts fail. This points to an inherent problem in the eight steps for leading change – organizations are not all the same.

Despite the critique towards the eight steps for leading change, in the book *The Heart of Change* by Kotter and Cohen (2002), the authors conclude that the main problems organizations face while implementing the eight steps are never due to 'strategy, structure, culture or systems' but rather are about 'changing the behavior of people'. Thus, underscoring the necessity for individual change, as it is through personal transformation that broader organizational change can be achieved.

2.9.2. The ADKAR Model

Following the emphasis on individual change from the last paragraph, the ADKAR model developed by Hiatt (2006) similarly argues that it is not organizations themselves, but the people within them, who collectively shift their behaviors and ultimately drive change. ADKAR is an abbreviation and comprises the stages of *awareness* of the need to change, *desire* to participate and support the need for change, *knowledge* on how to change, *ability* to implement the change, and *reinforcement* to sustain change. While the steps are designed to be followed in a linear sequence, and skipping steps is often cited as a cause of failure, in practice there is a need to approach them iteratively. The steps are illustrated below in Figure 2.7.

Figure 2.7: Visualization of the necessary building blocks for individual change (Hiatt, 2006)

According to Hiatt (2006), in the ADKAR model individual change begins with awareness, which involves recognizing the necessity for change and understanding the risks of not

changing. Emphasis is placed on helping individuals grasp the underlying drivers of the change initiative. Building on this foundation, desire focuses on fostering emotional commitment by connecting the change to personal interests and values, thereby motivating individuals to engage actively rather than merely comply. Once commitment is established, knowledge becomes critical, providing the training, education, and specific guidance needed to bridge the gap between intention and action. This naturally progresses to ability, where individuals must turn their knowledge into practice, developing confidence in new skills while overcoming barriers that may hinder implementation. Finally, reinforcement is about sustaining change and embedding change into culture, processes, and habits, addressing any regression back to old behaviors.

The benefit of the ADKAR lies, as explained earlier, in the increased focus on individuals as key drivers of change which contrasts to the top-down approach of Kotter's model. This is according to Galli (2018) very important when choosing a change management model as the process starts and ends with exactly that – individuals. However, the authors also explains that the strength of this model is also its main weakness; it focuses almost solely on the people side of change, which might make it a better choice for project teams and smaller environments as opposed to large organizations with complex processes.

2.10. Diffusion of Innovation

Finaly, as a base for discussion, the Diffusion of Innovation (DOI) theory, first published in 1962 by Everett M. Rogers, will be used. This is one of the most used frameworks for understanding how individuals adopt new technologies over time (Xu et al., 2024). Over the years, there have been numerous revisions and extensions of this model, but the core ideas have stayed the same with the latest version of the original model from Rogers (2003).

Rogers (2003) defines diffusion as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (p. 5) and explains that all individuals in a system do not adopt new technologies at the same time but can be divided into adopter categories based on their innovativeness. Innovativeness in turn is determined by factors such as socioeconomic status, personality traits, and communication behavior. This allows for a graphical mapping of individuals based on when they chose to adopt an innovation illustrating how innovations, new technology, and ideas spread through a population over time, see Figure 2.8.

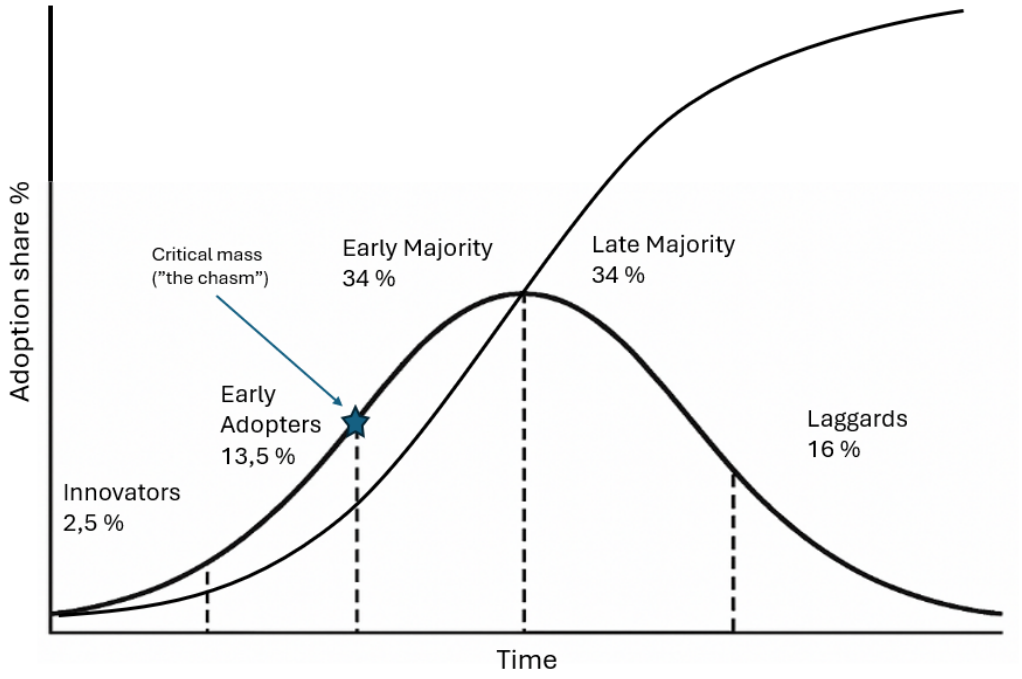

Figure 2.8: Diffusion of technology as an S-curve and normal distribution over time (Rogers, 2003)

According to Rogers (2003) the S-shaped curve represents the cumulative number or percentage of adopters over time, while the bell curve illustrates the normal distribution of adoption across the population. As shown by the S-curve in Figure 2.8, adoption begins slowly, accelerates rapidly once a critical mass is reached, and eventually levels off as saturation is approached in the population.

Rogers (2003) divided the individuals of a system into five adopter groups, namely: innovators, early adopters, early majority, late majority, and laggards based on their levels of innovativeness. Innovators are venturesome, open-minded and inherently curious. They anticipate future needs, are dissatisfied with current offerings, and have high hopes for new solutions. Early adopters are opinion-leaders and often respected individuals in their network. They assess new offerings carefully before adopting as they serve as role models for others and therefore help spread the word to the critical mass – the early majority. The early majority signals the acceptance of the mainstream. They are pragmatic and still open to new ideas but want to see proof of concepts before adopting. The late majority are skeptical about change and approaches innovations with caution. They do not adopt before the vast majority and peer pressure forces them to. Laggards are traditional and very late to adopt, if at all, and this is then due to external pressure or necessity.

According to Rogers (2003) one of the key challenges companies face when introducing innovations is reaching the critical early majority. Geoffrey Moore (2014) describes this hurdle as 'crossing the chasm,' referring to the gap between early adopters and the early majority that can impede widespread adoption. This gap arises because the innovative early

adopters who seek radical change are quite different from the pragmatic early majority who seek incremental improvement and, therefore, do not get along very well. The challenge for innovators is therefore to narrow this chasm to accelerate adoption across all adopter groups.

Apart from the adopter groups, Rogers (2003) identifies five attributes of an innovation that influences how quickly and widely it will be adopted, namely: relative advantage, compatibility, complexity, trialability, and observability. The relative advantage is the degree to which the innovation is perceived as better than the idea or technology it replaces and the compatibility how well it fits with existing values, experiences, and needs of potential adopters. Moreover, the complexity and trialability of the innovation concerns how easy to use and understand it is, as well as the degree to which it can be tested or experimented with before committing to full adoption. Lastly, observability concerns how visible the results of the innovation are to others.

Concerning DOI of AI in the workplace, Xu et al. (2023) introduced threat of technology, especially job insecurity, as an innovation attribute. The authors found that concerns about job security had a significant negative effect on attitudes toward AI adoption in the workplace. Furthermore, they found that relative advantages, compatibility, and observability were positive predictors of AI adoption in the workplace and emphasized that these attributes must be addressed in the promotion of AI in the workplace as well as addressing job insecurity with transparent communication and reskilling opportunities.

2.11. Summary of Frameworks for AI Adoption

As made clear from the sections above, the adoption of AI in services procurement will be described from three perspectives in answering *RQ 3: How can services procurement units manage AI adoption?*. Sensemaking as described by Weick (1995) analyzes how buyers make sense of AI in procurement. This is an important first step in interpreting cultural aspects of how buyers perceive AI in relation to their work and aims to provide insights into technology resistance, enthusiasm of the technology, and the attitude buyers might have towards the potential role and integration of AI in decision making (Hendriksen, 2023).

IT acceptance models, namely TAM and UTAUT (Davis et al., 1989; Venkatesh et al., 2003), focus on barriers and necessary requirements for broader acceptance of AI tools. They provide insights into the usefulness and ease of use of AI tools and extensions to models, like ISTAM (Vorm & Combs, 2022), capture specific factors influencing the acceptance of AI tools.

Lastly, as previously established in the introduction, successful AI adoption requires effective change management. In this study two frameworks considering change management on both an individual and an organizational level, ADKAR and Kotter's eight steps, are discussed as complementary to each other (Hiatt, 2006; Kotter, 2012). It is

paramount that change management is conducted on an organizational level providing vision and strategy for broader adoption, as well as on a local level providing employees with the right tools and processes to adopt effectively.

3. Methodology

In this chapter the methodology is presented. The authors have put great care in accounting for each step of the process to provide the reader with a thorough understanding of the methodology. The chapter starts with the research design to present an overall plan and design for how the study was conducted. Then follows the research strategy and approach which briefly addresses the philosophical and logical foundations. Furthermore, data collection methods to account for specific methods and techniques used to collect the data. Lastly, an account for how data was analyzed, and some comments on how the literature review was conducted will be presented (Bell et al., 2022). It ends with a discussion about trustworthiness and limitations of the methodology.

3.1. Research Design of the Study

The research is explorative in its nature and aims at exploring how AI can be applied in services procurement at Volvo SP. Because of the explorative nature the study adopts a qualitative approach and a single case study design as recommended by several researchers (Bell et al., 2022; Yin, 2018).

The study was divided into three phases: an introduction phase, an executional phase, and a completion phase. In the introduction phase a literature review was conducted, focusing on AI in Procurement, Indirect vs. Direct Procurement, Change Management Theory, Technology Acceptance Theory, and Diffusion of Innovation. Emphasis was also put on gaining contextual understanding of Volvo SP's organization, people, and processes. Therefore, much time was spent on site in Arendal where a total of six unstructured interviews were conducted, and many informal conversations were held to gain a thorough understanding of the environment and the topic. At the end of this phase the aim, scope, purpose, research questions, and methodology were confirmed and approved by the supervisors at Volvo SP and Chalmers. Towards the end of this phase, an interview guide was also designed as preparation for the semi-structured interviews with buyers that constituted the primary data collection of the study in the second phase.

The second phase focused on conducting the semi-structured interviews, the following thematic analysis of the collected data, and the initiation of the report. During this phase, 14 semi-structured interviews were conducted with a selected sample under the umbrella organization Volvo SP. The interview guide for the semi-structured interviews was updated and allowed to change as more insights were gained throughout the interviewing process. The final version of the interview guide can be found in the appendix of the report. This provided the data necessary to answer *RQ 1: What are the current pain points in the services procurement process?* and *RQ 3: How can services procurement units manage AI adoption?.* Additionally, the Digital Products department at Volvo, who develops and provides

processes and IT tools for Volvo SP and other departments at Volvo GTP, provided valuable input and support in addressing *RQ 2: How can AI address the pain points in the services procurement process?.* Finaly, a ranking of the top four applications of AI in the services procurement process was made. The ranking was based on the frequency of which a pain point was mentioned in the interviews, the perceived business impact of addressing the pain point and the applicability of the AI solutions. Figure 3.1 provides a schematic overview of the research design.

The third phase focused on completing the study by writing the report and making presentations for Volvo SP and Chalmers. During this phase some final insights were collected from supervisors and complementary people at Volvo SP.

