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Sustainability and Traditional Criteria in Supplier Selection and Order Allocation Decisions

A Finnish Industry Perspective

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ABSTRACT:

The present study investigates how buyers in the Finnish industrial technology and automation industry perceive the importance of sustainability criteria relative to traditional supplier selection criteria and how these perceptions influence business allocation decisions. The research addresses a gap in the sustainable procurement literature by focusing on buyer perceptions in a real industrial context, rather than relying solely on conceptual models or hypothetical decision scenarios. The study is guided by Institutional Theory and the Resource-Based View, which together help explain how external sustainability pressures and internal strategic capabilities shape procurement behaviour.

A quantitative research design was used, and primary data were collected through a survey of 95 respondents involved in purchasing-related decision-making in Finnish industrial technology and automation firms. The questionnaire measured the perceived importance of traditional criteria, including price, quality, delivery reliability, and technical capability, as well as sustainability-related criteria such as environmental practices, social practices, governance, and compliance. The data were analysed using descriptive statistics and inferential analysis to identify differences in criterion importance and to assess whether sustainability predicts supplier selection and allocation decisions beyond traditional factors.

The results of the study show that buyers prioritize traditional purchasing criteria more strongly than sustainability criteria, although sustainability remains relevant in decision-making. Price, product/service quality, and delivery reliability received the highest importance ratings, while governance and compliance were the most highly valued sustainability-related criteria. The results suggest that sustainability plays a stronger role in how business is distributed among suppliers than in the initial selection stage in the Finnish industrial and technology industry.

Overall, the study shows that sustainable procurement in the Finnish industrial technology and automation industry is not about replacing traditional criteria, but about balancing operational performance with sustainability expectations in a strategic and practical way.

KEYWORDS: Sustainable purchasing, supplier selection, business allocation decisions, Institutional theory, Resource-Based View, Buyer Centre approach, Finnish industrial technology and automation industry

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Abbreviations

RBV	Resource-Based View
SSP	Supplier Selection Priority
BAD	Business Allocation Decisions
CIR	Criteria Importance Ratings
B	Business Performance

1 Introduction

This first chapter provides the background of the study and introduces the research topic. It explains the relevance of the thesis topic and identifies the existing research gap. Based on this gap, the research questions and objectives of the study are formulated. The chapter also includes a brief review of relevant previous studies. Finally, the chapter concludes with a brief outline of the overall structure of the thesis.

1.1 Background of the study

In the present dynamic and increasingly complex global world, environmental and social responsibility are becoming increasingly important, making sustainability a major factor in evaluating organizational operations and informing strategic decisions across a wide range of industries. Often, businesses are under growing internal and external pressure to make sustainable decisions that will help present and future generations enhance resource optimisation (Tardin et al., 2024, p. 307). Sustainability in the business context is generally discussed through three dimensions, such as environmental, economic, and social, also often summarised as the three pillars or “people, planet and profit” (Slaper & Hall, 2011, p. 4). Many organisations are now merging sustainability into their everyday decisions, making it a natural part of how they operate and plan for the future. According to the findings of Carter and Jennings (2004), especially purchasing and supply professionals play a crucial role in embedding sustainability into an organization’s working culture (Carter & Jennings, 2004, as cited in Carter & Rogers, 2008, p. 368).

Due to their extensive influence on operations, sourcing suppliers becomes a crucial aspect of supply chain management (Choi & Hartley, 1996, as cited in Rashidi et al., 2020, p. 2). Alternatively, acknowledging the crucial part that the suppliers perform in diverse company operations emphasizes the significance of employing an effective supplier selection procedure. Whereas cost, quality and delivery reliability are still important considerations when selecting suppliers since organizations are increasingly considering sustainability into accounts. This makes purchasing decisions more unbiased and forward-

thinking by taking into consideration suppliers' economic, social and environmental values (Rashidi et al., 2020, p. 13). As termed it, *"Sustainable supplier selection is a process by which the best suppliers (in terms of the triple bottom line of economic, social and environmental objectives) are selected in order to improve the purchasing process, help strategic partnership selection, enhance product quality, increase customer satisfaction and, ultimately, to gain a competitive advantage in the market for a buyer"* (Rashidi et al., 2020, p. 3).

The researcher's obsession with this subject stemmed from personal professional experience as a buyer working in an Asian country, where the researcher gained practical experience with purchasing decision-making and supplier evaluation. This background has inspired the researcher to explore the same challenge in a different national and industrial context. Moreover, the researchers' interest in sustainability and supply chain management concepts further strengthened the study, as these topic areas are becoming increasingly significant in dynamic business environments. Integrating existing work experience with academic interest made this study both personally relevant and professionally significant while also supporting a better understanding of how sustainability aspects are reflected in buyer decision-making across various environments.

1.2 Research Gap

Despite the significant increase in the academic work on sourcing sustainability, there are still several critical gaps continues. Numerous studies have developed frameworks for sustainable supplier selection, often using mathematical models to weight sustainability criteria against traditional performance measures (Awasthi et al., 2018). However, most studies emphasize theoretical models or experimental scenarios, contributing slight empirical evidence from actual procurement teams on how sustainability criteria truly compete with traditional aspects in everyday decisions. Moreover, few have quantitatively examined whether perceived sustainability influences supplier selection and allocation beyond these conventional factors in a specific industry (Zhan et al., 2021).

Regardless of the evidence of significant advancement in the literature regarding the concept of sustainability-based supplier selection, there are still major gaps that lead to the relevance of the current research. A large number of available studies are mathematical, conceptual or model-driven approaches of sustainable supplier appraisal, usually based on hypothetical situations, not on actual procurement data. Messaoudi et al. (2025) and Nasrollahi (2025) suggested superior modelling frameworks that indicate the theoretical significance of sustainability requirements. Nevertheless, the literature is seldom tested on whether real buyers acting under the real organisational requirements perceive and prioritise sustainability in a manner compatible with theoretical anticipations.

Moreover, it is valid that whereas many studies evaluate sustainability in industrial sectors, including energy, logistics, or construction (Dhawan et al., 2026) and (Lahri et al., 2025). Few studies examine how buyers in technologically advanced manufacturing environments balance sustainability and traditional procurement standards. The Finnish Industrial Technology and Automation Industry is a particular setting that can be described by the strict EU sustainability requirements, high technological processes, and complicated structures of supply chains. However, there does not seem to exist any research that quantitatively observed the perceptions of buyers in this industry when it comes to sustainability and compared to traditional standards in the process of selecting suppliers and allocating business.

The other important gap is the role of sustainability in the allocation decisions. Although the studies indicate that sustainability affects supplier ranking or preliminary selection (Sayour et al., 2025), studies seldom discuss whether the sustainability perceptions can be used to provide extra illustrative power of allocation decisions in addition to the traditional criteria. Business allocation as a sign of actual purchasing behaviour can display varying priorities over early-stage supplier screening. It has not been empirically investigated to what degree sustainability perceptions are predictive of volume allocation beyond such factors as cost, quality, delivery performance, etc.

Moreover, the majority of research works concentrate on the sustainability practices that are observed by the supplier or macro-level systems, but not on the perceptions of buyers. The literature on sustainability-procurement lacks buyer-centric studies and, more importantly, quantitative research on sustainability using surveys and SPSS analysis. Thus, this study has a gap in terms of quantitative data on buyers' perception, criteria ranking and decision allocation with regard to sustainability in the actual operations.

The proposed research directly fills these gaps because it explores how Finnish industrial buyers weigh sustainability and traditional criteria when choosing suppliers and allocating businesses, based on a quantitative methodology that helps capture the modern decision-making trends. Alternatively, the theoretical contribution of this study is to strengthen supplier selection-related theory by giving empirical evidence on how sustainability criteria are perceived in contrast with traditional purchasing criteria in a realistic industrial scenario. The study enhances existing multi-criteria supplier selection frameworks by examining buyers' perceptions of sustainability in relation to price, quality and delivery reliability. Furthermore, it contributes to the literature by illustrating that sustainability may be relevant in order allocation decisions, increasing theoretical understanding of supplier evaluation beyond the initial selection phase. By examining the relationship between sustainability ratings and business volume allocation, determine that sustainability factors are not only assessed in supplier ranking but also continue for resource commitments. In addition to that, managerial implications are most significant for purchasing specialists, purchasers, and supply chain managers working in Finland's industrial technology and automation industries. The findings can help practitioners understand how sustainability criteria are evaluated in comparison to traditional purchasing standards as well as how these objectives influence supplier selection and business allocation decisions. In reality, this could assist firms in improving supplier assessment processes, creating more balanced evaluation frameworks, and determining which sustainability elements should be prioritized in purchasing decisions. The study can also help organizations coordinate their purchasing procedures with broader environmental goals while retaining competitiveness and operational efficiency.

1.3 Previous Studies

Decisions on supplier selection and business allocation constitute a core responsibility for buyers or purchasing managers in the company. Therefore, numerous academic studies have been conducted to identify the criteria influencing those decisions. Early research on supplier selection in the 1990s focused on the fundamentals, including technical capability, cost, quality and delivery dependability (Dickson, 1966, p.10). To determine that Dickson conducted a scientific study by surveying purchasing agents from randomly selected manufacturing firms in the USA and Canada, analysing their real procurement decisions to identify the criteria and systems guiding supplier selection. According to the findings, purchasing agents focused on maintaining efficient and flawless operations primarily by using suppliers as a means of reducing expenses and avoiding interruptions (Dickson, 1966, p. 15).

Later, Humphreys et al. (2003) conducted a survey with purchasing managers in Hong Kong's electronics industry and found that environmental performance only mattered once suppliers met basic operational requirements. However, the results of their study found that purchasers began to take pollution prevention and resource efficiency into account, although sustainability consideration followed reliability and price. Over time, sustainability criteria have come to play a much more significant role in business decisions as awareness and expectations among stakeholders have grown rapidly (Gazilusoy, 2015; Govindan et al., 2016, as cited in (Luthra et al., 2017, p. 1686). In the study of Awasthi et al. (2018), comprehensive models were identified to balance economic, environmental and social dimensions, demonstrating through the case examples that sustainability weighting improves supplier rankings. In addition to that, Awasthi et al. (2018) underlined the need for analytical tools and the limited empirical validation from real procurement teams as well.

Behavioural experiments also provide valuable insights into understanding buyers' decisions. Zhan et al. (2021) conducted a scenario-based experiment with 857 managers and found that poor sustainability performance generates more negative responses than high sustainability performance does positive ones. However, their findings indicate that

sustainability criteria improve buyers' expectation level while interacting with traditional factors like cost and quality in different ways depending on the industrial context. While supplier selection has been considerably researched in the sustainable procurement literature, the following allocation phase, about determining how order volumes are distributed among the suppliers, has received far less attention, with systematic reviews emphasizing the importance of integrated quantitative analyses of both decisions (Di Pasquale et al., 2020). According to the findings of Di Pasquale et al. (2020), they have stated that order allocation is often neglected, and only 20% of 113 studies focused only on the results from supplier selection, which is considered supplementary.