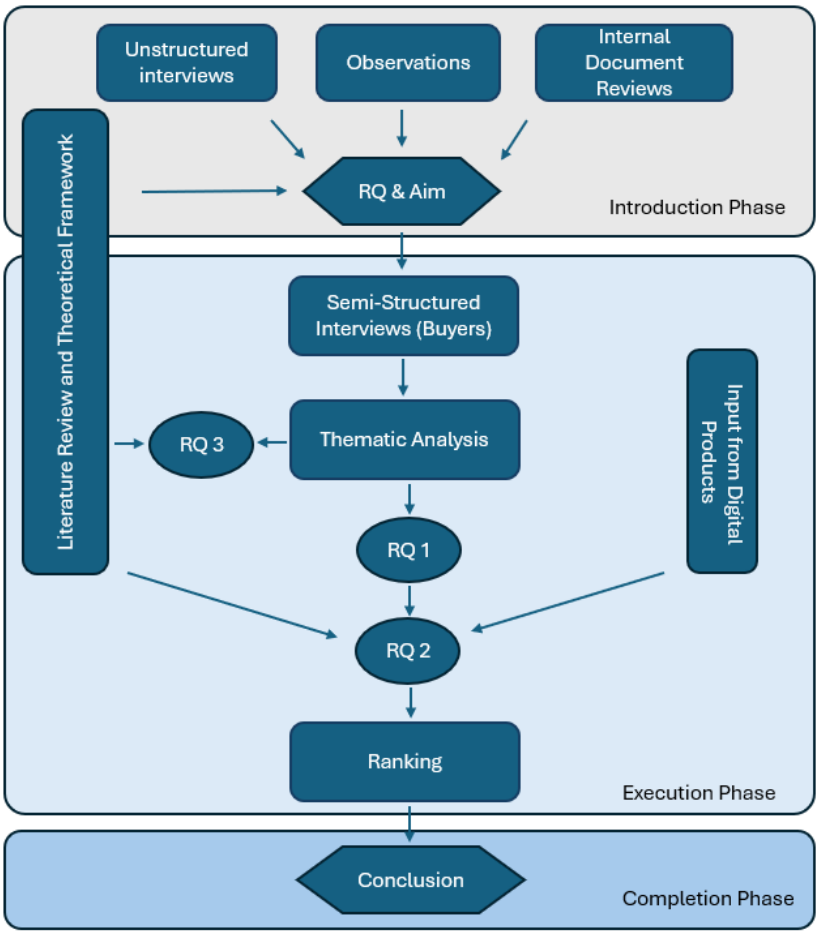

Figure 3.1: Schematic overview of the research design

The research was based on a single explorative case study. This design was recommended by Yin (2018) when dealing with the in-depth exploration of a phenomenon within its real-world context. To support this, comprehensive contextual studies were encouraged since there is no clear boundary between the studied phenomenon and its context. In other words, the way AI is implemented at Volvo SP is highly company specific and must therefore be

studied within its natural environment. The case study design integrates multiple data sources, including unstructured and semi-structured interviews, observations, and internal documents, to ensure a comprehensive understanding of AI adoption at Volvo SP and triangulation of the findings.

The time horizon will be cross-sectional which refers to a study that captures data at a specific point in time rather than over an extended period (Saunders et al., 2016). This means that the study does not aim to track any development over time but will provide a snapshot of Volvo SP at a given moment. Limitations of this include that the findings might be influenced by temporary conditions and that identified pain points or perceived challenges of AI might change in the future. However, the natural time constraint of the study provides a "forced" time horizon which will have to be respected.

3.2. Research Strategy and Approach to Theory

This study adopts epistemological and ontological assumptions rooted in subjectivism and interpretivism, meaning that knowledge is considered subjective and constructed through human experiences and social interactions. This is a prerequisite for the explorative nature of the study which is highly people oriented and values their experiences and perceptions. As a natural consequence of these assumptions, the research adopts a qualitative methodology which is recommended for these kinds of case studies (Saunders et al., 2016; Bell et al., 2022).

Regarding the approach to theory, the study adopts a mix of deductive, inductive and abductive reasoning, integrating both theoretical frameworks and empirical data. In identifying pain points in the services procurement process, the analysis was inductive and structured around an identified process. An abductive strategy was adopted regarding how AI can address these pain points where the study combines a theoretical framework with empirical input. Regarding sensemaking, change management strategies, and technology acceptance requirements for AI adoption, the study draws deductively on established theoretical models within the area (Saunders et al., 2016; Bell et al., 2022).

3.3. Data Collection Methods

The study was conducted using mainly two data collecting methods: unstructured, and semi-structured interviews. In relation to the result and aim of the study, semi-structured interviews were the primary source of data, and unstructured interviews as a method of data collection to create a contextual understanding of Volvo SP in the introduction phase and validating findings in the completion phase. Moreover, some comments on internal document analysis and observations will be provided as well as a brief explanation of the sampling process.

3.3.1. Unstructured interviews

For the introduction phase of the study six interviews were conducted of an unstructured nature with the Line Managers and the Digital Products Manager. The objective for these interviews was to gain a general understanding of the procurement process for services at Volvo SP and explore how AI is already being implemented to be able to define an aim, purpose, and research questions for the study.

Unstructured interviews are in comparison with structured and semi-structured interviews very open ended with only some general topics for the interview to cover (Bell et al., 2022). This makes them ideal for situations of explorative nature where emphasis is put on the respondent's subjective perceptions of the topic covered in the interview. According to Yin (2018), developing a deep understanding of the study's context is essential for conducting a successful case study and goes well with the overarching explorative nature of the study in general. The unstructured interviews were not recorded and conducted in the Volvo SP office, when possible, but a few were conducted online for convenience reasons. Table 3.1 provides a summary of the unstructured interviews.

Table 3.1: Table summarizing the unstructured interviews

Respondent	Role	Interview Type	Length
M1	Line Manager	Unstructured	N/A
M2	Line Manager	Unstructured	N/A
M3	Line Manager	Unstructured	N/A
M4	Line Manager	Unstructured	N/A
M5	Line Manager	Unstructured	N/A
DP1	Digital Products Manager	Unstructured	N/A

3.3.2. Semi-structured interviews

For the second execution phase of the study, semi-structured interviews were held with buyers from the different segments in Volvo SP. These focused mainly on identifying pain points in the current services procurement process and exploring the respondents' attitudes towards AI in their work.

Semi-structured interviews have a rough structure with some general questions but are open to spontaneous sidetracks to allow for exploration of further relevant topics (Bell et al., 2022). An interview guide was developed for this drawing on insights from the unstructured interviews, observations, internal document review, and literature review. The interview guide comprised approximately 20-30 questions but allowed for variations and sidetracks depending on the respondent's position in Volvo SP and personal interests. It was not treated

as a static document and was allowed to change during the interviewing process as the authors gained more knowledge and information on the topic.

The semi-structured interviews were recorded and transcribed by an internal function in Teams, also when the interview was conducted in the office, before being thoroughly transcribed manually to ensure trustworthiness. Data from the interviews was then stored on Volvo owned platforms to reduce the risk of any sensitive information leaking out. During this process any identifying details were removed from the transcripts to reduce the risk of bias and ensure anonymity. The respondents were informed about anonymity, confidentiality, the planned use of the data collected, and how it was stored as well as being asked permission to record the interview. This was to ensure the confidentiality of the respondents and to make them feel safe and in complete control of the situation, which hopefully aided in providing the authors with truthful answers. A table of all interviews conducted is presented below, see table 3.2.

Table 3.2: A table summarizing the semi-structured interviews

Respondent	Role	Interview Type	Length
R1	Buyer	Semi-Structured	57 min
R2	Buyer	Semi-Structured	53 min
R3	Buyer	Semi-Structured	47 min
R4	Buyer	Semi-Structured	1 h 3 min
R5	Buyer	Semi-Structured	1 h 8 min
R6	Buyer	Semi-Structured	37 min
R7	Buyer	Semi-Structured	1 h 20 min
R8	Buyer	Semi-Structured	1 h 2 min
R9	Buyer	Semi-Structured	1 h 7 min
R10	Buyer	Semi-Structured	52 min
R11	Buyer	Semi-Structured	1 h 10 min
R12	Buyer	Semi-Structured	34 min
R13	Buyer	Semi-Structured	1 h 14 min
R14	Buyer	Semi-Structured	1 h 12 min

There are approximately 52 buyers working in Volvo SP and therefore a sampling had to be done since interviewing all the buyers was not feasible. A sample of 14 buyers was chosen based on recommendations from the line managers to ensure that different perspectives from different business areas were brought to light. The sample included buyers of different ages, with varying time working at Volvo SP, and from different cultures and backgrounds. This way of sampling is a non-probability sampling, and more specifically, a purposive sampling as explained by Bell et al. (2022).

3.3.4. Internal Document Analysis

In the introduction phase of the study an internal document analysis was conducted. The analysis of internal documents in this case means interpreting information in the form of documented sources of secondary information. Two kinds of documents were used in this analysis: internal informative PowerPoint presentations and recorded videos from information sessions. These were primarily used for developing an interview guide and a contextual understanding of Volvo SP's processes and current AI landscape. Furthermore, they were used to triangulate the empirical findings from interviews (Säfsten & Gustavsson, 2023).

3.3.5. Observations

In the introduction phase observations were made to gain contextual understanding and aid in the development of an interview guide. These were conducted in the office and were informal, non-participative, overt, and unstructured (Säfsten & Gustavsson, 2023). To some sense they served to validate findings and prove points made in interviews, thus having some value as tools for triangulation as well.

3.4. Data Analysis Method

The study used thematic analysis as the data analysis method for the semi-structured interviews that constituted the main findings of the study. Thematic analysis is a method for identifying broad themes and patterns in qualitative data and is well-suited for explorative research (Bell et al., 2022). It followed a general framework for conducting thematic analysis proposed by Säfsten and Gustavsson (2023).

First, the authors familiarized themselves with the interview data by transcribing, making notes, and discussing things that seemed interesting in the data. Secondly, initial codes of interesting phenomena were identified and added into an Excel spreadsheet to keep track and order of the codes. The codes were finally grouped into themes and were then reviewed to ensure they accurately reflected the data. At this stage, the themes were labeled and structured in ways that provided answers to the concerned research question (Säfsten & Gustavsson, 2023). This entire process was very iterative as interviews were transcribed and themes were reviewed continuously during the process.

Concerning *RQ1: What are the current pain points in the services procurement process?* the identified themes constituted the identified pain points and were structured around the identified process steps of services procurement. In *RQ2: How can AI address the pain points in the services procurement process?* and *RQ 3: How can services procurement units manage AI adoption?* the identified themes served as the basis for analysis through theoretical frameworks as described in *2. Literature Review and Theoretical Frameworks.*

3.5. Literature Review

The literature review was conducted using three main methods. The first method was searching for relevant journal articles, conference papers, and books on Google Scholar. The second method was asking ChatGPT for help to find relevant sources, however, not as a source of information on its own. The third method was backward snowballing from relevant papers, articles, and books (Bell et al., 2022).

Relevance was determined by recency and citation count, though in areas such as change management, sensemaking, TAM, and DOI, seminal papers were included due to their foundational significance. The search terms used included: “AI in Procurement,” “Artificial Intelligence,” “Services Procurement,” “Indirect Procurement,” “Change Management,” “Technology Acceptance Model,” and "Diffusion of Innovation" in different combinations.

3.6. Ensuring Research Quality of the Study

The quality of the study will be discussed in the terms of trustworthiness first presented by Lincoln and Guba (1985). This concept was developed as an alternative to reliability and validity in qualitative research. Hence, a detailed discussion about the study’s credibility, transferability, dependability, and confirmability follows.

Credibility refers to the study’s ability to measure what it is supposed to measure (Lincoln & Guba, 1985). The study ensures credibility in two ways. Firstly, by triangulation of the data. To do so, data was continuously cross-checked with theory, observations, internal documents, and other respondents. Secondly, in accordance with Yin (2018), the first part of the study was highly explorative and devoted to understanding and researching the environment and context in which the population works in. This was done to achieve a deep understanding of Volvo SP as an organization and, consequently, to improve the study’s credibility.

Transferability refers to the extent to which the findings of the study apply to other contexts, settings, or groups (Lincoln & Guba, 1985). This is particularly relevant given the study's qualitative methodology. The study applies two ways of arguing for its transferability. Firstly, according to Bell et al. (2022) the findings of a single case study are not automatically representative of other populations. To get representative value, they must be synthesized to a theory on which the transferability can be assessed and verified in relation to prior research on the area (Saunders et al., 2016). Secondly, in line with Saunders et al. (2016), transferability can be improved by accounting and discussing their choice of methodology thoroughly. This will provide the reader with an opportunity to assess the findings of the study on their own.

Dependability concerns a study’s consistency and stability of measurement or result (Lincoln & Guba, 1985). According to Saunders et al. (2016), dependability of qualitative

studies has some inherent complications. These are attributed to the subjective nature of the data collection, which usually comes from observations and different forms of interviews, but Saunders et al. (2016) add that these complications can be remedied by a detailed explanation of how the study was conducted, and triangulation of its results. Hence, the authors of this study took great care to present all the necessary steps and actions taken to improve the dependability of the study.

Confirmability refers to the degree the study's findings are shaped by the actual data and experiences gathered from the chosen sample, or if they are in fact shaped by the author's biases and assumptions (Lincoln & Guba, 1985). Basically, ensuring that the research has been conducted in good faith (Bell et al., 2022). On this point, triangulation of data is once again advised (Saunders et al., 2016). On top of this, close connections with the supervisors at Chalmers and Volvo SP were maintained throughout the study and reflective reasoning of the study's findings was continuously discussed to ensure that any unwanted bias is brought to light.

3.7. Ethical Considerations

Ethical considerations concern the safe and fair usage of data, ensuring that respondents are informed about how data will be stored and that their identities are protected through anonymity (Säfsten & Gustavsson, 2023). All sensitive company data, including documents, presentations, and digital material related to Volvo SP, has been stored exclusively on internal company platforms to prevent unauthorized use in accordance with GDPR (European Union, 2016).

Participation in the interviews was entirely voluntary, and respondents had the right to withdraw at any time. To ensure transparency, the aim and purpose of the study was clearly communicated, and oral consent will be obtained before the interviews begin (Bell et al., 2022).

Additionally, employees perceptions of AI adoption may also be influenced by concerns about job security or organizational changes, potentially affecting responses during interviews. To address this, emphasize was put on the neutral and exploratory nature of the study to reassure the participants that their insights were only used for understanding, not evaluation.

3.8. Limitations of the Methodology

In qualitative methods, especially interviews, there is an inherent risk of different kinds of bias (Saunders et al., 2016). The risks are threefold. Firstly, respondent bias where the respondent provides socially desirable answers instead of their true opinions. To mitigate this, the interviewers took great care in creating a safe and open environment, ensuring that the respondents felt in control of the situation, and free to speak their minds. Secondly,

interviewer bias, where the interviewers' assumptions or phrasing may unintentionally influence responses. To mitigate interviewer bias, the interviewers continuously reviewed the interview guide and tried to be as neutral in the interview situation as possible. Thirdly, participating bias, which means that respondents might be hesitant to participate due to time constraints, cultural norms, or concerns about the study's intent. This was addressed by clearly communicating the study's purpose and ensuring that participation remains voluntary and confidential.

The interviews were scheduled to take one to one and a half hours. Even though the authors believe this to be sufficient time, there is a risk of limited time restricting the depth of the interviews.

As discussed in the transferability section, a single case study design presents inherent limitations, as focusing on one business unit may restrict the study's applicability to other industries or organizations. While measures were taken to enhance transferability, this limitation remains.

Regarding sample size and selection, a purposive non-probability sampling approach, based on recommendations from line managers, is not ideal for reducing bias. However, this method was chosen to ensure a diverse sample, which could not have been achieved through random sampling. While random sampling might have improved randomness and data quality, it risked missing key perspectives necessary for a comprehensive analysis.

The interpretation of themes in thematic analysis is inherently influenced by researcher bias, as it relies on the researcher's judgment. This means that pre-existing assumptions may shape the themes identified, and different researchers might derive different interpretations from the same data. To mitigate this, triangulation with literature has been applied to enhance credibility and reduce subjectivity (Bell et al., 2022; Saunders et al., 2016).

4. Empirical Findings

The following chapter will present the empirical findings gathered throughout the study. It is separated into sections covering the current procurement process of Volvo SP, identified pain points within this process, and identified themes relating to sensemaking, technology acceptance, and change management. The chapter aims at answering RQ1 and provide a foundation for analysis concerning RQ3.

4.1. Volvo SP Procurement process

The following section describes the general procurement process of the Volvo SP department. It is separated into two different sub-processes, S*ourcing* and S*trategic Procurement.*

4.1.2. Volvo SP Sourcing process

The general sourcing process within Volvo SP, visualized in Figure 4.1, is common across all five segments and consists of the 6 steps *Defining specifications, Supplier Scouting, Request for Quotation, Negotiation and Selection, Contracting,* and *Sourcing Governance,* following an internal need to initiate the process. Important points of contact between the buyer, the supplier and the stakeholder are also visualized in Figure 4.1 However, considering the differentiated nature of indirect procurement, the sourcing process and way of working in the different segments vary on a more detailed level. While one buyer in one segment only goes through the sourcing process once every couple of years, another buyer in another segment may have several sourcing in progress at once. Time spent on a single sourcing may also vary, both between different segments and within segments.

On a more detailed level the defining specifications phase aims to define the scope of the service need. Through collaboration with the key internal stakeholders the scope and pre-requisites for the service can be defined and articulated in a statement of work (SOW). The SOW and discussions about the need then lead to the supplier scouting phase where potential suppliers that can realize the service need are identified. In most cases the buyer has enough knowledge about the supplier base that they can easily identify the best prospects. To stay competitive buyers are encouraged not to use single sourcing. When several supplier prospects are found the buyer, in collaboration with the stakeholder, creates an RFQ or Request for Proposal (RFP) in SAP Ariba, an established enterprise resource planning (ERP) system, that is sent to the suppliers. Buyers use the terms RFQ and RFP interchangeably, but the process step will be referred to as RFQ only. The suppliers then respond to the RFQ with their quotation and proposal, and a Q&A meeting where suppliers can ask questions to the buyer and the different stakeholders are held. When all questions have been answered and all proposals have been presented, the buyer evaluates the different options and takes a decision on which supplier(s) to go further with. Here, tools such as self-

assessment questionnaires are used as evaluation support, and negotiations about the specifics around the deal between the buyer and the supplier representative are held. When negotiations are done and the best possible supplier proposal has been chosen, the buyer continues with setting up the contractual agreement between Volvo Group and the supplier in SAP Ariba. In most cases there is already a master agreement in place between Volvo Group and the supplier resulting in only needing to set up a stand-alone agreement for the specific sourcing project. In the contracting phase the legal department is usually involved in answering legal questions and managing legal risks when changes to contractual templates are proposed. At this stage the spend associated with the project is well known. The bigger the spend the higher the level of sourcing governance is required. When higher levels of sourcing governance are required, the buyer needs to prepare a presentation and defend their choice of supplier for internal approval. Lower governance levels only require the buyers' line manager to approve the sourcing. Upon internal approval the buyer can sign the contract on behalf of Volvo and finish the sourcing.

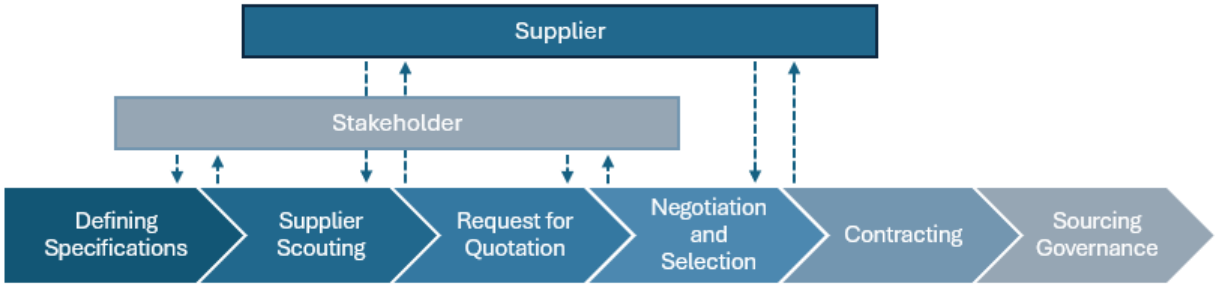

Figure 4.1: Sourcing process of Volvo SP

4.1.3. Volvo SP Strategic Procurement

Buyers in Volvo SP do not only work with sourcing projects. Managing relations with both internal stakeholders and external suppliers is another key part of a buyer's responsibility. Different buyers also have different roles, and one buyer can have several roles. For example, some buyers are both commodity buyers and segment leaders. As a commodity buyer you have more operational responsibilities conducting sourcing projects and managing supplier relations. Segment leaders have a more strategic responsibility, setting strategic directions for the segment and analyzing spend data. It is their role to spread best practices across the segment and make sure general strategic guidelines are followed and continuously improved. These more general and strategic activities are grouped together into the broader process of strategic procurement.

4.2. Pain Points in the Services Procurement Process

This section aims to provide the reader with an answer to *RQ1: What are the current pain points in the services procurement process?* The section will be structured around the services procurement process described in *4.1. Volvo SP Procurement process.*

4.2.1 Pain Points in Sourcing Process

Stakeholder alignment

As described by several buyers, the sourcing process starts with a specification's definition. A pain point here lies with stakeholder alignment. Stakeholder alignment refers to the process of arriving at a decision that both buyers and stakeholders can agree to, including discussions about price and value propositions of different suppliers. There are two explanations for this: buyers and stakeholders are not synchronized concerning strategy, or not fully realizing the value of sourcing on the stakeholder side, as described by R1 and R11.

"Many times, purchasing and the stakeholders aren't super synchronized when it comes to strategy and the choice of supplier." - R1

"I have to sell why we are doing what we're doing and what value we bring with it, and getting alignment with stakeholders can definitely take time." - R11

Finding Potential Suppliers

The next step in the sourcing process is supplier scouting. This step is often skipped by buyers as the supplier usually already exists in the supplier base or is recommended by the stakeholder. There are also general strategic guidelines encouraging buyers to consolidate the supplier base. However, the reason for skipping the scouting step might also be that it is time consuming and that buyers do not feel they have time for it, as described by R13. Hence, buyers are not very good at finding new supplier when it is needed. This is problematic because it can lead to missed opportunities for better pricing and innovative offers, limiting the potential value delivered to the organization.

"And maybe also [use AI] in sourcing - meaning actually scouting the market and finding suppliers - we're not very good at that, because we don't have time for it." - R13

Onboarding

When it is necessary to involve a new supplier, outside of the current supplier base, there is a need to onboard the new supplier. This includes setting up required contracts and adding them into the different systems used for the sourcing process. When a new supplier, not included in the current supplier base, is identified to be suitable for a sourcing project, the onboarding process is described as time-consuming. R10 specifically mentions that aggreging on and signing a non-disclosure agreement (NDA) can take months.

"Yeah, but something that always takes a lot of time for us, or often does, is when we have new suppliers coming into the system. It's the kind of thing, like signing an NDA, that can take months because there are some points that the suppliers don't agree on." – R10

Creation of RFQ

Following this is the RFQ step. RFQ creation is emphasized by the buyers as a time-consuming and manual process including a lot of administrative tasks that require cross-functional collaboration between the buyer and the stakeholder. This is identified as a large bottleneck by the buyers where there ought to exist a more efficient or even automatic solution, as described by R1, R11, and R14.

"When we actually create the RFP (RFQ), I think there should be better support for building how it should look and so on. There needs to be a more efficient solution." - R1

"They [the stakeholder] write it [the RFQ], but we are here to help, and that's also something we are working on. I believe automation could be useful for that, as well as for entering the information into our systems." - R11

"This part [the RFQ] is really, really time-consuming. It also requires several hours of full focus, because it's so difficult to pick up where you left off - like which questions you asked and which ones you didn't." - R14

Benchmarking

Several buyers also identify benchmarking as something that can take time and be difficult to find information about. Benchmarking in this case means comparing price levels with the market standard. R8 and R13 describe how knowing where to position themselves in terms of price can be difficult, especially considering the differentiated and specialized nature of services. Benchmarking also concerns the next step of negotiation and selection.

"I've spent a lot of time on benchmarking. We really need to know exactly where we can position ourselves so that we're not getting tricked either." – R8

"I mean, that [contract management] and also a price comparison - when we need to benchmark, you know." R13

Q&A Meetings

Another pain point related to the RFQ step is the Q&A meetings including buyers, suppliers, and stakeholders. These meetings are very important to clear out any misunderstandings and a possibility for different parties to ask questions to each other. However, these meetings are hard to schedule since they involve many people and take up a lot of time, according to R11 and R14. Several buyers repeatedly explain that these meetings take up a lot of time due to unclear requirements and questions asked in the RFQ.

"Also, when we receive questions - when an RFQ is sent out, there is usually a Q&A session held with the suppliers. And there tend to be a lot of questions… because the requirements aren't clearly defined." – R11

"Q&A is also a bit of a time consumer, because you need to find time in the stakeholders' calendars, the suppliers' calendars, and basically anyone in the project team." - R14

Manual Transfer of Data

At the RFQ step in the sourcing process there is also a need to manually transfer a lot of data and information between the different systems, which is seen as a non-value adding activity, as described by R11. This problem is not only applicable to this step but also applicable to contracting and several other steps in the process that require interactions with the systems.

"Then I basically transfer that information to another system, and that also takes time. …a bit of manual copy-pasting." - R11

Negotiations

Next up is the negotiation and selection step. When it comes to negotiations with suppliers, a pain point is the time-consuming process of analyzing and negotiating with suppliers, as described by R10. Buyers emphasize that one must prepare negotiations to perform them well but that this sometimes can be tedious work. Especially since this often includes going through the systems manually and reviewing different offers.

"It takes time when you analyze, and it also takes time when you're negotiating an agreement, you know." – R10

Evaluating Proposals

Concerning the selection of suppliers, the buyers are experiencing some difficulties in assessing quality and comparing offers since it is not always straight forward how to do that, as figuratively described by R8 and R10. Buyers explain that this problem to a broad extent is due to the inherent qualitative nature of buying services where offers are difficult to compare objectively.

"It's difficult, because here we're not comparing apples to apples - most of the time we're actually comparing apples to pears. So, it can be hard to compare the prices." - R8

"I mean, if you're buying a screw for a truck, I think it's pretty clear - here's the drawing and just give us exactly this. But for us, when it comes to services or more service-based products, for example, it's often the case that the suppliers come in with slightly different solutions." – R10

Manual Contract Management

Contracting is the next step in the sourcing process. Buyers refer to contracting as the process of drawing up the terms and conditions of the contract. Here there is still a need for

negotiation, but more on contractual terms and wording as understood by R8 and R10. This step is, according to several buyers, the heaviest in terms of workload.

“And after that, you move more into the negotiation part in the contract writing and all that, and it takes quite a long time.” - R8

“And then it's not about the prices anymore, but more about the wording, the liabilities, and things like that, which take a lot of time.” - R10

Legal Collaboration

In this step there is also a need for cross-functional collaboration with the legal department, which is necessary because of the buyers’ limited legal training according to R3. At this step buyers can get stuck between legal departments which can delay the process of arriving at a signed contract according to R5.

"The buyer is not necessarily trained in legal terms, and yet you're supposed to make decisions based on some legal terms, right?" - R3

"That's the kind of thing where, as a buyer, you can often get stuck between two legal departments” - R5

Preparing Presentations

The last step is the sourcing governance. This step is there to get internal approval for sourcing projects and includes the making of a presentation to be presented for either the sourcing committee or sourcing board. As explained by R6 it is very time consuming to make this presentation and present it well in slides.