Based on the above-mentioned existing literature review, although prior research on supplier selection and order allocation advanced from integrating basic environmental factors with traditional criteria to progressive models and behavioural studies, it mostly relies on theory, simulations or general concepts rather than practical data from specific industries showing how buyers actually balance sustainability against operational priorities. Therefore, this study bridges the gap between model-driven research and real-world procurement practices, delivering actionable insights for buyers in the Finnish industrial technology and automation sector on how to integrate sustainability criteria into supplier selection and order allocation decisions while upholding operational competitiveness.

1.4 Research Objective, Questions and Delimitations of the Study

This study intends to investigate how buyers in Finland balance sustainability criteria with traditional factors as key determinants in supplier selection and allocation decisions for their direct suppliers within the Finnish Industrial Technology and Automation Industry context, conducting quantitative research. The objective of this study is to provide empirical evidence that directly responds to the identified literature gap concerning the leading mathematical decision models over real-world procurement behaviours.

This work is relevant both in theory and practice. Sourcing the right suppliers is the key to strong company performance, helping to reach significant goals and sustainability targets. According to the academic article of Awasthi et al. (2018) "*Non-compliance with*

societal expectations puts focal companies at risk of losing brand reputation, legitimacy, and may subject them to unfavourable governmental actions” (Awasthi et al., 2018, p. 107). Also provides empirical insights by quantitatively assessing criteria importance rankings and investigating whether sustainability influences supplier selection and allocation decisions beyond traditional criteria from the perspective of Finnish Industrial Technology and Automation Industry companies, thereby bridging the gap between theoretical models and actual procurement practices.

To address the objective of the present academic work, one primary research question and three sub-research questions have been created.

The main research question is:

“How do buyers in the Finnish industrial technology and automation industry perceive the importance of supplier sustainability criteria relative to traditional criteria when making supplier selection and business allocation decisions?”

The research question aims to give practical insights into supplier selection and allocation processes in the Finnish Industrial Technology and Automation Industry by balancing sustainability perceptions with the traditional criteria. Buyers are concerned to reconcile with the elements such as carbon footprints and ethical labour standards determined by EU regulations, specifically the Corporate Sustainability Due Diligence Directive (CSDDD) and Green Public Procurement criteria, alongside fundamental priorities of cost, quality, and delivery reliability that ensure operational continuity. Therefore, this research question examines how these tensions manifest in initial vendor selections and subsequent order distributions, providing new insights into changing procurement dynamics.

To support the main research question from multiple perspectives, the researcher has developed three sub-research questions to answer the primary research question. The first sub-question intends to take the broad concept of sustainability from a business perspective and narrow it down to fit the context of the study. The first sub-research question is:

“Which sustainability dimensions and traditional criteria receive the highest perceived importance ratings from buyers?”

The second sub-question builds on the first by looking into causal linkages. The goal is to see if sustainability perceptions provide explanatory power to decision models beyond what traditional criteria can predict. The second sub-research question is:

“Does perceived supplier sustainability predict selection priority beyond traditional criteria?”

The third sub question directs on how much business each nominated supplier receives. The purpose is to see if perceived supplier sustainability still matters after traditional factors have been taken into account. The third sub-research question is:

“Is perceived supplier sustainability associated with business allocation decisions beyond traditional criteria?”

Through these research questions, the researcher seeks to identify how sustainability criteria influence supplier selection processes and business allocation decisions alongside traditional criteria in the Finnish industrial technology and automation industry (*Suomen teollisuusteknologia- ja automaatioteollisuus*).

The study’s scope has been defined by several delimitations that ensure focus and methodological coherence. Consequently, this study deliberately limits its scope to buyers (people who are engaged in purchasing-related activities) in the Finnish industrial technology and automation industry, excluding other sectors, regions, and stakeholder perspectives, for instance, suppliers or logistics providers, to enable in-depth exploration of how sustainability considerations are balanced against traditional procurement criteria. The main reason for conducting this study within an industry in Finland is the researcher’s accessibility to relevant data sources. This has made data collection more efficient and increased the credibility of the results. Another main reason is that, according to Business Finland, sustainability considerations have been an important segment of Business Finland’s strategic focus, reflecting its commitment to inspire ethical business operations, sustainable development and international competitiveness of Finnish

industries (Business Finland, 2025). A quantitative methodology was chosen for this study to bridge the gap in the existing literature, as many master's theses and scholarly articles on this topic have primarily used qualitative approaches, for instance (Solakivi et al., 2025). To ensure research clarity and convenient data collection, the researcher has created boundaries by deliberately excluding broader factors such as financial stability or long-term supplier development. Furthermore, the scope specifically addresses supplier selection and business allocation decisions, which represent critical stages in the procurement process. Downstream activities such as contract negotiation and supplier development are excluded to maintain methodological focus. Finally, data collection uses a cross-sectional survey design targeting buyers in 2026, capturing their perceptions and decision-making approaches toward direct suppliers, excluding other supplier categories in their processes over past years' experience, to provide a clear picture of current practices. This approach corresponds with the study's exploratory quantitative aims, although it basically excludes long-term analysis and standardize performance assessments.

1.5 Thesis Structure

The present research work contains five chapters, including an introduction as the first chapter. It presents the background of the study with the research gap, objectives, and research questions. The second chapter, theoretical background, discusses the theoretical grounds of sustainability in supplier selection processes and allocation decisions over the traditional procurement criteria within the Finnish industrial technology and automation industry. Thirdly, the research methodology chapter examines the quantitative approach of the study, which includes data gathering and analysis techniques through a targeted survey of purchasing staff, testing the comparative importance of sustainability versus traditional criteria and their combined influence on supplier selection priority and purchasing volume allocation decisions. The fourth chapter presents findings that indicate the empirical data, answering research questions using perceptual ratings, regression results, and comparative analysis. Finally, the discussions and conclusions explore the results and findings considering existing work and draw implications to enhance

procurement practice for the buyers. Furthermore, the final chapter summarizes the thesis work, evaluates the limitations of the research, and makes recommendations for future research.

2 Theoretical Background

The chapter is an overview of the theoretical, conceptual, and empirical background that shapes the focus of this study, in knowing how buyers balance between sustainability and traditional guidelines in choosing suppliers and assigning business volumes. The integrated current academic research published makes the chapter create a systematic story of the definitions of variables, theoretical frameworks, empirical results, and research gaps that emerge in the context of the study of sustainability-oriented procurement. It declares that despite the dominance of sustainability, the old parameters are still deeply rooted in the procurement matters, posing a conflict that has to be resolved empirically. Therefore, the literature review gives the preliminary basis for the comprehension of the interaction between conflicting priorities in the selection of suppliers, which forms the basis of research questions and empirical design that are discussed in this study.

2.1 Variable definition

The increasing adoption of sustainability in purchasing and supply chain management has transformed the manner in which firms consider and acquire their suppliers, particularly in industrial settings that are well advanced in technology. In a global supply chain, procurement decisions are increasingly influenced by economic, environmental, and social aspects as organisations struggle with growing regulatory burdens and pressures before the eyes of stakeholders. According to recent research, sustainability is no longer an addition to the customary procurement but is a critical requirement that defines supplier assessment systems, operational achievements, and long-term strategic focus (Messaoudi et al., 2025). These pressures are compounded in the Finnish Industrial Technology and Automation Industry by changing sustainability directives of the European Union, climate-associated targets, and dependency of the industry on technologically advanced supply chains. This means that buyers must strike a balance between sustainability and long-standing procurement objectives such as cost, quality, and reliable delivery. Marketing scholar articles are frequently viewed as buyers, the counterpart to the sellers,

particularly argue that buyers are active decision makers with goals, strategies and information requirements rather than passive recipients of offerings (Cabanelas et al., 2023). According to this perspective, purchasing behaviour entails gathering information, evaluating alternatives and managing the exchange process to obtain the optimal outcome. In contemporary organizational purchasing, buying decisions are shaped by a set of actors whose involvement extends beyond individuals formally titled as “buyers”, which means handled through a buyer centre approach (Chusaerie et al., 2025). The author has highlighted according to previous studies that the structure for purchasing decision making consists of deciders, buyers, users and gatekeepers (Webster Jr and Wind, 1972, as cited in Cabanelas et al., 2023, p. 70), meaning that employees without a formal purchasing title can still play an active role in specifying needs, evaluating alternatives, approving expenditures and influencing supplier selection and how volumes are allocated. This perspective is notably applicable to current industries, where purchasing responsibilities are often distributed across departments such as operations, engineering, finance and management rather than centralized in the procurement department alone. Therefore, when discussing ‘buyers’ in an organizational context, it is more accurate to refer to buyer-center members or organizational buyers since the practical buying role extends beyond formal job titles and indicates cross-functional participation in purchasing decisions (Cabanelas et al., 2023).

Supplier selection involves the assessment of potential suppliers on various dimensions in order to come up with suppliers who are more likely to meet the organisational needs (Müncch et al., 2022, p. 2). The traditional supplier selection criteria have always been focused on cost, quality of the products, reliability of delivery, and the ability of the supplier. They have been popularly identified as the necessary factors of procurement performance and operational continuity (Aspeteg et al., 2025). As indicated by Aspeteg et al. 2025, the traditional definition of cost is based on the purchase price and total cost of ownership, which has impacted companies in terms of competitive positioning and financial viability. At the same time, quality takes relevance in respect of meeting specifications, uniformity, stability and meeting standards, particularly in the high technology

industrial sectors. Delivery is associated with the timeliness, logistics performance, and lead time reliability, which influence the flow of production and inventory planning. These conventional characteristics jointly make up the core expectations that help firms to incorporate efficient operations in intricate supply networks.

Conversely, sustainability-related factors take the supplier assessment further to environmental, social and governance areas (Münch et al., 2022, p. 3). Hart (1995, as cited in Münch et al., 2022, p. 6) mentioned such environmental criteria as carbon emissions, energy efficiency, waste management, circularity, and resource stewardship are generally included. In recent scholarship, the importance of environmentally responsible supply chains has come into the spotlight in the context of realising national and international decarbonisation goals. According to Dhawan et al. (2026), sustainable logistics, supplier-managed distribution schemes, and low-emission initiatives are also becoming more important to companies that are trying to minimise supply chain carbon footprint (Dhawan et al., 2026, p. 27). Social sustainability includes the issues of labour rights, labour safety, community well-being and moral behaviour (Blandino & Montagna, 2025). Several studies highlight that suppliers should not only apply fair working conditions and clear social performance, but also remain legitimate in the global markets (Sayour et al., 2025). Governance includes ethical sourcing, data openness, accountability structures and adherence to regulatory requirements. Studies are progressively showing that an effective sustainability governance capability can affect the corporate reputation, the resiliency of the supply chain, and the long-term trust of the stakeholders in a significant way (Lehner, 2026).