"Now, I’m very rarely presenting on the sourcing committee or sourcing board, but there’s a lot of preparation work. To have a good case, we need to be part of the business thinking and also present it well in slides." - R6

4.2.2 Pain Points within Strategic Procurement

Limited Stakeholder Awareness of Sourcing's Strategic Impact

On top of the sourcing activities there are strategic procurement activities. At this level, buyers describe late stakeholder notification as a recurring pain point, as described by R3. Late stakeholder notification creates problems for the buyers because this does not give them enough time to perform the sourcing properly. This includes sourcing steps being accelerated and causes a lot of stress for buyers as well as delays at the stakeholder side. An explanation for this as provided by several buyers is that the stakeholders do not prioritize sourcing, being reluctant to spend too much time on it, as described by R3 and R11.

“Stakeholders contact us late in the process. It's only because they don't think it's necessary to spend that much time on the sourcing process.” - R3

"Often you can see that they don't want to involve us in the process at all, and I see that as the biggest headache." - R11

Here, buyers describe that there is a need to convince stakeholders that sourcing makes sense and brings value to them, as further described by R3. There are however concerns regarding a joint definition of value since value for the stakeholder is often more about the technological aspects and for the buyer more the commercial aspects.

"So, it's all about convincing people internally that our process makes sense and that we can bring value to them. But often, the definition of value differs from person to person." - R3

Furthermore, because of this, R4 describes that stakeholders occasionally get highly creative in their attempts to bypass sourcing altogether to avoid internal approvals which to them are seen as bottlenecks.

"So, if you look from their [stakeholders’] perspective, it could be a sourcing board or sourcing committee level case — something we need to present and get the proper approvals for. But sometimes, they split [the business] to avoid needing approvals on their side altogether." - R4

Inherent Diversity in Services Procurement

Another recurring topic among buyers is the inherent diversity of sourcing projects needing different approaches to the sourcing process. Although this creates an unclear process it is widely accepted that this is the case with services procurement and explained to be a result of the inherent nature of services procurement, as described by R4. However, there are also opinions that the sourcing process needs further standardization, as explained by R1, especially in order to adopt AI further.

“There would need to be some kind of standardization of how the sourcing process looks.” – R1

“There is no one-size-fits-all — we're going to need different sourcing processes for different types of segments or types of things we're purchasing, you know.” - R4

Lack of Supplier Overview in Disconnected Systems

According to R1 and R4 the buyers suffer from a lack of supplier overview, with buyers perceiving an excessive number of disconnected systems that create operational problems. Supplier overview refers to the possibility of having an overview of statistics and information about the supplier. Especially the buyers with dual responsibilities as both buyers and segment leaders experience this pain point, where they e.g., track the

expenditure through spend analysis. Especially the Ariba systems are seen as a major pain point, as described by R9.

"I think there are a lot of them [systems]. I think there are too many for it to be effective." – R1

"So today, I don't even bother [to learn the systems], but I think it's very inefficient — we have so many systems. Everything is disconnected." – R4

"Ariba is a nightmare, to be frank. It's not an easy tool, and no buyer will tell you that it's okay with this tool. It's not." - R9

Consequently, some of the administrative workload is outsourced to a back office in India, as described by R4 and R8. However, there are some inherent difficulties with that set up as well regarding quality of work, as described by R2.

"Yes, but it's also that you constantly have to check that the work is being done and that it's being done correctly." - R2

"So, if you don't use PSC to get some of the stuff done, you're probably gonna sink. You know, you're not gonna be able to cope with everything you have to do." - R4

"So, there's a lot of administrative stuff as well, but then we also have... I use a lot of support in India. It takes quite a long time to get everything set up in Ariba, so sometimes I need support there." - R8

Finding internal information

Furthermore, finding internal information is seen as a pain point, as described by R2 and R4. The buyers say that the information is there but hard to get because it is poorly stored on internal platforms. This creates a lot of excessive work according to several buyers because it can sometimes take a lot of time and energy to find crucial information.

"The problem I have is really finding information internally at Volvo, and the intranet search isn't always that easy in all situations." - R2

"So, it's almost like I think I need to chase the information, you know, the information is just not there." - R4

4.2.4. Summary of the Identified Pain Points in the Volvo SP Procurement Process

Synthesizing the answer to RQ1 can be done in the following Figure 4.2. It aims to provide an overview of the pain points described by the respondents in a structured way based on the process steps described in *4.1 Volvo SP Procurement Process*.

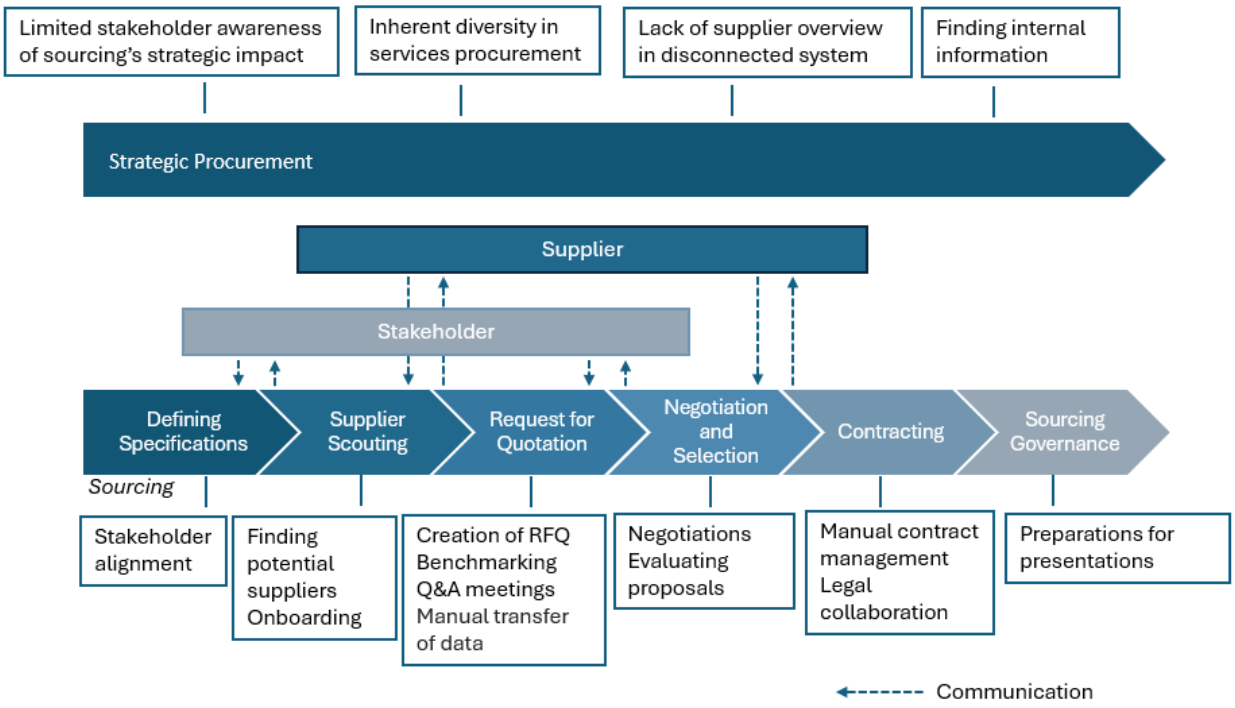

Figure 4.2: Overview of identified pain points in the procurement process

4.3. Themes Relating to Managing AI Adoption

This section aims to provide an empirical foundation for the analysis of *RQ 3: How can services procurement units manage AI adoption?.* It will be structured around the three perspectives presented in *2. Theoretical Frameworks*: sensemaking of AI, acceptance of AI tools, and change management.

4.3.1. Themes Related to the Sensemaking of AI

High hopes for AI as a tool to facilitate work

To start with, there are high hopes for AI as a tool to facilitate work among the buyers. Especially concerning tasks that they perceive as difficult or boring but also to relieve them of some of the workload overall, as described by R2 and R13. Several buyers also talk about a rising interest in AI tools and an eagerness to try things out, as described by R1 and R3. This interest is fueled not only by the practical promise of AI, but also by an awareness that AI is becoming increasingly relevant and present in procurement.

"I know that my colleagues are already super interested as soon as something new comes up – we want to try it out and, like, evaluate the tools." – R1

"If it's hard or boring or whatever it might be. That's the kind of thing you want AI to help with." – R2

"Yeah, I think that people are like: What's cooking? How does it impact us?" – R3

"It's exactly that - like, Copilot, that's what it is for me. The right word. That's what describes it all for me. I mean, you don't want an AI that takes over. You just want support - like, a copilot." – R13

Strong consensus that AI will reduce operative tasks over strategic

In connection with this, there is quite a strong consensus that AI will reduce operative tasks, thereby enabling them to focus more on strategic responsibilities, as described by R1, R3, and R14. Some buyers even envision a future where operative tasks are largely eliminated and suggest that simpler tasks might become fully automated over time.

"Yeah, like, if AI itself can, you know, handle larger parts of the sourcing process, then my job would rather be, like, to follow up on the sourcing I've done and - and focus on, like, what I think we as procurement should be prioritizing… a more strategic role." – R1

"Hopefully, it will be used for things that aren't interesting to us - getting rid of the boring and heavy tasks - and freeing us up to focus on things like decision-making, thinking, creativity, and what's coming next." – R3

"I think there are bits - or even very big parts - of purchasing that will be replaced by AI. But I don't necessarily think that's a bad thing; it's just about efficiency. Yeah, more strategic work." – R14

Keeping humans in the loop is still seen as essential

On the other hand, keeping humans in the loop is still seen as essential to sourcing according to several buyers e.g., R9. Especially negotiations and cross-functional tasks are seen as particularly difficult for AI to completely take over, as described by R4 and R5. This perspective highlights a belief among buyers that, despite AI:s potential for automation, certain steps or tasks in the sourcing process will continue to rely on human involvement.

"AI is not going to be able to do the negotiations, you know, to handle all of that. I would say that gathering the people to work together - this cross-functional work - is really key, I think." -R4

"It's pretty unlikely that it will take over negotiations entirely, like, it's just not really possible to do in the scope I have." – R5

"AI will not act alone. That's not possible." – R9

Opinions diverge regarding whether AI constitutes a threat to buyer's jobs

Regarding this, opinions go apart regarding fear of job loss. Some buyers see AI as a threat in this sense and are expressing some concerns about which jobs will be impacted by AI, as described by R13. However, most buyers agree with R1 that there will still remain enough work even with AI fully implemented.

"We would have to reach a very extreme point before I would be afraid of losing my role." – R1

"Will AI completely replace the role of a purchaser, for example? Because of course, there are a lot of worries like that too." – R13

4.3.2. Themes Related to the Acceptance of AI Tools

Requirement for further AI adoption centers on perceived usefulness

Requirements for further acceptance of AI tools centers on perceived usefulness. Buyers explain that to use AI tools they must be able to trust the quality of the output and see a connection and relevance to their jobs, as described by R1, R5, and R8. In addition to this, R1 mentions availability as an important feature of AI tools.

"Yeah, I think it's about it becoming a tool that you always have available in some way." – R1

"I don't dare to trust it [AI] too much, like, the information I get from it, I'm not sure I can actually use it." – R1

"I think people need to start seeing the value in it. They need to recognize that it actually saves time in their work." – R5

"Volvo's ChatGPT, I mean, I didn't really feel like I had a need for it. And I think that's where you need to be clear about what the actual need is and in what context are we supposed to use these tools, and what can they actually help us with?" – R8

Concerns about AI mostly surrounding confidentiality, ethics, and trustworthiness

There are concerns about AI integration, mostly surrounding ethics, confidentiality, and trustworthiness of the technology, as described by R4 and R11. While some buyers focus on the accuracy of AI generated content, others were more concerned about confidentiality and ethics.

"What's worrying is that, of course, AI is just a tool. It's just an IT thing. So, the human aspect and the questions like, 'Okay, what are we going to use it for?' are what really matter." – R4

"Yeah, but I'm thinking about the information. It feels a bit like that with our Volvo AI now. Because many times, it's like, what can you share? Where's the line when it comes to sensitive information? That's where I feel a bit uncertain." – R11

4.3.3. Themes Related to Change Management

Established sense of urgency, but no time to learn how to use AI tools

Regarding change management aspects there is a somewhat established sense of urgency concerning AI adoption in the attitude of some responses, for instance by R6. In relation to this, several buyers see the need to change the mindsets of people as a crucial first step and that recently there has been a change across the organization, as indicated by R4.

"Yeah, I think the mindset would be the key strategy here. And I think recently there has been a change." – R4

"It's a bit like when the computer first came - those who didn't get on board with it ended up left out. It's the same thing here. If we can't adopt this tool, then we'll be left out too." – R6

However, several buyers feel that they do not have the time to learn how to use current AI tools properly, as described by R9.

"Since I'm too caught up in operational work, I don't have time to reflect. I don't have time to search for information. I want something quick - a tool I can just use." – R9

Consensus about a need for more targeted education and inspiration about the use of AI

There is quite a strong consensus about the need for a more targeted education and inspiration about how and when to use AI, as described by R2, R9, and R12. Several buyers have a tough time understanding in what situations it is beneficial to use AI and while some AI related training exists, buyers express that it often lacks specificity and fails to meet day-to-day needs. The training is also mostly online, and some buyers feel alone trying to understand how different AI tools work for their benefit, as described by R9.

"I think that's probably the hardest part for me - figuring out when I should actually use it [AI]. Or maybe it's even that I know the situation, but I just forget about it. Maybe it's a lack of imagination, you know." – R2

"Previously, it was group training done on site, and now it's more and more e-learning - and you can feel alone trying to understand something or figure it out." – R9

"I think they could provide more training in this area. Yeah, they have some trainings - like for document analysis and contracts - but some people need more practical examples" – R12

Opinions go apart regarding people and system readiness

There was no clear consensus among buyers regarding the readiness of people and systems to adopt AI tools. Some expressed confidence that both organizational systems and employees are prepared, while others pointed to legacy systems, slow technological shifts, and user resistance as barriers. The perception of readiness often seemed to vary depending

on individual experiences with existing tools and past change efforts, as described by R1, R8, and R10.

"I don't really think so [that the systems are ready]. We work with SAP, so I don't know..." – R1

"I definitely think we're ready [to adopt AI]." – R8

"From a systems perspective, I've always felt that things move pretty slowly. We've had so many different systems, but on the other hand, as soon as something changes, there's always a bit of resistance, I guess." – R10

Unclear roles and responsibilities concerning who is driving AI adoption locally

Buyers express varied and sometimes conflicting views regarding who is responsible for driving AI adoption at the local level. While some buyers believe that AI adoption lies on an individual level, others point to the organization and management as primary drivers of AI adoption, as described by R2, R9, and R11. This points to some ambiguity in practice as to who is ultimately responsible for implementing AI.

"I would probably say it [the responsibility] lies more with the individual, since the organization as such has already acknowledged it." – R2

"Management is supposed to give you the means to make your work." – R9

"I believe in shared responsibility. But at the same time, I think the organization holds a significant responsibility to communicate information properly and ensure that everyone stays informed. At the team level, I see it as largely up to the managers to truly include everyone." – R11

Management seems interested and engaged but no clear strategy or vision is communicated

Concerning management's role, buyers perceive that management is open to and supportive of AI adoption. However, this has not been translated into a clear communicated vision or strategy. This lack of direction leaves teams or individual buyers to interpret or prioritize AI use on their own, as described by R10 and R11.

"I don't really feel that there's a lot of pressure - it's more like an attempt to at least open things up." – R10

"No, I wouldn't really say that [communicated vision or goal]. And like I said, it really depends on each team. On a higher level, yes - I do think there's a strong push to use it [AI] as a tool in the way we work today." – R11

5. Analysis

In this chapter an analysis of the empirical findings will be presented. It will be structured in two parts aiming to answer *RQ2: How can AI address the pain points in the services procurement process?*, and *RQ3: How can services procurement units manage AI adoption?*

5.1. Leveraging AI Technology to Address the Pain points

This section aims to answer *RQ 2: How can AI address the pain points in the services procurement process?* The AI framework used for this analysis is presented in *2.3 AI in procurement*. The following sub-sections are separated into the two different streams of the overall procurement process: *Sourcing* and *Strategic Procurement.*

5.1.1. Addressing Pain Points in the Sourcing Process

While section *4.2 Pain Points in the Services Procurement Process was s*tructured around the pain points, this analysis section returns to the structure of the theoretical framework for AI in the sourcing process. Thus, this section is structured around the main process steps of the sourcing process: *Defining specifications, Supplier scouting, Request for Quotation, Negotiation and Selection, Contracting,* and *Sourcing Governance.*

Defining specifications

In the defining specifications phase, the identified pain point concern stakeholder alignment. Aligning with the stakeholder to come up with a final SOW and definition of the project or product that needs to be sourced is difficult, requiring many meetings and often differing opinions and points of interest. This pain point is very connected to organizational practice and common hurdles in large organizations, as mentioned in several interviews. Buyers do however also mention how they would like support from AI in analyzing the need of the stakeholder and creation of the initial SOW. Research on AI usefulness in defining specifications is very limited, showing some promise in applying it to increase supplier involvement, but not in aligning with stakeholders (Gottge et al., 2020).

Supplier scouting

Finding potential suppliers in the supplier scouting step of the sourcing process was mentioned as one of the pain points. However, most often the buyer has expert knowledge about their segment. Current practices also prioritize consolidation, i.e. having less suppliers, meaning most supplier scouting is done within the existing supplier base. However, it was noted that when a market analysis is needed there is a lack of knowledge and time for making it thoroughly. AI can be used to address supplier scouting by using web-crawlers to scan the web for information and find new potential suppliers (Guida et al., 2023). For choosing the

right supplier in an existing supplier base, several AI techniques can be used to optimize bidders list, analysis, and pre-configuring tenders (Spreitzenbarth et al., 2024). Chatbots can also be used to automate the RFI-process, increasing the number of suppliers that can be contacted (Allal-Chérif et al., 2021).

Knowing the capabilities of AI, such as automation and smartness, it is reasonable to believe that AI can also support buyers in onboarding new suppliers. However, research on AI use in onboarding is not present, signaling a need for additional studies and research focus before it is possible to claim it as true.

Request for quotation

In the RFQ process step several pain points could be identified. Creating an RFQ to send to potential suppliers is deemed a very time-consuming and difficult task. Lack of effective templates, varying project scopes and a need for collaboration with stakeholders are mentioned as probable reasons. Several respondents believe AI could be used to support them in creating the RFQ by coming up with relevant questions to include and creating templates based on past projects. Research, although not extensive, shows how AI-automated RFQ processes are already adopted by at least 60 percent of companies (Cui et al., 2022). Mainly, integrated chatbot features are used to automate manual creation and streamline communication and collaboration.

Additionally, buyers experience difficulties benchmarking and knowing where to position themselves in terms of price against the market. Applying AI to address price benchmarking is not covered extensively by researchers. However, Handfield et al. (2019) confirm this issue mentioning price benchmarking as a key area of procurement in need of better analytics.

Another pain point that could be identified was the time-consuming nature of the Q&A meetings between the buyer, the suppliers and the stakeholders. Inefficient meetings are not something that is covered in AI research. However, automating both RFI and RFQ processes by integrating chatbots (Allal-Chérif et al., 2021; Cui et al., 2022) could potentially reduce the need for additional meetings.

Finally, the RFQ step involves a lot of manual transfer of data, which affects other process steps as well. Automating the process through AI could reduce the need for manual transfer of data (Cui et al., 2022) and support buyers, addressing the final pain point.

Negotiation & Selection

In terms of negotiation and supplier selection, one of the pain points mentioned is directly connected to inefficient negotiations. Buyers call for AI to support them in preparing for exhaustive negotiations. Using AI in negotiations is mentioned in research, taking a twofold

approach. Firstly, AI can be applied to support buyers in analyzing offers, preparing for and conducting negotiations (Spreitzenbarth et al., 2024). An AI negotiation support system can recommend tactics and knowledge reasoning tailored to specific, complex situations (Spreitzenbarth et al., 2024). Here, generative AI can be used to support buyers with negotiation tactics and approaches (Richey et al., 2023). AI-based negotiation chatbots are being applied to prepare a buyer for traditional face-to-face negotiations (Guida et al., 2023). The second approach to AI in negotiations is to automate the process. Here, the greatest potential is believed to be in contexts where human negotiations are not efficient enough (Spreitzenbarth et al., 2024). AI chatbots mimicking human behavior in negotiation is one way in which negotiation can be automized (Cui et al., 2022, Herold et al., 2025). The best use of AI in negotiations however seems to be when decision-making support and automation through chatbots are combined (Cui et al., 2022, Herold et al., 2025).

The second pain point in this process step concerns difficulties when evaluating the different suppliers´ proposals, often described as comparing apples to pears. Buyers call for AI to support them in both evaluating and analyzing proposals. Research on the use of AI in supplier selection and evaluation is one of the more mature research areas of AI in procurement. AI is widely used to enhance multi-criteria decision-making, supporting buyers in evaluating supplier proposals on not solely cost, but also quality, sustainability, and reliability (Guida et al., 2023; Spreitzenbarth et al., 2024; Allal-Cherif et al., 2021). Similar multi-criteria decision-making support could be applicable for indirect procurement, where the differentiated nature creates the scenario of comparing apples to pears. Evaluating based on several criteria can rationalize decision-making, when individual criteria differ greatly between proposals. It is also believed that generative AI can automate, support, and improve in-depth supplier evaluation and selection even further (Richey et al., 2023).

Contracting

In the contracting process step, manual contract management and legal collaboration could be identified as pain points. Many buyers mention contracting as a heavy process. Setting up the contract requires a lot of manual work, with efficient templates missing. Buyers are also often stranded between legal departments in need of support with legal questions, compromising the analysis of the contracts. Several respondents believe AI can support these activities and feel it should be a top priority. Research indicates that different AI techniques can be applied to support in managing contracts. BDA can be applied to monitor and manage complex contracts, simultaneously comparing different ones (Moretto et al., 2017). By feeding an AI support system with input data, historical data and predefined templates it is also possible to automate contract management (Aziza et al., 2023; Priyardashni, 2024). Research also mentions how AI-powered contract analysis tools can be used to review and analyze contracts. Extracting information and comparing it against

standards and legal requirements can then be possible, which allows for a more proactive approach (Aziza et al., 2023; Priyardashni, 2024), addressing both pain points.

Sourcing governance

The final sourcing process step, sourcing governance, is an inefficient and time-consuming process in its nature, however it is also a necessary process for large spend projects to get internal approval. Buyers mention how it is time-consuming to prepare a presentation for internal approval. Creating the presentation itself, extracting all necessary information from the sourcing project, takes time. Additionally, long lead times for getting a presentation slot delays the finalizing of sourcing projects even further. Possibly getting support from AI in creating the presentation is mentioned by several buyers. The creativity and text- and image generation capabilities of generative AI applications like ChatGPT indicate that this is probably possible (Richey et al., 2023). Unfortunately, despite having access to internal versions of ChatGPT, current AI applications available to Volvo SP buyers are not able to generate new files and documents from existing information.

5.1.2. Addressing Pain Points in Strategic Procurement

As the strategic procurement process does not follow a formal sequence of steps, this section is structured around the identified pain points. Within the strategic procurement scope, several pain points could be identified from the interviews. However, the applicability of AI to address those pain points is lower than for the pain points concerning the sourcing process. The empirical findings revealed broader challenges than the scope of the theoretical framework regarding AI in Strategic Procurement could capture. However, pain points outside the scope are addressed since they are still relevant in practice.

Limited Stakeholder Awareness of Sourcing's Strategic Impact

For the pain-point regarding limited stakeholder awareness of sourcing's strategic impact it was not possible to find any ways of addressing it with AI guided by the presented AI framework. The pain points are more connected to organizational practices and lack of knowledge than technical faults or manual work.

Inherent Diversity in Services Procurement

Addressing the pain-point of inherent diversity in services procurement with AI is also not possible guided by the presented AI framework. Similar to the limited stakeholder awareness, varying sourcing projects that call for different approaches to the sourcing process is an organizational pain-point, with little relation to AI. Standardizing the sourcing process and ways of working is up to the management of the department to decide on.

Lack of Supplier Overview in Disconnected Systems

The pain-point concerning lack of supplier overview in disconnected systems was mainly mentioned by buyers with the dual responsibility of both commodity buyer and segment leader. Research shows that specifically leveraging BDA and AI can provide procurement organizations with good tools for visual representations of spend- and supplier overview (Handfield et al., 2019; Moretto et al., 2017; Spreitzenbarth et al., 2024). Similar overviews and spend analysis tools are available for buyers. However, buyers' answers and research seem to show that there are room and possibilities for improvements.

The specific issue of disconnected systems is also more of an organizational pain point. Buyers do however believe AI could be applicable in providing system support. Such tools already exist in various forms, for example as an AI bot that can guide a buyer through a sourcing in SAP Ariba. It is a similar support system to those mentioned in the theoretical framework, specifically the enterprise version of ChatGPT working as an intelligent procurement assistant (Spreitzenbarth et al., 2024). This indicates that this type of solution is viable and applicable.

Finding Internal Information

The final pain-point concerning strategic procurement, finding internal information, is also not possible to directly address by using the presented AI framework for strategic procurement. However, it was noted during interviews and observations that some buyers have access to an enterprise version of Co-Pilot, simply described as a Microsoft version of ChatGPT, which have access to and can search the internal Microsoft connected database. Yet, this feature is not available to all buyers within Volvo SP.

In general, research on AIs applicability in strategic procurement mostly focuses on decision support for strategic questions (Spreitzenbarth et al., 2024). Both using advanced analytics techniques, like recommender systems learning from historical decisions to suggest future actions and using an enterprise version of ChatGPT as an intelligent procurement assistant. Volvo SP currently has access to an enterprise version of ChatGPT, which can be used to support strategic decision making. However, the maturity of the model is low and applicability for strategic decision-making support will increase when the model improves. Despite some applicability, regarding decision-making support and visual aids, the connection between AI and the different pain points within strategic procurement is weak.