The third important variable in this research is business allocation decisions, which are defined as the volume of purchasing to be allocated to suppliers that is selective (Di Pasquale et al., 2020). The selection of allocation is usually based on the ability of the suppliers, their previous performance and strategic value. *“Optimal order allocation may be also conditioned by an existing panel of suppliers, with which companies already collaborate and whose reliability, quality, and precision are highly rated”* (Di Pasquale et al., 2020, p. 4742). However, recent research shows that the sustainability factor may play a key role in the volume allocation decision. Nasrollahi (2025) concludes that sustainable

supplier portfolio optimisation is capable of influencing a firm's allocation of volumes to ensure that they create maximum value in terms of environmental and social welfare as well as efficiency of operations (Badurdeen et al., 2009, as cited in Nasrollahi, 2025, p. 487). On the same note, Nascimento et al. (2025) emphasise the fact that risk-oriented models within the humanitarian supply chain are very emphatic not just on reliability but also on sustainability-associated risk assessment. Accordingly, sustainability perceptions and allocation decisions are still a significant but insufficiently studied issue of procurement behaviour (Nascimento et al., 2025).

2.2 Industry introduction

The present study is constructed on one of the most influential industries in the selected context. Industrial technology and the automation industry are widely recognized as primary drivers of economic development, product growth and industrial competitiveness. In general, the industrial automation industry refers to the sector in which technologies are used to enable the operation of machines and systems with minimal human intervention (Papulová et al., 2022, p. 1489). This consists of a wide variety of technologies such as programmable logic control systems, sensors, robotics and computer-based systems that boost production efficiency, accuracy and reliability (Prمود, 2022). Basically, it refers to an industry which applies engineering, digital systems, machinery and intelligent control technologies to boost industrial workflows, production operations and service offerings by maximizing efficiency, precision, accuracy and productivity while reducing human intervention. Finland is broadly recognised as a highly developed, innovation-driven economy. As per the OECD 2025, Finland's continued prosperity relies on increased productivity, technological innovation and skilled workforce recruitments (OECD Economic Surveys Finland, 2025). Also note that, whereas Finland has solid institutions and superior digital systems, further investment in R&D and technological advances is essential to enhance competitiveness. These aspects are particularly significant in the automation industry, where highly advanced expertise, innovation potential and technological infrastructure are crucial for expansion. On the other hand, Business Finland

has reported that this business sector is currently significant, and Finland intends to boost it even more in the coming years with technological advancements (Business Finland, 2025). The industry is also extremely important in terms of sustainability, as EU countries are progressively expected to incorporate environmental and social responsibility into companies' functional and supply chain considerations (Saunila et al., 2024). According to one of the recent master's studies related to the field, sustainability has become a key element of an industrial strategy. Businesses use supplier evaluation, auditing, transparency systems and ESG-related practices to foster responsible buyers. In accordance with the World Economic Forum (2023), developments such as the Industrial Internet of Things (IIoT), predictive maintenance, autonomous robotics, and smart factories are transforming global value chains and industrial production techniques. As a result, governments and organizations that invest in industrial technology and automation are better positioned to boost productivity, adapt to changing market needs, and sustain global competitiveness in the digital economy (OECD, 2025). As a result, industrial technology and automation are widely recognized as critical foundations of future industrial transformation. The industry background is reinforced by illustrating that sustainable procurement is not only a theoretical concern but also an actual decision-making challenge for Finnish industries. That makes the selected industry appropriate for examining how buyers perceive sustainability criteria alongside traditional criteria when selecting suppliers and allocating businesses to them.

2.3 Theoretical Framework

There are a few theoretical viewpoints that can be used to understand the changing relationship between sustainability and the decision-making process of supplier selection and allocation.

The theoretical frame of the research is formulated by combining the Institutional Theory and the Resource-Based View (RBV) to explain the ESG-based supplier selection and business allocation decision (Khoshfetrat et al., 2020). The integrated approach is specifically helpful since the process of selecting suppliers is not merely a technical or

economic procedure but a socially and institutionally embedded process under the influence of external pressures and internal strategic capabilities. Whereas the Institutional Theory explains the reasons why firms should adopt sustainability practices, RBV explains how such practices can be used to gain a competitive advantage (Li et al., 2021). Nevertheless, despite the fact that such integration offers a holistic underpinning, it also presents conceptual challenges and constraints, which ought to be critically analyzed. This section thus provides the framework in a systematic way, addressing the contribution of each theory, limitations of the theories, tensions between the theories and potential extensions to increase explanatory power.

2.3.1 Institutional Theory: External Pressures and ESG Adoption

The Institutional Theory offers a solid basis for explaining the growing interest in the implementation of ESG-related practices in supplier selection (Kumar et al., 2025). The “father” of the early institutional theory of organizations is known as Philip Selznick. Originally, Philip Selznick Berkeley & Angeles (n.d.) emphasized that organizations should not be assessed as rational and technical systems, instead they are continuously influenced by social, political and institutional pressure. Through this process, organizations become institutionalized by developing values, norms and patterns of behaviour beyond their formal structure and technical purposes. A key concept introduced by Selznick is co-optation, whereby organizations incorporate influential external actors into their decision-making processes to gain legitimacy, stability, and social support. Therefore, institutional theory suggests that organizational actions are driven not only by efficiency and formal goals, but also by the need to achieve legitimacy and long-term acceptance within the broader social environment (Philip Selznick Berkeley & Angeles, n.d.). Later, DiMaggio & Powell (1983) extended this argument by demonstrating how decision makers tend to shape their enterprises in ways that increasingly resemble others within the same field. Hence, the authors defined three causes and identified institutional isomorphism as the driving force behind the consistency (Cabanelas et al., 2023). This explains that external pressures affect organizations by influencing their behaviour and decision-making. It is generally agreed that these pressures are commonly

categorized into coercive, normative and mimetic isomorphism (Slaper & Hall, 2011). Coercive pressures are a result of formal regulations, legal requirements and government policies that force firms to meet environmental and social standards. Examples of such pressures in procurement include emissions regulations, labour laws, and sustainability reporting requirements, all of which motivate firms to consider suppliers based on ESG criteria. Normative pressures, conversely, are generated as a result of professional standards, industry norms and societal expectations. Responsible behaviour is anticipated to have a dual effect on firms, to adhere to the established guidelines and to remain legitimate and socially acceptable (Liaqait et al., 2022). This is especially applicable in the global supply chains where stakeholders, such as customers, investors, and Non-Government Organizations, are demanding transparency and ethical practices. This has led companies to include ESG factors when selecting suppliers to meet these expectations. Mimetic pressures take place when organizations copy the actions of successful or dominant organizations, particularly in ambiguous settings. When other companies embrace the sustainable procurement methods by leading companies, others adopt them to keep up with the competition and keep their legitimacy (Liaqait et al., 2022). Such imitation has aided the extensive rise of ESG practices in industries. Consequently, sustainability will be a regular ingredient of supplier assessment processes. It is in these processes that the Institutional Theory explains why the ESG criteria have been of great significance in the selection of suppliers and in business allocation choices. It points out that businesses do not operate in a vacuum but are in a larger institutional context which influences their behaviour (Laosirihongthong et al., 2019).

Although the Institutional Theory is explanatory, there are a number of limitations when using the theory to make procurement decisions that are based on ESG (Kumar et al., 2025). A key weakness is that it tends to characterize firms as passive participants that merely react to outside forces. This point of view undervalues the importance of managerial agency and strategic intent (Laosirihongthong et al., 2019). In practice, companies tend to make proactive decisions to influence their institutional environment. As an illustration, businesses can be the first movers in sustainability efforts, shape policy, or establish industry norms. These moves point to the fact that companies are not only

reactive but are also actively involved in the process of creating the rules of the game. The other limitation is associated with the behaviour of mimetics. Even though imitation may decrease uncertainty, it does not always have the best results. Companies can either be superficial in adopting ESG practices, merely to conform to industry standards, without making them a part of their operations (Li et al., 2021). This may lead to greenwashing or symbolic compliance, where sustainability initiatives are implemented not to produce real effects but to manage their reputation. Therefore, the Institutional Theory might oversimplify the efficacy and complexity of ESG adoption. Moreover, the Institutional Theory is mainly concerned with legitimacy instead of performance results (Li et al., 2021). Although legitimacy is a desired outcome, it does not clarify enhanced operational efficiency or competitive advantage. When selecting suppliers, firms have to strike a balance between the issue of legitimacy and the cost, quality and delivery performance. The Institutional Theory is not the only one to provide a comprehensive explanation of how firms arrive at such trade-offs (Keshavarz-Ghorabae, 2023). However, present enterprises' purchasing decisions are typically carried out by a buying center, Institutional pressures influence both formal procurement structures and the allocation of buying responsibilities within organizations, leading firms in the same industry field to develop similar organizational buying practices.

2.3.2 Resource-Based View: Internal Capabilities and Competitive Advantage

Resource-Based View supplements Institutional Theory by placing emphasis on the internal capabilities which help firms to gain value out of sustainability practices. RBV notes that competitive advantage is attained when firms develop resources that are valuable, rare, inimitable and non-substitutable (Liaqait et al., 2022). Originally, Wernerfelt (1984), argued in Resource-Based View, a firm should not only analyzed from the product perspective but also from the resource perspective to create a competitive advantage when leveraged strategically. Later, Barney (1991) further expanded RBV by detailing that company resources can create sustained competitive advantage when they are valuable, rare, difficult to imitate and non-substitutable. Thus, internal organizational resources, knowledge and capacities are crucial sources of long-term competitiveness and

organizational success, according to the Resources-Based View (Barney, 1991). In terms of supplier selection, the capabilities that are related to ESGs, including expertise in sustainable procurement, advanced data analytics, and effective supplier relations, are all possible strategic resources. The capabilities help firms to assess suppliers better, track sustainability performance, and partner on improvement efforts. To illustrate the point, companies with high digital capabilities are more likely to evaluate the emissions and compliance of the suppliers more accurately, and companies with strong relational capabilities can develop long-term relationships with suppliers, which tends to improve sustainability performance (Kumar et al., 2025). These capabilities do not only enhance the process of supplier selection but also affect the decisions made by firms with respect to business allocation, enabling firms to prioritize those suppliers that contribute towards the realization of long-term strategic objectives (Ali et al., 2023). RBV also focuses on learning and the development of capability. Companies that invest in knowledge and systems that are sustainable can develop expertise over time, which forms a framework of continuous improvement and innovation (Kellner & Utz, 2019). It is especially significant in ESG situations, where the standards and expectations undergo constant changes. Through the evolution of dynamic capabilities, companies will be able to adjust to changing circumstances and preserve their competitive advantage.