5.1.3. Summary of how AI can be Leveraged to Address Pain Points

This section summarizes the findings related to RQ2 with a visual overview of how AI can be leveraged to address the pain points. Figure 5.1 visualizes the findings, highlighting which pain points that have been deemed possible to address and broadly what type of AI solution that is feasible, in accordance with the applied AI framework. Figure 5.1 is adapted from the visual summary of the identified pain points and follows a similar structure. Pain points that

are not directly addressable by AI (e.g., stakeholder alignment) have been greyed, while pain points that are addressable by AI are highlighted in bold. For each addressable pain point the identified AI solutions have been grouped into two different topics of AI: Automation, and Smartness. This grouping has been made to simplify the visual overview and the synthesization of the results. Automation concerns the different ways AI can be used to automate a process e.g., using chatbots to automate RFI- and RFQ creation, and negotiations. Finally, smartness concerns using AI to enhance decision-making and support analysis through e.g., negotiation support systems, multi-criteria decision-making, support in supplier evaluation, or BDA in spend analysis.

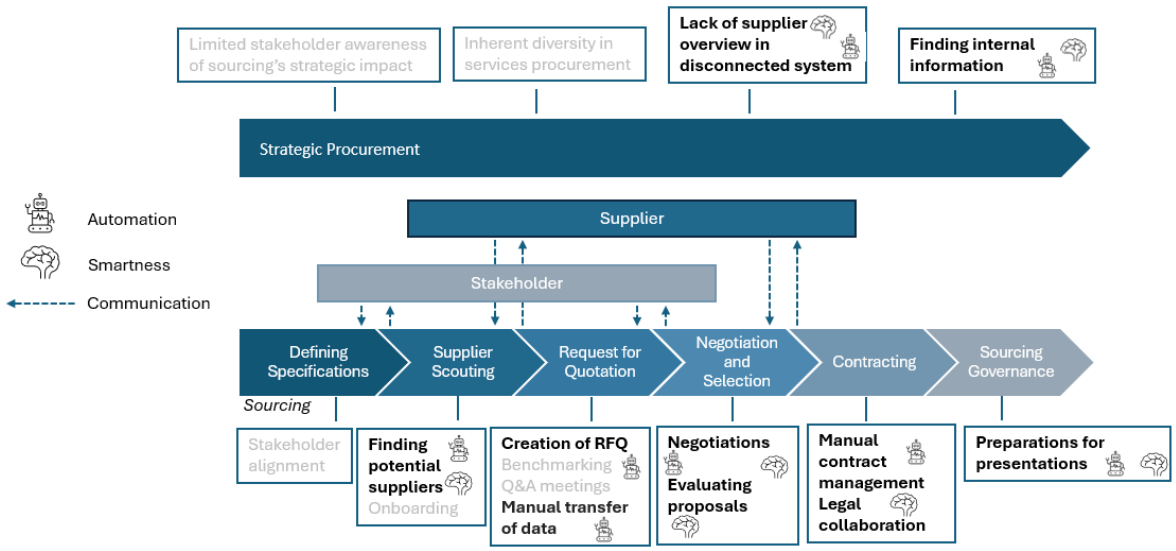

Figure 5.1: Visual overview of how AI can address the identified pain points

5.2. Analyzing the Role of Sensemaking, Technology Acceptance, and Change Management in AI Adoption

This section aims to answer *RQ 3: How can services procurement units manage AI adoption?.* In answering this question three perspectives will be analyzed. First, the sensemaking of AI among buyers, second, the barriers to further AI adoption as perceived by the buyers, and third, an analysis of the change management process as perceived by the buyers.

5.2.1. Understanding Buyer's Sensemaking of AI

From the thematic analysis, four themes emerged that can be connected to the sensemaking of AI as explained by Weick (1995) and Hendriksen (2023). This part centers on how and why buyers perceive AI the way they do.

High hopes for AI as a tool to facilitate work

This theme reflects a positive view on AI which focuses on the narrative of how it is a tool to be used to aid buyers in their work. In other words, AI is not seen as a disruptive force but more as an enabler for buyers to perform better. Weick (1995) explains that in facing ambiguity people enact their environment based on what feels plausible rather than looking for objectivity. This means that this way of looking at AI might stem from buyer's need to reduce anxiety and maintain coherence in their professional roles, and not from an objective evaluation of AIs actual capabilities or limitations. At this point, Hendriksen (2023) argues that seeing AI as a tool and facilitator opens up for the idea of AI as an extension of human decision-making ultimately leading to automation of routine tasks and increased operational efficiency.

Strong consensus that AI will reduce operative tasks over strategic

At this point a shared belief about the role of AI as best suited for operational rather than strategic tasks indicate a socially constructed boundary that helps buyers make sense of what AI will be able to do. As Weick (1995) notes, sensemaking is inherently social, and by differentiating between what humans will do and AI will do buyers enact a vision that AI will respect human strategic judgement while keeping to more operational tasks. However, Hendriksen (2023) challenges this idea saying that AI could be seen as a strategic asset that potentially could provide a competitive advantage.

Keeping humans in the loop is still seen as essential

Weick (1995) highlights that sensemaking often is guided by identity construction and legitimacy. The emphasis on still keeping humans in the loop could, from this perspective, be seen as a way for buyers to maintain their professional integrity in relation to AI as a new digital technology. Hendriksen (2023) explains that this way of still keeping humans-in-the-loop could help organizations maintain trust and coherence during transition towards adopting more AI and reflects an effort to anchor AI in ethical and accountable practices.

Opinions diverge regarding whether AI constitutes a threat to buyer's jobs

Weick (1995) explains that in situations of high uncertainty, people rely on different experiences, values, and cues to extract meaning, which often results in contradictory and fragmented interpretations. The divergent view of AI's impact on job security among buyers underscores how ambiguity can lead to multiple ways of making sense of AI and its role in services procurement. While many buyers see AI as a tool to facilitate work and reduce operative tasks there are buyers perceiving it as a threat to their jobs. According to Hendriksen (2023) such divergence is quite common in digital transformation where sensemaking efforts are met with skepticism or resistance depending on how well they align with employees lived experiences. This conflict suggests that there is still a need for more

deliberate and inclusive sensemaking efforts to create a shared understanding of AI's role in services procurement.

Conclusively, in understanding buyers' perception of the role of AI in procurement, the results show that buyers see AI more as a tool to facilitate their work, and potentially as an actor regarding the automation of simpler tasks than a threat to their existence as buyers. The related results of this study indicate that as AI advances and becomes capable of performing more complex tasks, buyers' perception of the role of AI in services procurement might have to change accordingly. In the AII framework presented by Hendriksen (2023), the role of AI is evaluated on two axes: the level of integration in the process, and the freedom it has in decision-making. According to this framework, right now AI only has an assistive role in decision-making and is only partially integrated in the services procurement process at Volvo SP, signifying a 'Human Sherlock - Robot Watson' situation. To integrate more AI into the sourcing process, the view on AI as something more than a mere digital tool must therefore change into realizing AI as a potential partner, actor of more complex tasks, and a competitive advantage earning Volvo SP strategic benefits. This is already acknowledged by a few buyers but must be understood on a broader scale throughout the department for AI to be implemented effectively and fully. In other words, allowing for a more mature integration according to the AII framework.

5.2.2. Requirements for the Acceptance of AI Tools

In this part of the analysis, the two themes identified connected to technology acceptance will be interpreted by the TAM by Davis et al. (1989) and the UTAUT by Venkatesh et al. (2003). It focuses on barriers and necessary requirements for broader acceptance of AI tools available to the buyers, such as an internal Chat GPT, a chat with your document tool, and a contract management tool, and provides a framework of requirements for further adoption of these tools as well as any future ones.

Requirements for further AI adoption centers on perceived usefulness

In line with the TAM by Davies (1989), requirements for further adoption of AI tools centers on perceived usefulness. As seen in a later theme, buyers are inherently busy people with a heavy workload and little time for learning new digital tools. Therefore, new tools that are not perceived as useful and easy to use will not be integrated effectively. Regarding usefulness, buyers explain that trustworthiness of the output, quality of the output, and relevance to their jobs are antecedents to the usefulness of AI tools. This coincides with the external variables of job relevance and output quality which are antecedents to the usefulness as identified by Venkatesh and Davies (2000). The availability of AI tools as an antecedent to usefulness is not identified as an external variable in the TAM or any of its extensions. However, availability is found in the UTAUT where it could be seen as a facilitating condition (Venkatesh et al., 2003).

Concerns about AI mostly surrounding confidentiality, ethics, and trustworthiness

Buyers explain that concerns about AI tools mostly surround confidentiality, ethics, and trustworthiness. Buyers emphasize these concerns strongly and call for management directions as to when the AI tools can be fully trusted and ethical. Confidentiality and ethics are not explicitly mentioned in the TAM or UTAUT but are touched upon in the suggested transparency addition in the ISTAM by Vorm and Combs (2022) that see transparency as a way of establishing trust in intelligent systems as an antecedent to behavioral intention. Moreover, ethics can be interpreted as a subjective norm in the TAM or social influence in the UTAUT. Subjective norm is an external variable and antecedent to perceived usefulness in the extension to the TAM by Venkatesh and Davis (2000), and social influence a direct antecedent to behavioral intention in the UTAUT by Venkatesh et al. (2003). Finaly, trustworthiness of output has already been addressed in the last theme, but regarding trustworthiness of the technology itself is further discussed by Hasija and Esper (2022) as a social influence aspect of the UTAUT.

Conclusively, buyers highlight availability of AI tools, trustworthiness and quality of the output, uncertainty about the relevance to their jobs, confidentiality of input data, ethics, and trustworthiness of the technology itself as barriers to adoption and acceptance of AI tools. Figure 5.2 displays a situation specific adaptation of the TAM and UTAUT models. The TAM and UTAUT, and extensions thereof, together support the majority of these in the analysis above including them as external variables to perceived usefulness, social influence, facilitating conditions, or antecedents to behavioral intention directly.

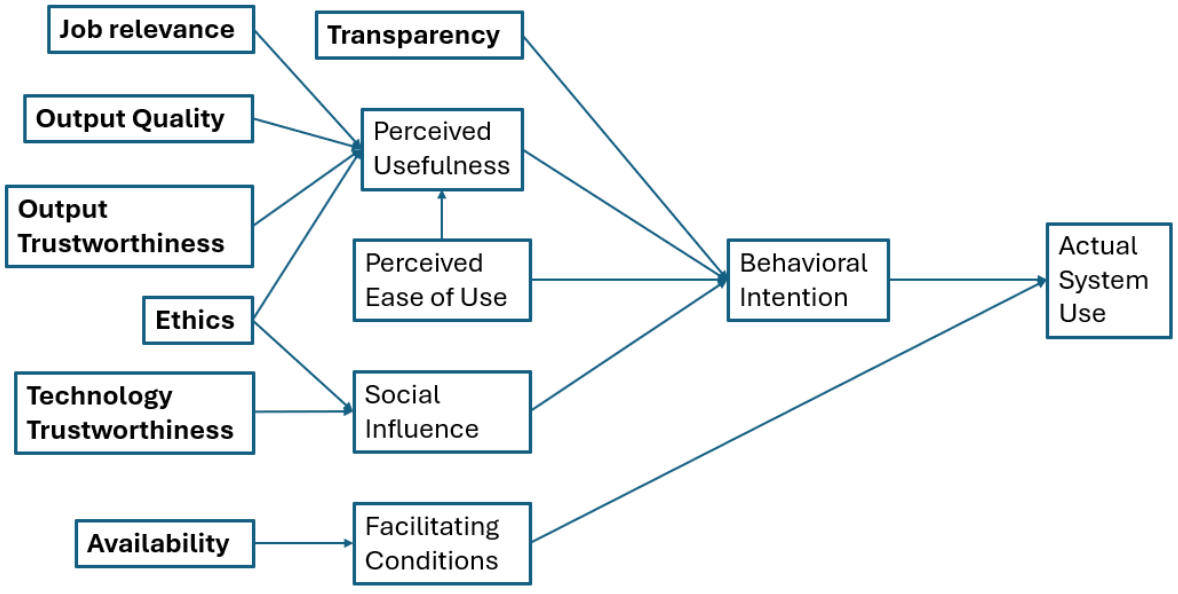

Figure 5.2: Visualization of the situation specific adaptation of the TAM and UTAUT

5.2.3. Strategic Plan for Change Management

This part of the analysis is devoted to the five themes identified relating to change management. They are interpreted in relation to Kotter's eight steps of leading change (Kotter, 2012) and the ADKAR model developed by Hiatt (2006). This part centers on the organizational factors necessary to advance AI adoption through identifying Volvo SP's position within the change management process by Kotter (2012) and provide a strategic plan for moving forward.

Established sense of urgency, but no time to learn how to use AI tools

Both change management models used in this study refer to first steps relating to the need of an established sense of urgency, awareness, and desire to change (Hiatt, 2006; Kotter, 2012). In relation to Kotter's model (Kotter, 2012), buyers acknowledge the need and importance to adopt AI tools in their processes and daily work suggesting that this first step is fulfilled. Similarly, in the ADKAR model this suggests that the awareness and desire steps are fulfilled but that the lack of time hinders the ability for buyers to acquire sufficient knowledge about how to use them, which are crucial steps in the ADKAR (Hiatt, 2006). Moreover, the problem of not finding the time to learn is a barrier towards further adoption which suggests that the fifth step, removing barriers as a way of empowering employees, is not fulfilled in this sense.

Consensus about a need for more targeted education and inspiration about the use of AI tools

Education and inspiration about how to effectively use AI are again relevant to step five in Kotter's eight steps for leading change model as a barrier to further adoption (Kotter, 2012). Buyers perceive that there is little, or no education targeted at services procurement about how to concretely use the AI available in their daily work and that it is hard find out on their own without some inspiration on how to use AI tools. Concerning ADKAR, this theme can, like the last theme, be linked to the knowledge and ability steps of the model (Hiatt, 2006). Without the correct knowledge of how to use AI, buyers will struggle to adopt it on a broad scale. Concerning the inspiration part of the problem, an effective way of inspiring employees on how to use AI tools is through the sixth step in Kotter's model, generating short-term wins (Kotter, 2012). By highlighting success stories and illustrate the value added by AI tools you provide an effective way for maintaining motivation and inspire further adoption of AI tools.

Opinions go apart regarding people and system readiness

Buyers do not share a common belief about people and system readiness. The reason for this seemed to be attributed to individual experiences with existing tools and past change efforts and relate more to the knowledge and ability of buyers than any ill will towards the technology itself. If people readiness is low, this theme can be linked to the knowledge and ability steps and might be improved with education and inspiration in line with the last

theme. Concerning system readiness there might be a need for some improvements to the systems or even completely new ones, thus removing barriers for further adoption in line with step five (Kotter, 2012). However, given the qualitative method of the study, it is hard to assess the magnitude of this problem.

Unclear roles and responsibilities concerning who is driving AI adoption locally

The second step of Kotter's model for leading change concerns the creation of a guiding coalition for the change initiative (Kotter, 2012). As interpreted from the interviews, the absence of an AI champion or designated group at the local level is a hinderance to coordination and ownership of AI initiatives. According to Kotter (2012) effective change management requires not only top-down endorsement but also clear local accountability which to some extent is missing according to the buyers.

Management seems interested and engaged but no clear strategy or vision is communicated

Following the last paragraph, management engagement is important, and the buyers feel that management is supportive and interested, but that there is a lack of a clearly communicated strategy and vision to support it. This means that step three and four in Kotter's model, developing and communicating a vision and strategy, remains partly underdeveloped (Kotter, 2012). According to Kotter (2012) this can create ambiguity regarding the broader purpose of AI and inhibit the alignment of strategic efforts at Volvo SP.

Conclusively, Volvo SP is at an early stage in their change management process towards implementing AI on a larger scale in its services procurement process. There seems to be an established sense of urgency and awareness of the need for change, but the buyers lack the time to learn about AI, a locally connected group or person to champion AI, a clear strategy and vision, and targeted education and inspiration about how to leverage AI in their daily work. On top of this, opinions go apart concerning whether systems and people are ready to adopt AI at all. A strategic plan for managing the change process thus includes creating a locally connected group to champion the use of AI, developing a clear vision and strategy for AI in services procurement, increasing the knowledge of AI and its application in day-to-day work, and creating success stories to inspire and show the value created by AI. An overview of the plan is provided in Figure 5.3.

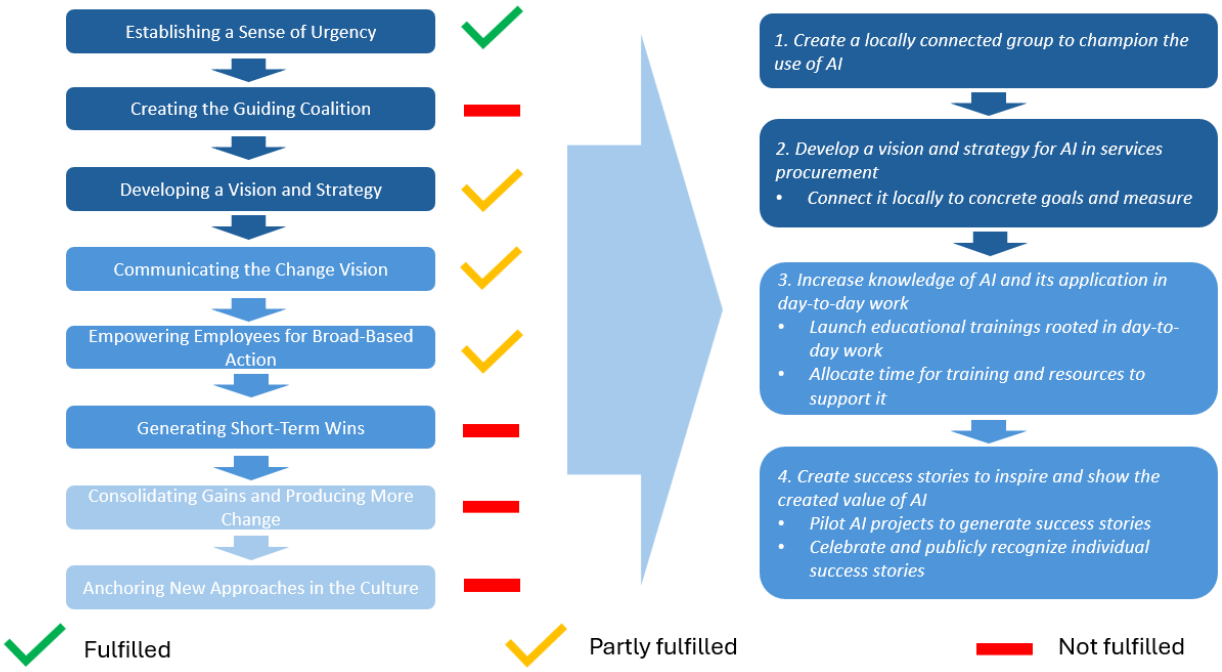

Figure 5.3: A strategic plan for managing the change process of adopting AI

6. Discussion

This chapter aims to discuss the results of the study in relation to the research questions as well as the limitations and implications of the study. Additionally, it aims to provide recommendations for the future regarding both academic research and Volvo SP's further adoption of AI in services procurement.

6.1. Identified Pain Points and what can be Addressed by AI

This section will discuss the findings related to the study's first and second research questions. Both results, implications, and suggestions will be discussed.

Following the interviews, discussions, observations and analysis of internal documents at Volvo SP, a wide range of pain points connected to different parts of the procurement process could be identified. The pain points, summarized and visualized in Figure 4.2, mostly concern the sourcing process, with only a few concerning the strategic procurement part of the procurement process. This is because the sourcing process was the focus of the interviews when discussing pain points, due to it being the main part of most Volvo SP buyers' day-to-day work. Despite this, pain points outside of the sourcing process, concerning strategic procurement, could also be identified due to the explorative nature of the interviews. Hence the strategic procurement part of the procurement process is included, but in less detail compared to the sourcing process.

While many of the pain points concern manual, administrative and time-consuming tasks, several are also connected to the very nature of indirect procurement and procurement of services. The pain-point concerning proposal evaluation and the difficulties of comparing apples and pears is well connected to what both Fitzimmons et al. (1998) and van der Valk and Rozemeijer (2009) mention as intangibility and a common difficulty within indirect procurement. Similarly, the pain points concerning RFQ creation and contract management also stem from the inherent nature of indirect procurement, where common templates are difficult to create due to intangibility and differentiated project scopes. The four important skills for indirect procurement professionals mentioned by Delke et al. (2023) also strengthens the pain points, where communication, cross-cultural awareness, flexibility and agility and change management are emphasized.

Once the pain points had been identified it was possible to apply the AI frameworks presented in literature review, visualized in Table 2.8 and 2.9. By analyzing the identified pain points through the lens of the frameworks it was possible to identify which pain points were possible to address using AI. A visualization of these findings can be found in section *5.1.3. Summary of how AI can be Leveraged to Address Pain Points*, Figure 5.1. In accordance with Saunders et al. (2016) these findings have been assessed and verified in relation to prior research, suggesting that they are transferable to contexts other than this case study.

However, to what extent the findings are transferable to other contexts is difficult to evaluate since the AI frameworks were adapted to fit the service procurement context.

To further guide procurement organizations in their journey towards AI adoption, a ranking of the top AI use cases from this study was made. The ranking is based on the frequency of which a pain point was mentioned in the interviews, the perceived business impact of addressing the pain point and the applicability of the AI solutions. The four areas identified are contract management, RFQ automation, negotiation support, and evaluating supplier proposals. While the ranking is not based on quantitative scores, it reflects an informed assessment of the current situation at the case organization Volvo SP.

Getting support in the contracting stage was frequently mentioned in interviews with buyers, both as a time-consuming, heavy process, but also as an area with a lot of potential for improvement. Research shows great applicability of AI in contract management, especially through automation and increased legal support (Aziza et al., 2023; Priyardashni, 2024). Initiatives for AI tools within contract management are already ongoing at Volvo SP, signaling that further improvements in this area are realistic.

The RFQ stage was one of the most frequently mentioned pain points, with buyers seeking help in automating the process. It was specifically mentioned as an inherent difficulty in purchasing services. While the applicability of AI in automating the RFQ process is high based on research (Allal-Chérif et al., 2021; Cui et al., 2022), the differentiated nature of purchasing services can cause issues. Common templates are hard to create (van Weele & Rozemeijer, 2022) and therefore automation could be more difficult. However, considering the severity of the pain point and the potential of the solution, providing buyers with the necessary support in this area can yield great efficiency gains.

Getting support in the negotiation stage was less mentioned in interviews than RFQ or contracting support. It was however still one of the top mentioned pain points and areas for improvement. The business impact of improved negotiations is perceived as big, with the potential of lowering costs, and goes in line with the increased strategic importance of procurement organizations (Hofmann et al., 2019). Research on AI support in negotiations also shows great applicability, both in terms of preparing buyers for important negotiations (Guida et al., 2023; Richey et al., 2023; Spreitzenbarth et al., 2024) and relieving buyers of less important negotiations (Cui et al., 2022; Herold et al., 2025; Spreitzenbarth et al., 2024). However, fully automated negotiations for cookie cutter items, exemplified by the Walmart pilot project (van Hoek et al., 2022), could be difficult in a services procurement setting where intangibility is high. There are although still cookie cutter items procured within indirect procurement, such as office suppliers, where similar automated AI solutions can be utilized.

Evaluating proposals from suppliers was frequently mentioned as one of the hardest parts of working as a buyer in Volvo SP. The analogy of comparing apples and pears, referring to the challenge of comparing and evaluating different service offers, stems from the inherent challenges of indirect procurement mentioned throughout the report (Fitzsimmons et al., 1998; van der Valk & Rozemeijer, 2009). Getting support from AI in difficult evaluations is feasible considering research on the subject. With several scholars signaling that AI can be used to support and enhance decision-making in difficult, multi-criteria scenarios (Guida et al., 2023; Spreitzenbarth et al., 2024; Allal-Cherif et al., 2021) It could also have a great business impact, enabling buyers to take more informed decisions and allowing them to choose the right supplier more often.

An important distinction made in AI literature is the one between automation (replacing manual tasks) and smartness (augmenting decision-making). For example, Cui et al. (2022) discuss how automation without smartness can be a detriment to efficiency, while augmenting automation with existing smartness is the way to go. Similarly, Burger et al. (2023) discusses hybrid intelligence, where artificial intelligence through automation and smartness is coupled with human intelligence. It is apparent that the biggest benefits from adopting AI in procurement come when both automation and smartness are applied to processes together with human intelligence.

A key observation made during this study is the difference between how AI is represented in academic literature and how it is understood and discussed in practice. While existing literature focuses mainly on traditional AI technologies, such as BDA (Moretto et al., 2017), simple chatbots (Allal-Chérif et al., 2021), and different ML techniques (Spreitzenbarth et al., 2024), in interviews and discussions AI was almost exclusively associated with recent generative AI technologies e.g., ChatGPT and other so called large language models (Ooi et al., 2025). This creates a conceptual gap between the developed theoretical frameworks on AI in procurement, based on research, and the buyer's perception of AI. It also creates a gap between the theoretical framework and what is possible to accomplish with AI. As a result, there is an overhanging risk that the framework presented in this study is an underrepresentation of the different AI use cases that are technologically feasible and that can interest procurement organizations. This underrepresentation was somewhat confirmed by representatives from the Digital Products department at Volvo GTP. Discussions, or acknowledgments of this phenomenon have not been found in literature. However, it is believed that it is due to the rapid development of AI in recent years (Sheikh et al., 2023), naturally causing research to lag behind real technological advancements. With AI in procurement being an under researched field this gap could be even bigger compared to other fields.

While it remains a challenge that AI technology advancements move faster than the literature on the subject, it highlights the need for qualitative, exploratory research.

Explorative studies, like this one, enable researchers to view current practices, challenges and engagements within AI and AI adoption, with hopes of bridging the gap between research and practice.

Another distinction that is important to make is the fact that AI may not always be the best or most suitable solution, but it might be part of the solution. In discussions with IT professionals from the Digital Products department at Volvo GTP, light was shed on the different pain points identified among the buyers in Volvo SP. It was noted that while AI is the hottest topic of discussion within IT development it is important to understand that AI is not the solution to all problems. Therefore, since the pain points across the services procurement process identified in this study are not only pain points related to AI, but it should also not be assumed that AI is the single best solution. This is not only true for the pain points that were not possible to address with the theoretical framework, but also for those where AI could be a solution. However, as noted by one of the IT professionals, AI may well be part of the solution to every problem, but not always the sole solution.