While RBV is a great source of information, its implementation for sustainability is not without difficulties. Among the main weaknesses, the growing standardization of ESG practices can be mentioned (Khoshfetrat et al., 2020). With the emergence of sustainability as a requirement to be met in various industries, many of the ESG practices have become non-rare and unique. For instance, the certifications, reporting standards and compliance systems are popular, and therefore they are not very effective as sources of competitive advantage. This undermines the assumption and diminishes the explanatory power of RBV (Kayani et al., 2023). The other drawback is that RBV is firm-centric. Supply chains are relation-oriented in nature and entail various actors, such as suppliers, distributors, and partners. Instead of being owned by a single firm, value is co-created, through interactions, instead of being owned by a single firm (Laosirihongthong et al., 2019). The performance of ESG, especially, relies on the concerted actions of the whole

supply chain. As such, the emphasis on internal resources can be detrimental to the need to consider collaboration and network dynamics. Also, RBV presupposes that the firms possess control over their resources and are able to utilize them in a strategic manner (Li et al., 2021). Nevertheless, there are numerous factors in the case of ESG, which are beyond the control of the firm. It can be affected by suppliers' behaviour, changes in regulations, and external risks. This adds complexity which cannot be fully examined by internal capabilities alone (Liaqait et al., 2022). Conclusively, according to RBV, businesses that develop valuable, rare and difficult to match purchasing capabilities, supplier management skills and sustainability-oriented organizational routines may achieve long-term competitive advantage over firms that perceive purchasing as a solely commercial process within the context of sustainable supplier selection business allocation decisions (Jia et al., 2023).

2.3.3 Integrating Institutional Theory and RBV

The combination of Institutional Theory and RBV brings a basic conflict of conformity and differentiation (Liaqait et al., 2022). Institutional Theory stresses the necessity for firms to align with external expectations, and, as a result, firms end up adopting similar practices. Conversely, RBV concentrates on differentiation and uniqueness as the sources of competitive advantage. It poses a paradox, in that, should all firms decide to adopt similar ESG practices due to institutional pressures, how can such practices be used as a source of competitive advantage. This strain is quite applicable in the selection of the supplier. ESG standards are becoming increasingly standardized, and companies tend to use similar assessment systems (Liaqait et al., 2022). Nevertheless, differentiation can still exist in the manner in which these practices are adopted. Other companies might take a step further to comply by investing in new solutions, ensuring sustainability is part of the strategic decision-making process, or developing a strong relationship with suppliers (Kayani et al., 2023). These variations indicate that ESG practices may take on a similar form but can differ greatly in depth and effectiveness (Li et al., 2021). The other conflict will be because of the differences in motivations. The Institutional Theory implies that companies implement the ESG practices to win legitimacy, and the RBV focuses on

value creation (Liaqait et al., 2022). As a matter of fact, these motivations are coexisting and interacting. Companies might strategically leverage their efforts to improve performance and competitiveness by initially undertaking sustainability practices out of external pressure but later leveraging them to their advantage. This interaction is crucial in the creation of an all-inclusive framework.

2.3.4 Implications for supplier selection and business allocation decisions

The combined framework carries significant consequences on the process of supplier selection as well as the business allocation process (Liaqait et al., 2022). Institutional forces drive companies to consider ESG factors when evaluating suppliers, which guarantees adherence to and the legitimacy of suppliers. Simultaneously, the RBV will imply that companies will focus on suppliers who can help them achieve their strategic goals and capabilities. In the process of selecting suppliers, it leads to a multi-dimensional process of supplier selection that includes both traditional criteria (cost, quality, delivery) and sustainability factors. Companies need to weigh these factors to choose suppliers that can address the needs of their operations, in addition to being aligned with the objectives of ESG (Liaqait et al., 2022). When making business allocation decisions, the incorporation of the ESG criteria adds another layer of complexity. Companies can also direct additional business to those suppliers that have high sustainability performance, not only to live up to the expectations of the institution, but also to create more long-term value (Laosirihongthong et al., 2019). But trade-offs might occur when more expensive or less efficient sustainable suppliers are available. In such a situation, companies should make a wise decision between the short-term cost and long-term advantages. This complexity is further supported by empirical evidence, which shows that sustainability does not substitute traditional criteria but rather interacts with them in the decision-making processes. This strengthens the argument that there is a necessity to have a theoretical framework that embodies the issues of both economic and sustainability concerns (Liaqait et al., 2022). Conversely, Institutional theory and the RBV together support complementary theoretical foundations for this study. While institutional theory explains how external pressures and legitimacy seeking outline purchasing structures

and buyers' roles, RBV explains how internal resources and capabilities can differentiate firms in their sustainable supplier selection and business allocation decisions. Enterprises operating in the Finnish industrial technology and automation industry may develop unique purchasing capabilities and supplier evaluation practices that are valuable for sustainability performance, rare among competitors, hardly replicable due to unique historical conditions or causal ambiguity, and non-substitutable, thereby creating sustained competitive advantages in purchasing and supplier management.

2.4 Previous Empirical Studies

According to recent empirical research, sustainability is becoming increasingly popular in supplier selection schemes of various industries, but traditional norms are deeply embedded in the practical decision-making. Messaoudi et al. (2025) illustrated that the sustainable supplier selection frameworks are becoming more complex with the support of chance-constrained modelling method. However, cost efficiency and risk-related factors continue to play a major role in driving procurement choices. Their analysis of a disruption-prone supply chain revealed that sustainability criteria do not typically displace traditional factors; rather, the two sets interrelate. Correspondingly Arai (2025) disclosed how the environment of public procurement characterized by the growth of demand size, is more likely to encourage innovation among suppliers, implying that the technological breakthrough can also be promoted by the procurement decisions that incorporate the aspect of sustainability.

Sustainability-based supplier requirements in manufacturing and engineering-oriented systems tend to be weighed against the difficulties of production systems. Aspeteg et al. (2025) note that procurement within the engineer-to-order defence projects presents both uncertainty and complexity, and in such cases, buyers need to consider both aspects of sustainability and key operational variables such as quality control, delivery reliability, supplier integration, etc. Finally, their results pointed out that the concept of sustainability is recognised, but traditional measures of performance still dominate high-risk, high-complexity supply environments (Aspeteg et al., 2025).

The focus on environmental sustainability has attracted the attention of empirical research owing to the growing commitment to decarbonization in the world. According to Dhawan et al. (2026), supplier led distribution models and integrated warehousing are significant levers in the construction industry in regard to achieving logistic decarbonization. Though the business scenario in Finland is not as the same as that in the industry with regard to the industrial technology, the results indicate that customers consider the suppliers based on more than just the cost and operational effectiveness, although their potential to minimize carbon emissions and adopt low-impact logistics. Furthermore Solakivi et al. (2025) in their turn, they highlighted the issues related to the incompatibility of the emission laws within the transport chains, stating that customers increasingly experience an institutional pressure to focus on the environmentally compliant suppliers.

Sustainability in supplier selection is also evident in renewable energy and environmentally oriented fields. As pointed out by Lahri et al. (2025), the sustainability criteria in the selection of battery suppliers in the electric vehicle (EV) industry demonstrate a superiority of environmental footprint, resource circularity, as well as energy efficiency when compared to cost-based frameworks of supplier ranking. Their results highlight that sustainability can display a high degree of prediction in case the industry is competitive based on technological innovation or long-term environmental compliance. Additionally, some of the studies focus on the moral and social aspects of supplier assessment. In an analysis of sustainability determinants in the UAE cement industry, Sayour et al. (2025) indicated that the organisations are progressively embracing the sustainability-associated critical success factors, including environmental stewardship, worker welfare, and community engagement. According to their findings, sustainability is not just purely a recognized ethical requirement but a requirement for long-term competitiveness and risk mitigation. Correspondingly, Najafzadeh et al. (2025) make this point on an Industry 4.0 scale, indicating that the principles of sustainable development and the ethical approach to engineering should be incorporated into the new Architecture, Engineering and Construction (AEC) management framework.

Industries that are technology-intensive are increasingly interested in innovation that drives sustainability. Mariani & Mancini (2025) emphasized that machine learning tools can be used to improve the selection of project portfolios in accordance with sustainable innovation courses. Their results indirectly confirm the idea that the priorities of strategic sustainability of procurement choices are the central priority, in which innovation, digitalisation, and constant improvement become the key elements of competitive advantage. Moreover, several studies show that sustainability and risk management overlap. Nascimento et al. (2025) highlighted the role of sustainability-related decision factors and unpredictable environmental factors in supplier risk assessment models, especially in a humanitarian supply chain. The use of hesitant fuzzy linguistic sets implies that the sustainability aspect can be used to predict the risk exposure and operational vulnerability (Nascimento et al., 2025).

Another factor that is highlighted by portfolio-oriented studies is sustainability as a factor in allocation decisions. Nasrollahi (2025) revealed that the simultaneous modelling and weighting methods indicate the high impact of organisational management, environmental management systems, and corporate social responsibility in sustainable supplier prioritisation of biomass supply chains. Their results demonstrate how sustainability criteria can have a valuable impact on the allocation of purchase volumes, rather than the rankings of suppliers' selection.

Sustainability has also been recognised in the accounts of physical distribution and logistics management. Piffari et al. (2025) take the social-ecological systems approach to defining resilience processes in healthcare supply chains, stating that the issue of sustainability is becoming an increasingly important factor in resilience-building and risk mitigation. Their study indicates that supplier assessment frameworks currently need to add to the social and ecological aspects to enhance the resilience of the system level. Lastly, empirical data based on accounting structures demonstrates the impact of sustainability reporting and regulation formation on corporate governance and procurement. Sustainability accounting systems are criticized by Lehner (2026), who argues that EU regulatory power structures significantly influence firms' reporting of environmental and social

information. The insights are valuable to procurement, where transparent sustainability reporting is becoming an increasing source of information used to evaluate suppliers.

All these empirical works demonstrate that sustainability during supplier selection is complex and dynamic. They emphasize on the continued significance of traditional criteria and the growing role of sustainability in operational, strategic, and risk-aware operations procurement decision-making.

2.5 Conceptual Framework and Hypotheses

2.5.1 Conceptual Framework

The conceptual framework shown in Figure 01 provides a systematic account of how considerations of sustainability affect the selection of suppliers and ultimately the business allocation decisions (Li et al., 2021). It combines the main constructs Supplier Selection Priority (SSP), Criteria Importance Ratings (CIR), and Business Allocation Decisions (BAD), but implicitly, it draws on Institutional Theory and Resource-Based View. As discussed in detail, the strong points of this model are observed, and some aspects should be reflected upon more thoroughly.

At the first level, the SSP is framed as an independent variable which covers environmental sustainability, social responsibility, governance, and regulatory compliance. This classification is an adequate grasp of ESG aspects and is very much in line with the modern literature on supply chain management. Regulatory compliance and ESG factors must be included, as it encompasses both voluntary and mandatory motivators of supplier evaluation (Liaqait et al., 2022). The weakness, however, comes in the implicit assumption that these dimensions have the same weight among firms and across industries. As a matter of fact, prioritization may be skewed, where sector-specific pressures like tougher environmental laws in manufacturing compared to tougher social governance issues in service industries may exert their influence. Therefore, SSP can be more dynamic and context-dependent than is indicated in the framework.

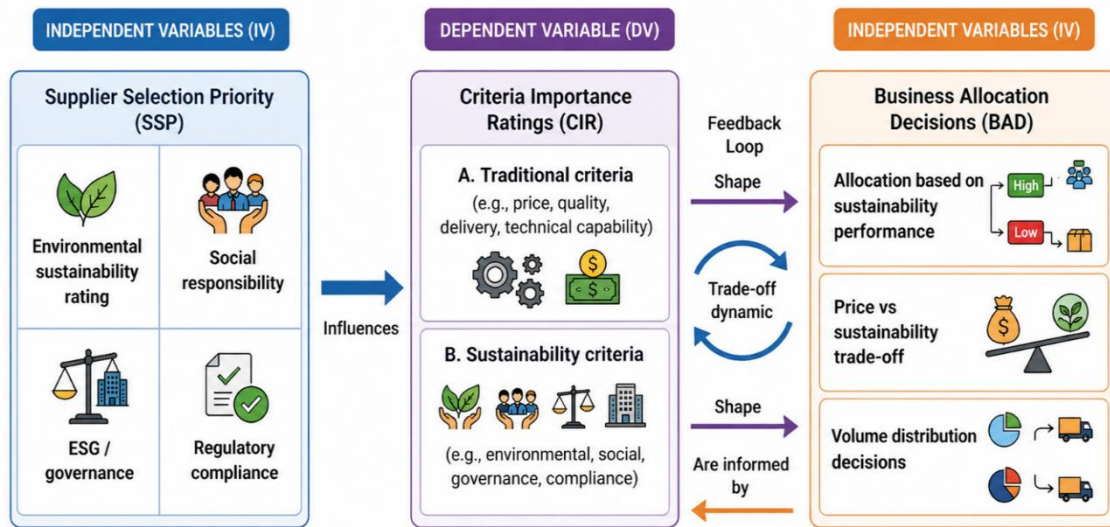


Figure 1. Conceptual Framework

The shift in priorities between SSP and CIR brings out the dynamics of priorities of the suppliers, as far as the relative importance of various evaluation criteria is concerned (Laosirihongthong et al., 2019). This contrast between traditional criteria (price, quality, delivery, technical capability) and sustainability criteria is conceptually competent, as it is a classical opposition between cost efficiency and ethical responsibility (Ali et al., 2023). This step is a practical way of operationalizing the decision-making process by demonstrating how abstract ESG priorities are operationalized into measurable evaluation metrics (Liaqait et al., 2022). The model, however, is based on a linear and unidirectional effect of SSP on CIR, which can be simplistic in the real world. Practically, a repetitive process of decision-making is normal in firms where the evaluation outcomes of previous evaluations refocus subsequent priorities. Also, the framework fails to explicitly consider internal organizational constraints, including budget constraints or procurement policies that can moderate the formation of CIR. The fact that CIR is placed in the middle as the dependent variable is worth mentioning, yet, at the same time, it is somehow problematic. CIR would normally be like a mediating variable and not an outcome, since it directly relates to subsequent allocation choices. It is partially recognized in the framework in the form of feedback loops and trade-off dynamics, but this correlation can be better elaborated.

Finally, BAD is particularly developed, covering three critical dimensions, namely, allocation based on sustainability performance, price versus sustainability trade-offs, and volume distribution decisions (Drakaki et al., 2019). These elements are a reflection of real-world purchasing issues and how the evaluation criteria can be translated into actual business results. The fact that the concept of sustainability is hardly ever pursued on its own but has to be balanced with the financial aspects is a massive strength. This is quite similar to RBV, where firms can be willing to pay higher prices as long as the company gains benefits in the long run in terms of brand reputation and resilience.

Nevertheless, the assumption that sustainability performance directly results in an increase in allocation might not always be true (Nourmohamadi Shalke et al., 2018). Sustainability concerns can be trumped by market conditions, the availability of suppliers, and short-term financial pressures, especially in highly competitive or cost-sensitive industries. Large companies can introduce sustainability mandates on their smaller suppliers, but these smaller suppliers may not have the resources to comply, creating a lack of connection between intention and action (Azadnia et al., 2015).

Another significant aspect is the feedback loop between BAD and CIR, which implies that the decisions made about allocation can change the future evaluation criteria. This will add a dynamic factor to the model, indicating that over time, the firms learn and evolve. However, this feedback mechanism is not developed conceptually (Kumar et al., 2025). It is not clear how this loop works with the help of formal performance appraisal, market learning, and institutional pressures. The general framework assumes that the perceptions of sustainability criteria and traditional criteria by the buyers affect the decisions on supplier selection and allocation. The framework also projects that sustainability might have explanatory power outside the normal criteria. However, empirical data on such correlations remain limited, particularly in specialized industries (Solakivi et al., 2025). Moreover, such connections in Finland's industrial technology and automation sector remain unaddressed, as contextual factors like regulatory pressure and supply chain dynamics may uniquely shape buyer perceptions.

2.5.2 Hypotheses

This Study is based on several assumptions that are closely linked to the hypotheses and quantitative survey design. It is assumed that buyers can assess supplier selection and business allocation criteria reliably and knowledgeably, drawing on their professional experience. This assumption is significant because the study depends on respondents' ability to interpret the questionnaire elements correctly and to evaluate the relative importance of sustainability in relation to traditional criteria such as price, quality and delivery reliability. Prior research on sustainable procurement and supplier evaluation has shown that these decisions are often made through multi-criteria assessment, in which both sustainability-related aspects are evaluated together (Imeri et al., 2015). In addition to that, the study assumes that sustainability criteria are relevant to purchasing decision-making and may influence supplier selection and allocation decisions beyond traditional standards. This assumption is used as the basis for the hypotheses, which are built on the idea that environmental, social and governance concerns do not operate regardless of cost and quality but may provide explanatory value in supplier selection and business allocation decisions. Sustainable purchasing study evidence has consistently shown that firms increasingly integrate sustainability into purchasing decisions, along with the fact that theoretical perspectives such as institutional theory and resource-based view help explain why sustainability can contribute to competitive advantage and strategic effectiveness (Chusaerie et al., 2025). Hence, the study proposes that respondents' perceptions of sustainability criteria in supplier selection and allocation decisions can be used to test whether these aspects are important in addition to traditional purchasing criteria.

Based on the presented assumptions, the main research question and three sub-research questions, this study proposes the following hypotheses for empirical testing.

Main research question:

H0 There is no significant difference in buyers' perceptions of the importance of supplier sustainability criteria and traditional criteria when making supplier selection and business allocation decisions in the Finnish industrial technology and automation industry

H1 There is a significant difference in buyers' perceptions of the importance of supplier sustainability criteria and traditional criteria when making supplier selection and business allocation decisions in the Finnish industrial technology and automation industry

Sub research question 01:

H0₁ There is no significant difference in the perceived importance ratings of sustainability dimensions and traditional criteria among buyers

H1₁ There is a significant difference in the perceived importance ratings of sustainability dimensions and traditional criteria among buyers

Sub research question 02:

H0₂ Perceived supplier sustainability does not significantly predict supplier selection priority beyond traditional criteria.

H1₂ Perceived supplier sustainability significantly predicts supplier selection priority beyond traditional criteria

Sub research question 03:

H0₃ Perceived supplier sustainability is not significantly associated with business allocation decisions beyond traditional criteria

H1₃ Perceived supplier sustainability is significantly associated with business allocation decisions beyond traditional criteria

3 Research Methodology

The third chapter of the paper details the methodology of the empirical research conducted among buyers in the industrial technology and automation industry in Finland. The purpose of this chapter is to clearly outline the research design, starting with the methods employed and then followed by an explanation and justification of the data collection steps to enhance the understanding. Further in the chapter, the researcher will discuss the target survey population, the sampling method used and the facts on which the thesis is based. The methodology chapter will conclude with a presentation on the study's validity and reliability.

3.1 Research Design

Business researchers commonly distinguish between qualitative, quantitative and mixed methods approaches based on the researcher's data collection method and the extent of the data analysis applied. According to Saunders et al. (2023), quantitative research methodology explores differences, variations and casualties between variables and systematically converts observational data into measurable quantities that enable statistical implications, hypothesis testing and broad generalisation (Saunders et al., 2023, pp. 181-191). The thesis study applies a quantitative research design, conducting an empirical data investigation with the buyers in the Finnish industrial technology and automation industry. To address the research questions, a survey using a self-administered questionnaire was shared via e-mail to collect primary data from buyers in the sampled firms. Surveys are a key instrument in quantitative research to collect data, in general delivered as a self-completed questionnaire via online, postal or collection methods and interview-administered formats such as telephone conversations or structured interviews (Saunders et al., 2003). Additionally, there are two forms of questionnaires. One type of questionnaire is structured and consists of formal questions intended for gathering precise, standardize data from a limited target audience, while the other one is unstructured, which is used for more open-ended questions for detailed and flexible responses (Aggarwal & Ranganathan, 2019). The survey used in the present study is a standardised

questionnaire, applied equally to all respondents to enable direct comparison and give the researcher control over the research process. Furthermore, this study adopts an exploratory approach, as its empirical objective is to examine the patterns and interactions among variables (Saunders et al., 2003, p. 139).