6.2. Supporting AI Adoption: Complementing Perspectives

Based on the description by Weick (1995), sensemaking in this study has been used to understand buyers' current perceptions of the role of AI in procurement. As further discussed by Hendriksen (2023), this perception is crucial since AI is not only disruptive in a technological way but is also disruptive to many social processes in supply chain processes, thus highly influenced by human sensemaking of AI technology. The findings of this study support Hendriksen (2023) and offer insights into the socially disruptive sensemaking process of adopting and integrating AI into services procurement in a real-world setting. However, given the case study design, the transferability of the findings might be limited, highlighting the need for further research on this novel topic.

In this study, TAM and UTAUT were used to understand the user acceptance of AI tools that already existed at Volvo SP such as a contract analysis tool, a chat with your document tool, and an internal ChatGPT model. Relevant extensions to these models concerning AI includes the ISTAM, developed by Vorm and Combs (2022), which explores transparency to foster trust as an antecedent to behavioral intention, and trustworthiness of the technology itself, discussed by Hasija and Esper (2022), as an external variable to social influence in the UTAUT. These extensions were both relevant among the buyers and point toward limitations of the original models concerning the acceptance of AI tools. None of these extensions have been thoroughly researched; however, this study has provided some qualitative insight into the validity of the extensions. Furthermore, ethics was a new external variable to the models. Ethics is discussed by Vorm and Combs (2022) as influencing usefulness but was also deemed an antecedent to social influence in the UTAUT. On this part there has not been a lot of research which might boil down to the fact suggested by Vorm and Combs (2022) about

the difficulty in how integrating ethics, transparency, and trustworthiness in the design of AI tools can be achieved at all.

Concerning the adopter categories presented by Rogers (2003), the buyers are displaying a highly varied population of different adopters ranging from innovators and early adopters to laggards. Some buyers are very innovative with great understanding and usage of the current AI landscape both internally and externally. Others are aware of AI and positive towards it but lack understanding and awareness of AI. Understanding these adopter groups is vital for further adoption of AI at Volvo SP to reach the critical mass. As described by Moore (2014), a gap may arise between the innovative early adopters who seek radical change and the pragmatic early majority who seek incremental improvement, leading to a situation where these two adopter groups do not get along very well. The challenge thus lies in crossing the chasm between these adopter groups smoothly. It is not evident in the findings whether such a gap between these two adopter groups exists. However, there are buyers specifically emphasizing the need for more inspiration and education on AI tools expressing concerns about trustworthiness and ethics, and other buyers who are very open towards AI tools and only see opportunities. There are, in other words, tendencies towards a situation where a more careful, pragmatic, and incrementally inclined group on the one hand, and a more innovative and radical group on the other has evolved. Left untended, this situation might evolve into a chasm that risk creating a gap between buyers at Volvo SP. Especially as AI adoption scales up.

Several of the variables identified in the analysis of technology acceptance can be analyzed in the light of the attributes of DOI presented by Rogers (2003) as well. The attributes are, in comparison to TAM and UTAUT, aiming to describe the diffusion of technology in a population as opposite to the user acceptance of technology by individuals. Cross analyzing the findings with DOI, it is evident that the attributes of relative advantage and compatibility of using AI are important for buyers. Many buyers fail to see the full usefulness of current AI tools, not seeing any relative advantage, and many fail to see the full relevance to their jobs, demonstrating a lack of compatibility. This is in line with the findings of Xu et al. (2023) who emphasize exactly those attributes as crucial for the diffusion of AI technology.

Regarding fear of job loss in relation to DOI, as described by Xu et al. (2023), the threat of technology and especially job insecurity is identified as an attribute that influences how quickly and widely an innovation or idea will be adopted. Among the buyers there was little expressed worry about job insecurity, much pertaining to the fact that the workload is very high anyways. However, in the study this was assumed to be a delicate matter for buyers to discuss which makes the magnitude of this point of view hard to assess. According to Xu et al. (2023) it might be a hindrance to further diffusion of AI tools within Volvo SP as adoption scales up.

6.3. Recommendations for Future Research

As stated by several authors (Guida et al., 2023; Spreitzenbarth et al., 2024; van Hoek, 2024), the current state of literature on applying AI in procurement is scarce. This study has also concluded that specific literature on applying AI in service procurement is even more scarce. While this study provides interesting insights into what areas of service procurement that buyers need support in and which of these that are possible to address with AI, similar case studies in real industrial settings are few. Hence, future research should focus on how to use AI to enhance operations in real industrial settings, providing actionable insights to procurement organizations. Second, it should also move deeper into procurement organizations, with research tailored around indirect, service procurement to bridge the current gap between research and practice.

Future research should focus on extending technology acceptance models to fit AI applications as well. As seen in this study there are significant limitations to the current models and limited empirical validation of extensions focused on AI applications, like ISTAM.

During the study, the concept of Jevons' Paradox emerged as an interesting perspective (Jevons, 1865). While not part of the theoretical framework, the concept of Jevons' Paradox suggests that increased efficiency through AI contrary to expectations may result in greater, rather than reduced, workload for buyers. This paradoxical relation was first noticed by William Stanley Jevons in 1865 when he noted that as steam engines became more efficient, coal consumption increased due to lower costs. In the context of procurement, the assumption is that AI will reduce workload and costs by making buyers more efficient. However, Jevons' Paradox implies that increased efficiency could instead lead to more tasks being assigned to buyers, potentially increasing their workload contrary to what one might expect, leading to higher overall costs. This paradox highlights a potentially overlooked consequence of adopting AI by buyers and might suggest an interesting direction for future research.

On a methodological level, future research should conduct comparative research between direct and indirect procurement regarding AI. At the time being most research concern AI in direct procurement and indirect procurement is not thoroughly researched. This study has shown that there are inherent differences between the two and that implementing AI in them might need different approaches. Furthermore, research conducted on technology adoption is often conducted over time with a longitudinal time horizon. Therefore, future research should aim at tracking AI adoption over time to provide more quantitative data on how AI is adopted in procurement.

6.4. Recommendations for Volvo SP

Following the findings and discussions Volvo SP is recommended to look further into integrating AI within the identified top AI use case areas of contract management, RFQ automation, negotiation support, and supplier evaluation. For contract management there is already existing support in terms of contract analysis tools. However, the current AI tools are not specialized for services procurement and a legal support system is still missing. AI support in the heavy and difficult RFQ stage is also missing and Volvo SP is recommended to look further into supporting buyers using AI in this area. There are no current AI tools supporting buyers in negotiations and the potential business impact of improving this area is big. Hence, Volvo SP is also recommended to prioritize this area in their AI adoption. Considering the inherent nature of service procurement, evaluating and selecting supplier proposals is often difficult. Therefore, the recommendation is for Volvo SP to consider AI when finding ways of supporting the buyers in evaluating suppliers.

In accordance with the analysis, the recommendation for Volvo SP is to consider adopting a change management strategy in line with the strategic plan presented in *5.2.3. Strategic Plan for Change Management* and consider the analysis made in *5.2.1. Understanding Buyer's Sensemaking of AI* and in *5.2.2. Requirements for the Acceptance of AI Tools*. Together these perspectives provide a way forward for the three stakeholders of the study, namely: buyers, digital products, and management. The first and second steps of the strategic plan are generic but the third and fourth steps can be altered to fit one of the four use cases identified above. The suggestion is thus to implement step one and two and then start small with one of the use cases, following steps three and four.

6.5. Limiting Factors

The starting point and aim of this study were to explore how AI can enhance efficiency within services procurement through a case study at the Volvo SP department. After discussions with supervisors at the case organization and at Chalmers, it was decided that the study would focus on identifying pain points in the current services procurement process. It would then explore how AI could be leveraged to address these pain points. It was also decided that the aim should include change management aiming to support further AI adoption at Volvo SP. It is important to acknowledge that by only focusing on how AI can address pain points in the services procurement process, other relevant areas where AI could enhance efficiency is neglected. This was the preferred approach of the case organization and therefore deemed necessary to conduct the study. Furthermore, by mainly interviewing buyers from the case organization the focus of enhancing the efficiency of the services procurement process could be rephrased to 'enhancing the efficiency of the buyers'. However, by structuring both the pain points and the AI capabilities around the process, results and analysis could be simplified and easier to understand.

During the study, the context and relevance shifted. When the overall aim was decided the consensus was that the case organization had little to no current AI practices or tools available to them. During the study, several new tools and applications were made available to the buyers of the case organization, with further improvements and updates to these tools being discussed and evaluated. However, the adoption rate among buyers was still very low and the overall aim and purpose of the study was not affected by the new context.

The research is also delimited to the application of AI in service procurement and not to the application of AI in procurement of any other products within Volvo GTP. This is important to note, since findings may not be fully generalizable across other departments within Volvo GTP or other organizations. As already mentioned however, the findings concerning RQ2 and RQ3, where empirical findings have been assessed in relation to prior literature, can be generalized in accordance with Saunders et al. (2016).

7. Conclusion

By taking a case study approach, this study explored how AI can enhance efficiency within services procurement. The study was guided by three research questions focusing on identifying pain points in a current services procurement process, the potential of using AI to address the pain points and change management strategies to support AI adoption. Consequently, this final chapter is structured around the three research questions, shortly summarizing the main findings.

In response to RQ1, the study identified several pain points in the services procurement process. Within the sourcing process, critical pain points include manual RFQ creation, difficult supplier evaluation, and heavy contract management. In strategic procurement, buyers reported pain points such as lack of supplier overview in fragmented systems and difficulties finding internal information. Together, the different pain points reveal both operational, organizational, and strategic challenges affecting the efficiency of the procurement organization.

Regarding RQ2, the analysis showed that AI can effectively support buyers and address several critical pain points in the services procurement process, with an emphasis on the sourcing process. Technologies focusing on automation, smartness and generative AI show great potential e.g., through automating RFQ creation, enhancing decision-making and supplier evaluation, streamlining contract analysis, and preparing PowerPoint presentations. However, not all pain points were deemed applicable to address with AI, highlighting the difficulty in addressing organizational challenges with technology.

Following RQ3, the analysis showed that there are several requirements and barriers that must be considered to successfully integrate AI tools e.g., availability of AI tools, trustworthiness and quality of the output, uncertainty about the job relevance, confidentiality of input data, ethics, and trustworthiness of the technology. Moreover, change management strategies relevant to Volvo SP included creating a locally connected group to champion the use of AI, developing a clear vision and strategy for AI in services procurement, increasing the knowledge of AI and its application in day-to-day work, and creating success stories to inspire and show the value created by AI. Furthermore, the value of sensemaking of AI was emphasized as an important perspective to understand the buyer's perspective for Volvo SP to realize the true value of AI in services procurement.

This study shows that AI can support in addressing key pain points in services procurement, while also offering insights on how to effectively manage AI adoption. It contributes to AI literature by highlighting important research gaps and providing directions for future studies.

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Appendices

Appendix A - Semi-Structured Interview Guide

Introduction

Hi, we are Gustav and Adam, studying Industrial Economy at Chalmers, and are writing our master's thesis here at Volvo SP. This study explores how AI can enhance efficiency in the sourcing process and related AI adoption and change management aspects.

Today, we're interested in understanding:

- **Where in the current sourcing process there are pain points**
- **Your perspective on AI in procurement and daily work**

We're here to learn, not to judge. The discussion is anonymous, and data will be stored on Volvo platforms and erased in June.

- **May we take notes and record the interview?**

You're free to stop the recording or delete any statement at any time.

- **Any questions before we begin?**

Understanding Current Challenges in the Services Procurement process

- Can you introduce yourself and describe your role at Volvo?
- What does a typical workday look like for you?
- Can you briefly describe the main steps in the sourcing process?
- What are the most time-consuming and inefficient tasks?
- Are there any other common pain points that create frustration for you or your colleagues?
- Where do delays or misunderstandings usually happen?
- What sources do you currently use to gather data for decision-making in the sourcing process?
- How well do the current systems and tools support your work? Anything that is frustrating or difficult to use?
- Can you recall a recent example where the procurement process did not go smoothly? What happened?

Potential of AI in Service Procurement

- What is your general attitude towards AI?
    - Is it a tool, friend, partner, workmate?

- Do you currently use AI in your work?
    - In the sourcing process?
    - In your daily work?
    - Routines, tools, channels?
    - Is it useful?
    - Easy to use?
- In what areas of services procurement do you think AI could be most beneficial?
    - In the sourcing process?
    - In the general white-collar work?
- If AI were introduced more into the sourcing process, what concerns or challenges do you foresee?
- In the future, after successful AI implementation, what does your work look like?

Current State of AI Readiness & Change Management

- Do you believe your department is ready for AI adoption?
    - Are the systems ready?
    - Are people ready?
- What skills or knowledge gaps do you think exist regarding AI adoption?
- In your opinion, what would be the most important first steps to prepare for AI adoption?
- How do you perceive management's attitude towards AI adoption?
    - Is there any vision or goal around AI adoption?
    - Are you supported by them in any way?
- Is there a dedicated group of people who are working with AI adoption in the sourcing process?
    - Are there any ongoing AI projects that you know about?
- Would you say that the responsibility for AI adoption is on an individual or organizational level?
- Have you gone through any similar technology-driven changes before (digitizing, digitalizing, SAP Ariba)? Any experiences from that?
    - What worked/did not work?
    - Does this shape your expectations of AI?

Closing Questions

- Is there anything else you would like to share about the sourcing process or AI adoption?
- Would you be open to follow-up questions if needed?
- May we cite you anonymously in our report?

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