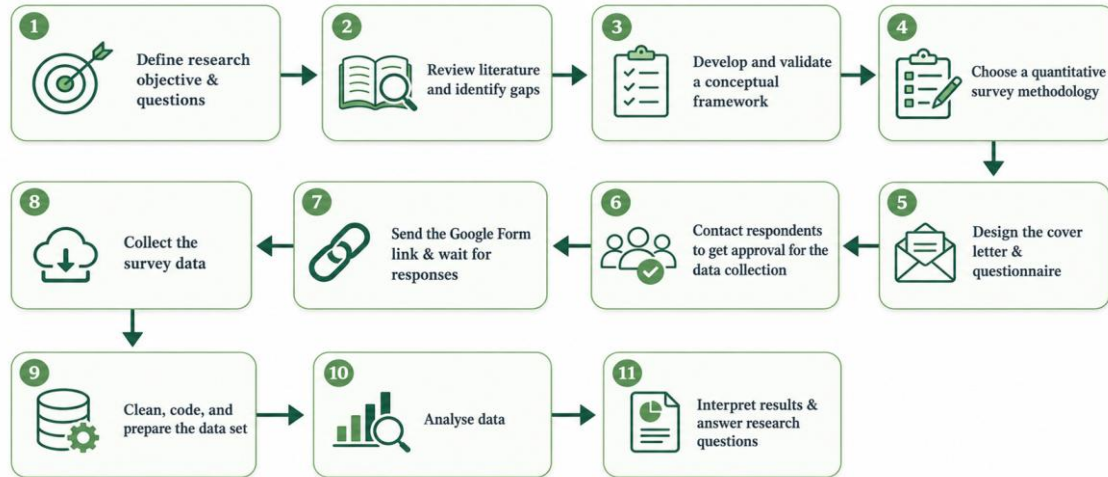


Figure 2. Research process

The process of this study has been described in Figure 02. Identification of the research objectives and formulation of the main research questions are the first steps in the research process. Initially, the researcher determines what the research is intended to accomplish. After identifying the research topic, the relevant literature was reviewed to identify existing research gaps and to develop a conceptual framework that supports the study. Based on the framework, a quantitative survey was chosen as the most suitable method for collecting empirical data from the purchasing decision makers. The next step was to create the questionnaire and cover letter, ensuring that the survey items represented both traditional and sustainability criteria relevant to the study. After the survey instrument was completed and approved, potential companies were contacted and asked for their approval to share with the respondents in the data collection process. Once the approval was granted, the Google Form link was distributed, and responses were collected. After data collection, responses were processed and prepared for statistical analysis to ensure that the dataset was complete and suitable for statistical testing. Finally, the data were analysed, and the results were interpreted to answer the research questions to provide an empirical insight into how sustainability and traditional criteria

are balanced in supplier selection and business allocation decisions in buyers point of view.

The quantitative methodology and the survey design are appropriate when answering the research objective to find out how buyers in the Finnish industrial technology and automation industry balance perceived supplier sustainability criteria with traditional criteria when making both supplier selection and business allocation decisions. The research question is discussed about the perceptions, relative importance and predictive influence of different criteria which are measurable through structured rating scales and comparative questions. A survey strategy allows these perceptions to be converted into numerical data that can be analysed statistically, enabling the study to identify which criteria are rated as most important, how they rank relative to one another, and whether sustainability indicators have a statistically significant effect on selection priority and allocation shares after controlling for conventional factors such as cost, quality, and delivery reliability. This aligns with Saunders et al. (2023), who emphasise that survey-based quantitative methods are particularly appropriate when the aim is to describe patterns, test hypothesised relationships, and generalise from a sample to a broader population of business decision makers.

Also, the quantitative approach is methodologically consistent with the thesis's deductive reasoning and theoretical framework. Prior sustainable supplier selection research has proposed conceptual models and multi-criteria decision-making frameworks. However, there is still a lack of empirical evidence on how buyers in specific contexts trade off sustainability against traditional criteria when selecting suppliers and allocating order volumes (Carter & Rogers, 2008). Furthermore, the survey design aligns with the structure of the research questions by enabling the same respondents to provide information on both the initial supplier selection and subsequent order allocation phases of the decision-making process. This focus emphasises the connection between research questions and methodology to contribute to an understudied field.

Collectively, these features demonstrate that the chosen approach for the thesis study is not only practically feasible but also theoretically and analytically coherent with the

objective of generating broadly applicable, empirically based insights into how Finnish industrial buyers integrate sustainability into supplier selection and business allocation decisions.

3.2 Data Collection

Data collection is at the heart of any good research. It enables the gathering of information for analysis and interpretation. By following careful, structured methods, researchers can collect reliable and accurate data that helps to build knowledge, to test the idea and make well-informed decisions (Floyd J. Flower, 2008, p. 61). The selected data collection strategy for this study is a survey, delivered through an internet-based self-administered questionnaire. This approach was deliberately selected by the researcher to collect standardised data from the possible buyers in Finland's industrial and automation sector. Primary data collection via the survey method is particularly suitable because it captures the self-reported ratings for subjective evaluation of complex, multi-attribute decisions that cannot be obtained from secondary sources such as financial statements or reports (Rashidi et al., 2020, p. 6). Since the current study focuses on buyers' practical experience, perceptions and decision trade-offs rather than objective outcomes, no external data sources such as industry databases were included. This mono method approach is associated with the Saunders et al. (2019, p.164) guidelines for focused quantitative research. It allows for efficient and straightforward hypothesis testing while adhering to the criteria driven by the existing literature covering both traditional measures like price, quality and delivery as well as sustainability dimensions including environmental, social and governance considerations.

The present study employs non-probability sampling to collect responses from the buyers who are involved in the supplier selection and business allocation decisions in the Finnish industrial technology and automation industry. It uses a combination of convenience and purposive sampling methods. Convenience sampling involves selecting respondents from the most accessible population segment of the population, while purposive sampling uses the researcher deliberately choosing participants based on their usefulness for the desired data collection (Ahmed, 2024, p. 3). This approach is

considered appropriate for exploratory survey studies to understand the patterns in decision criteria perceptions commonly in B2B research targeting small and expert populations (Ayandibu, 2025). Also, the study aimed to collect a sample of nearly 80 - 120 respondents to capture a diverse data set for the quantitative analysis. The researcher intended to distribute the survey to the following enterprises operating in the Finnish industrial technology and automation industry. Table 01 shows the overview of the selected companies relevant to this study. These companies were selected as they actively participate in engineering services, automation solutions, industrial technology and related manufacturing operations. Thus, they are appropriate respondents for the analysis of sustainable supplier selection and business allocation processes.

Table 1. Overview of the case companies

Company	Year, Location	Industrial Technology	Industrial Automation
A	2010, Vaasa, Finland	Marine power systems, energy management, and electrification technologies	Automation and control systems for marine and energy applications
B	1988, multiple locations in Finland	Electrification, robotics, smart manufacturing, digital industry technologies	One of the leading industrial automation companies globally
C	1910, Espo, Finland	Smart mobility and building system solutions	Automation integrated into smart mobility and building systems
D	2012, multiple locations in Finland	Engineering, industrial electrical systems, process technologies	PLC programming, industrial automation, commissioning services

E	1969, Pietarsaari, Finland	Manufacturing operations and industrial technology solutions	Automated manufacturing and assembly systems
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To collect data from the targeted sample population, an invitation with study details and an online questionnaire link was sent to directly identified contacts in each case company. The questionnaire briefly described the study's objectives and highlighted that the thesis work focuses on perceived decision criteria and self-reported purchasing decision making. In addition to that, respondents were given the information with an informed consent statement before accessing the primary questionnaire items. It declared that participation was entirely voluntary, responses would be treated confidentially and stored securely, and no personally identifiable information would be collected or disclosed.

The questionnaire was initially drafted in English in a standard Word document before being transferred into the Google Form platform. One of the key advantages of the Google Form is its real-time data collection and analysis capabilities, enabling immediate feedback for researchers (Ayandibu, 2025, p. 414). The questionnaire for the current study consists of five sections. In Section one, the researcher intends to gather background information on the respondent's role in the organisation, including years of purchasing experience, primary purchase category and their relation to the firm's core business, etc. These variables describe the sample characteristics and act as potential control variables later in the analysis.

The second section is designed to measure the perceived importance of different supplier evaluation criteria in the process of selecting suppliers. The mentioned traditional criteria include price/ cost competitiveness, product or service quality, and delivery reliability. On the other hand, sustainability criteria refer to environmental practices, social practices, governance and compliance. All these criteria are measured using a five-point Likert scale ranging from "1= not at all important to 5= extremely important", allowing for calculation of mean scores and reliability indicators. The third section examines supplier selection preferences through scenario-based questions. Respondents are asked to

consider situations where suppliers are equally competitive on traditional supplier selection criteria, and to indicate how strongly they support sustainability criteria in their final decisions. In the fourth section of the questionnaire, the researcher addresses the business allocation aspect, declaring how the criteria affect order volume shares among suppliers and if the respondent would shift business to more sustainable suppliers despite the slightly higher prices. Finally, in section five, the researcher aims to identify the barriers to prioritising sustainability in purchasing. Additionally, the final section includes an optional question for respondents who are interested in the results of the findings. A sample questionnaire is attached to the Appendix section (Refer to Appendix 01).

The data collection took one month from 23rd March to 16th April 2026. However, the exact survey-sharing route and the full composition of the respondent group could not be independently verified by the researcher. After data cleaning and the removal of incomplete questionnaires, the final sample size reflects 95 responses from a diverse mix of firm sizes, purchase categories, and experience levels, thereby supporting the generalisability of the findings to the Finnish industrial technology and automation context. The questionnaire was designed and distributed to maintain the anonymity and voluntary participation among potential respondents. Although individual participants could not be identified because the survey was anonymous, the researcher obtained the approximate number of responses from each participating company through the designated contact persons. For Case Company A, the researcher was able to directly access the responsible personnel and team leaders within the organization. Before the distribution of the questionnaire, an initial fact verification process was conducted with one of the members in the management team to ensure that the survey process complied with ethical considerations. During the meeting, the researcher had to clarify that the participation of the respondents in the survey would be entirely anonymous and voluntary, and that no company specific or confidential information would be collected, disclosed, or referenced in the study. Following this confirmation, the researcher granted permission to share the survey link with the respective team leaders, who subsequently facilitated the distribution of the questionnaire among potential respondents within their teams. Also, the questionnaire link was circulated through three identified direct contact

persons in Case Company B. In a similar manner, one direct contact person was supported to distribute the questionnaire link in Case Company C. To gain access to potential respondents in Case Company D, the researcher relied on one of the personal networking connections to circulate the survey link. Additionally, the primary contact person for Case Company E was identified through a professional social networking platform, which enabled the researcher to facilitate the distribution of the questionnaire. These contact persons acted as intermediary facilitators in reaching potential respondents within the respective organizations. Through these multiple access approaches, the researcher was able to effectively reach respondents across all selected case companies while maintaining the ethical principles of voluntary participation, anonymity, and confidentiality throughout the data collection process. However, the limitation of the data collection remains, as the researcher was not able to directly control the distribution of the survey link within the case companies. Accordingly, based on the confirmations of the direct contact persons of the case companies, the researcher was able to approximately map the respondent groups as, 30 responses were received from Case Company A, 20 from Case Company B, 15 from Case Company C, 20 from Case Company D, and 10 from Case Company E. The study achieved no of valid responses that provided sufficient statistical power for the intended analysis in line with Cohen (1992) statistical power of the analysis.

3.3 Data Analysis

The data collected through the questionnaire were analysed using both descriptive and statistical analysis techniques to address the main research question and three sub-research questions. The analysis commenced with descriptive data to visualise the respondents' profile and determine the most relevant traditional and sustainability-related criteria in supplier evaluation. The sample population characteristics were described by using descriptive methods such as graphs and charts in Section 01 demographic questions covering the aspects of participants' roles, years of purchasing experiences, firm size, level of involvement in supplier selection & business allocation within the company and knowledge of sustainability evaluation frameworks. For this section, the data was

analysed using Microsoft Excel. Additionally, a paired t-test was employed to compare the mean importance ratings of traditional criteria (price, quality, delivery reliability) vs sustainability criteria (environmental, social practices and governance) to distinguish those perceived as most influential in purchasing decisions.

After making the descriptive analysis, statistical methods were applied to examine whether there is a relationship between the independent and dependent variables (Saunders et al., 2019, pp. 613- 617). The questionnaire was designed with that in view, respondents' perceptions of traditional and sustainability-related supplier criteria as independent variables and supplier selection and allocation decisions as dependent variables. To determine whether sustainability criteria influence the supplier selection decision in addition to traditional criteria, multiple regression analysis was performed. This allowed the researcher to determine that perceived sustainability criteria had an impact on final supplier selection when respondents assumed that vendors were equally competitive in terms of price, quality and delivery reliability. Similarly, the chi-square test was used to find out the association between sustainability perceptions and the volume of business allocated to suppliers. This allowed the study to collect data on both how respondents stated assess the suppliers and how those assessments were reflected in their decision outcomes. The questionnaire responses were converted into numerical values where necessary for analysis using SPSS.

The main research question was answered using an ANOVA test, which integrated findings from the sub-research questions to measure the overall balancing patterns. In addition, perceived barriers were analysed using a descriptive method to identify the key obstacles respondents deal with when prioritising sustainability criteria in organisational purchasing decisions. Overall, the analysis utilized descriptive and statistical approaches to present clear empirical information on how Finnish industrial technology and automation operators make purchasing decisions, as well as how sustainability was integrated into both supplier selection and business allocation processes. A summary of the analysis methods described in Table 2.

Table 2. Statistical analysis structure

Research Question	Primary Data	Analysis method
Main Research Question (Overall balance)	All criteria ratings, scenario questions	ANOVA
Sub - Research Question 01 (Criteria ranking)	Q12 ratings	Paired t- test
Sub - Research Question 02 (Selection priorities)	Q 13 – 18 selections	Multiple regression
Sub - Research Question 03 (Allocation decisions)	Q 16, 19 – 21 allocations	Chi- square test

3.4 Research Quality

3.4.1 Ethics

Ethical consideration in research, protecting respondents and building trust are crucial in business survey research, particularly when exploring organisational decision making (Miller et al., 2024, pp. 3- 4). The researcher considers that research ethics, validity and reliability are the foundations of credible empirical analysis, especially in quantitative survey research (Saunders et al., 2019, pp. 213-218). This study adhered to essential research ethics, including voluntary participation, informed consent, anonymity and confidentiality. Respondents were clearly informed on the questionnaire's cover page that its purpose was a master's thesis research work and that no sensitive or confidential information would be collected. Furthermore, anonymity was maintained by ensuring that the questionnaire did not collect any personally identifiable information, such as the respondent's name, email address or any firm-level information beyond general

categorical information. Some demographic questions were included in the survey but specified as optional to protect the confidentiality of the respondents' information and comply with Finnish data protection regulations (e.g. EU GDPR guidelines).

3.4.2 Reliability

The reliability of the study plays an essential role in determining research quality as it assures that findings are stable, consistent and reproducible under identical settings, increasing the overall credibility and trustworthiness of the conclusions (Carmines & Zeller, 2012, p.10). To evaluate the research reliability, both internal and external aspects must be considered. Internal reliability signifies consistency throughout the study process, such as identical data analysis, the researcher interpreted results and scale variables that frequently assess the same concept. External reliability, on the other hand, is considered with the study's replicability, which means that comparable results would appear if it were conducted again at a different period or by another researcher (Saunders et al., 2019, pp. 516- 517). To ensure the study's credibility, the researcher must take steps to eliminate potential risks. In the current study, the questionnaire used a standard five-point Likert scale ranging from one as "not important at all" to 5 as "extremely important" for the criteria rating in question No 12, as well as for categorical response-based selections for demographic and behavioural items. This consistency reduces the measurement error caused by different interpretations (Carmines & Zeller, 2012, p.10) One of the significant concerns in the purchasing survey was that confusing phrasing could impact priorities. To improve the flow of the questionnaire and reduce respondent fatigue, the items were classified into clear categories, specifying traditional criteria (such as price, quality and delivery), sustainability dimensions (as environmental, social and governance), supplier selection scenarios (questions 13- 18) and business allocation behaviours (questions 16, 19- 21) while removing unclear terms that could weaken the consistency.

3.4.3 Validity

In research, validity matters as much as reliability. The extent to which the questionnaire construct measures what it is intended to assess refers to the validity of the empirical

study (Carmines & Zeller, 2012, p. 11). However, according to Carmines & Zeller (2012), an indicator's reliability does not necessarily imply its validity. Research validity also consists of external and internal aspects (Saunders et al., 2019, pp. 516-517). Internal validity is discussed through content validity, construct validity and criterion validity (Saunders et al., 2019, pp. 516-517). Content validity concerns the extent to which the survey's questions sufficiently address the research questions (Saunders et al., 2019). In the present study, content validity was achieved by comprehensively covering core dimensions from the literature, peer-reviewed sources, traditional and sustainability factors based on established frameworks in supplier selection studies. Construct validity refers to whether the questions used to evaluate a construct accurately reflect what it actually means (Saunders et al., 2019). The researcher supported this validity criterion with scenario-based questions in the survey (questions 13- 18) by confirming that the respondents perceived sustainability's influences when traditional criteria were considered as equal, isolating the key trade-off without contradicting factors. On the other hand, the demographic profile of the respondents enhances validity by enabling statistical analysis, exposing how decision-makers' backgrounds shape perceptions, and reducing errors in generalisation. Finally, the criterion-related validity measures the questionnaire's ability to predict significant conclusions (Saunders et al., 2019). The current research work focused on simultaneous consistency with real-world actions, including behavioural items (questions 19- 21), which examine actual allocation decisions. Although the relevant external data were unavailable due to access limitations, the questionnaire design was ensured to address the common bias using a balanced scale. Overall, these internal validity criteria support conclusions in multiple regression by linking sustainability perceptions to real outcomes.

External validity describes how successfully the research findings generalize to other contexts, populations, or time periods (Saunders et al., 2019). In the present thesis work, external validity is moderately encouraged by focusing on buyers in the Finnish industrial technology and automation sector, which was an appropriate population for supplier selection studies, while acknowledging limitations from non- probability sampling and self-reported perceptions. The online questionnaire was circulated through LinkedIn and

via email with professional networks to buyers who are involved in purchasing decision-making within the organization enhancing population validity rather than general employees. However, to ensure the study's generalisability in different circumstances, repeated work or a long-term study is necessary (Saunders et al., 2019, pp. 215-216).

4 Findings

The present chapter addresses both the descriptive and statistical assessment of the data collected through the current study's specific online survey (Appendix 1). The findings commence with a descriptive presentation of the respondents' demographic characteristics. In order to introduce survey participants, information including the respondents' experience level, firm size, level of involvement in supplier selection and business allocation decisions, frequency of supplier evaluation within the company and personal familiarity with sustainable frameworks is presented. Afterwards, the statistical analysis was conducted to test the hypotheses and provide answers to the research questions discussed in the chapter.

4.1 The Sample description

The questionnaire was shared with buyers in the industry with the expectation of receiving 80- 120 responses. A total of 95 respondents have answered and voluntarily participated in the study. The demographic characteristics of the respondents were initially summarized using descriptive statistics, which gave a picture of their professional background and organization environment. This will be helpful in determining the integrity of the data, and the findings will be informed by experienced participants.

The respondent distribution on the basis of current role indicates a balanced professional background with a high number of professionals holding purchasing-related positions. According to Figure 3, the researcher collected 31 responses from buyers/purchasers, the largest absolute number of respondents, underscoring that a considerable number of respondents are directly engaged in everyday purchasing. This is then achieved by Project Managers, 19 responses and Category Managers with 10 responses, who are usually strategic in the selection of suppliers and the decision-making process. The other positions, such as Field Service Coordinators, Marketing Managers, Project Controllers, and Sales Managers, make smaller yet significant contributions to the study, which means that all functions are cross-functional in making decisions relating to

procurement. Also, the existence of Sustainability Managers (3 responses) indicates that environmental and social issues are becoming more prominent in the organizational frameworks. The cumulative distribution indicates that more than 60 % of the respondents are in positions that are directly connected to procurement, project management or sourcing functions. Such diversity promotes the quality of the study since it reflects both the operational and strategic levels of perspective, giving a balanced picture of the practices of supplier selection and order allocation.



Figure 3. Sample current job role

The spread of the respondents in terms of their experience in purchasing activities shows the balanced composition of both the early career and the experienced professionals in Figure 4. The highest percentage was represented by the respondents with 1-5 years of experience (45.3%), which means that almost half of the respondents were relatively new to purchasing-related tasks, but still have enough exposure to provide valuable information. It was preceded by the group of 6-10 years' experience (31.6%), which is a considerable percentage of middle-level professionals with a great amount of hands-on experience. An interesting observation is that 18.9% of the respondents had over 10 years of experience, indicating the existence of very experienced professionals and, as such, would have an insightful understanding of supplier selection and procurement strategies. In the meantime, there is a minor number (4.2%) with less than one year of

experience, which brings in new ideas. In general, the majority of respondents (more than 50% of all participants) have experience that exceeds five years, which indicates that the dataset is informed by experienced participants, which increases the reliability and credibility of the findings of the study.

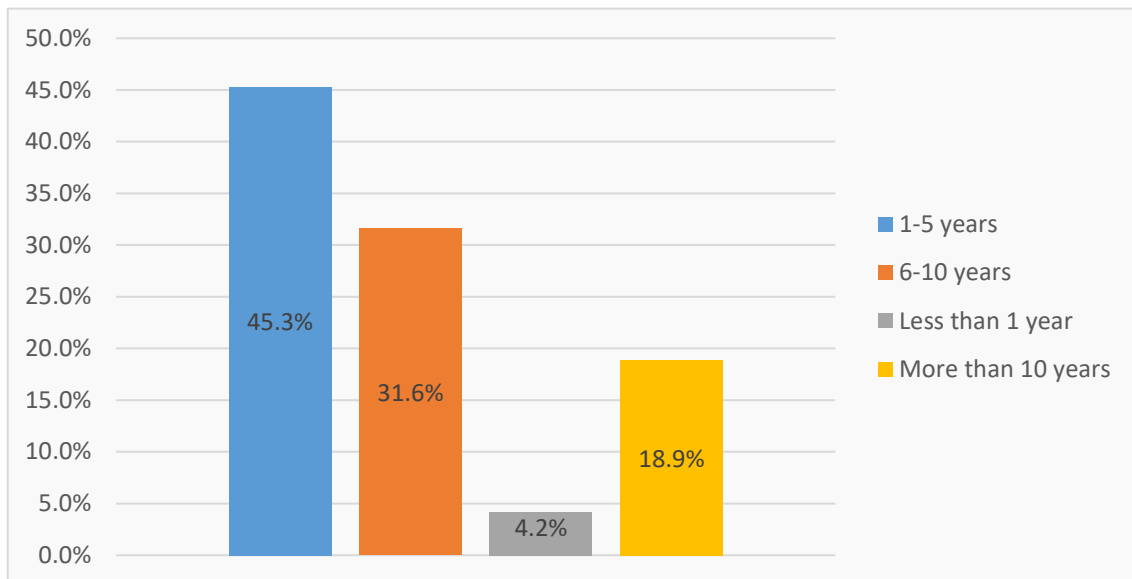


Figure 4. Sample working experience

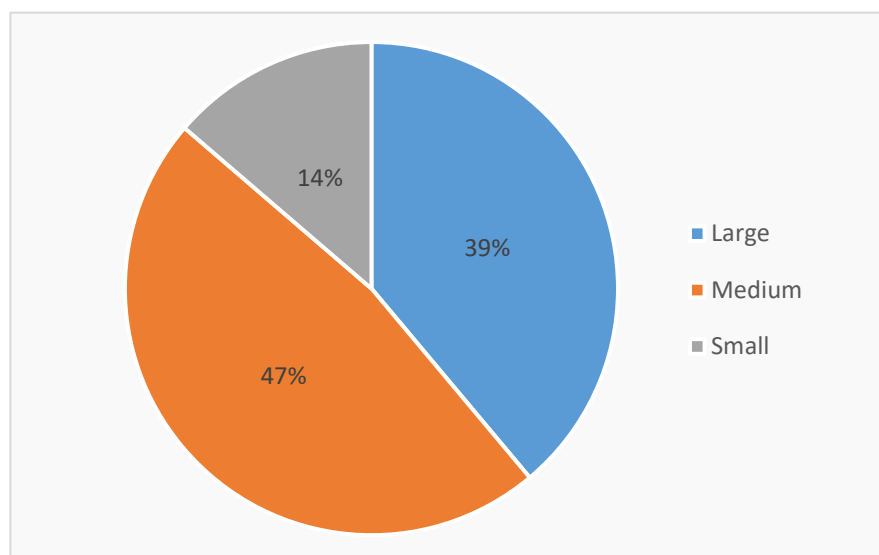


Figure 5. Sample size of the organization

In line with Figure 5, the size of companies represented by the respondents illustrates that most of them work in medium and large companies. Medium-sized firms (50 to 249 workers) make the highest percentage at 47.4%, indicating that about half of the respondents work in companies that maintain a balance between structured operations and flexibility in operations. Large businesses (250+ employees) are secondly mentioned, at 38.9%, and tend to have a more formalized purchasing process, an established supplier assessment system and are more focused on integrating sustainability. Small companies (1-49 employees), on the other hand, make up a low 13.7% of the sample, meaning that smaller firms were not very active. This can be an indication of the small scale of the procurement activities or the less formal practices of supplier selection in such organizations. Comprehensively, more than 85% of the respondents represent the medium and large enterprises, which means that the results of the study are dominated by the organizations that have developed procurement activities. This increases the applicability of the findings in more complex organizational contexts in selecting strategic suppliers and allocating orders.

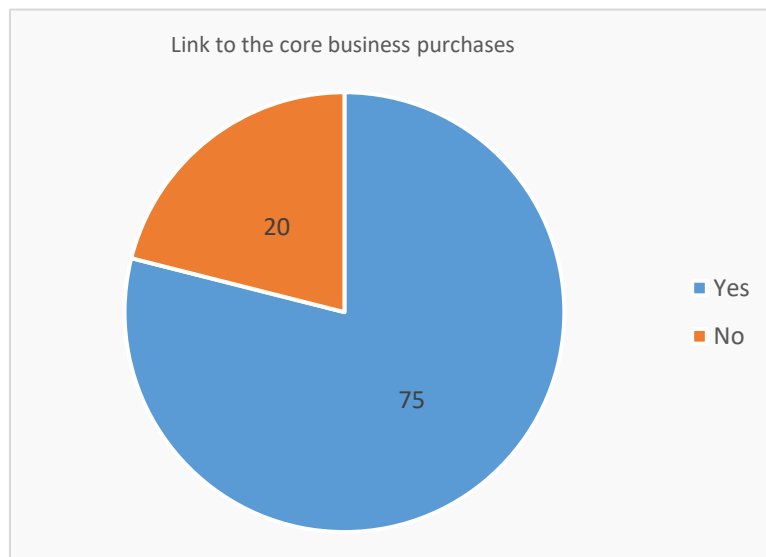


Figure 6. Sample purchasing behaviour

Figure 6, the results of the demographic factors of the analysis show that a majority of the respondents, 75 (78.9%), have their purchasing behaviour directly linked to the core

business operations of the company, and only 20 respondents (21.1%) reported otherwise. This implies that most of the participants are in strategic procurement processes which directly affect organizational performance, production processes, or service delivery. The high percentage of core-related purchasing is an additional factor that enhances the relevance of the study since decisions in supplier selection and allocation of orders are most likely to directly affect the operational efficiency and competitiveness. The responses are thus very useful in the analysis of the integration of sustainability and traditional criteria in critical procurement decisions in the organizations.

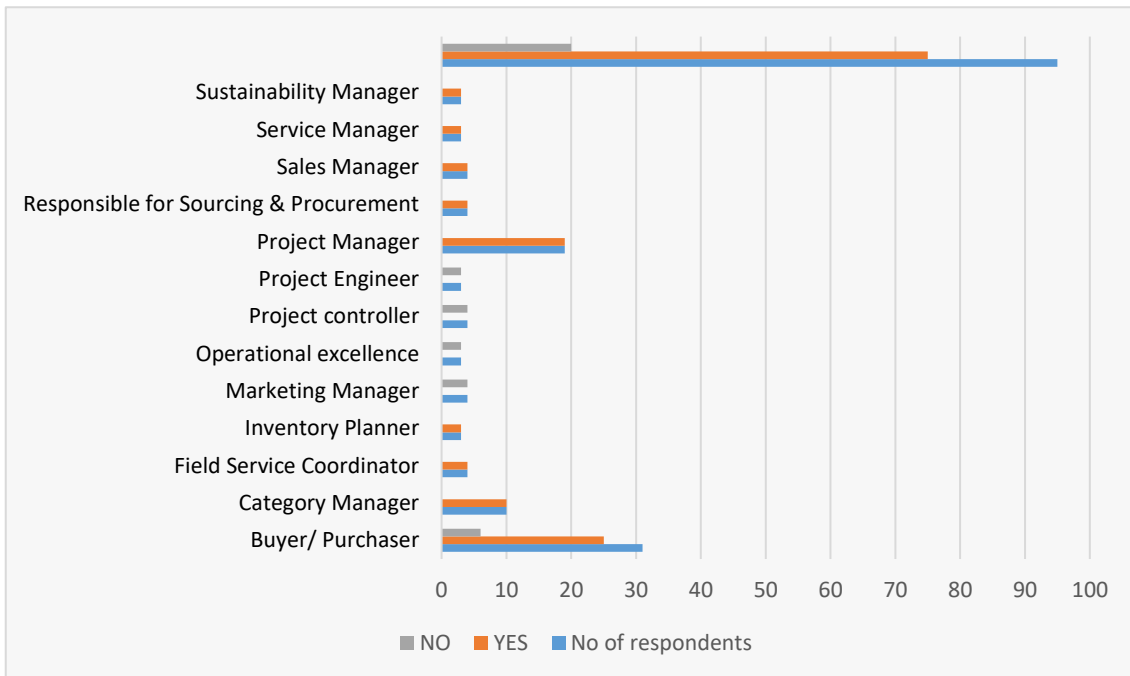


Figure 7. Respondents' roles and their link to core product purchasing

To summarise, Figure 7 clarifies the distribution of survey respondents according to their organizational roles and whether their positions have a direct link to the core business activities of the respective company. A total of 95 respondents voluntarily took part in the study, of which 75 respondents indicated that their roles were directly linked to the core business operations, while 20 respondents reported no direct connection. The findings demonstrate that most participants were engaged in operational and procurement-related functions are closely associated with organizational core activities within the

Finnish industrial technology and automation sector. Among the respondents, the largest group consisted of buyers/purchasers (n=31), where 25 respondents identified their roles as directly linked to the core business. Similarly, all category managers (n=10), project managers (n=19), inventory planners (n=3), field service coordinators (n =4), service managers (n=3), sustainability managers (n=3), and employees responsible for sourcing & procurement (n=4) reported having direct involvement with core business operations. In contrast, respondents from marketing managers (n=4), operational excellence employees (n=3), project controllers (n=4), and project engineers (n=3) indicated that their roles were not directly linked to the core business activities. Overall, the figure suggests that the study mostly gained perceptions from employees engaging in purchasing, sourcing, project management, and operational roles that are strategically connected to the organizations' primary business activities.

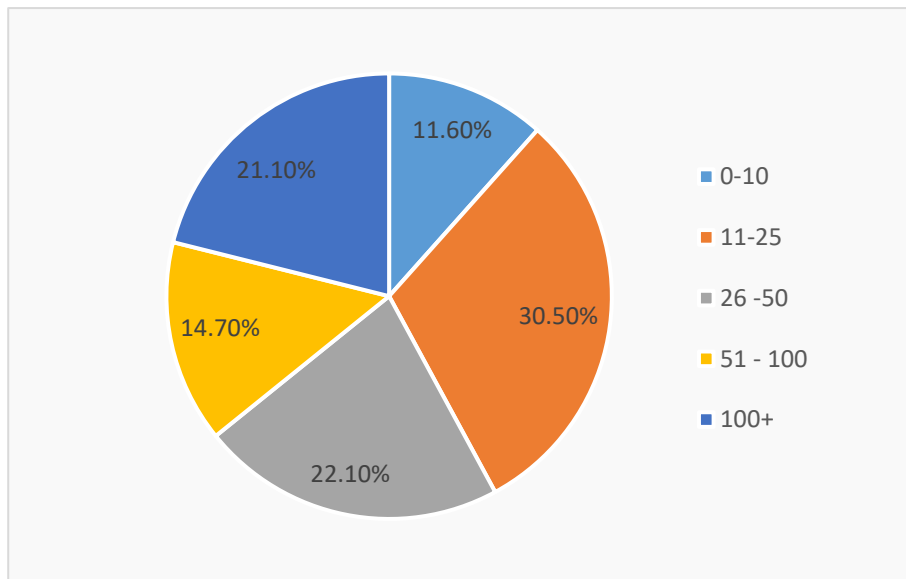


Figure 8. Sample involvement of direct suppliers

The findings indicate in Figure 8 that organizations have a broad spectrum of direct suppliers, which implies that they have different levels of complexity in their supply base. The majority of the respondents work with 11-25 direct suppliers (30.5%), and then the highest response rate to 26-50 suppliers (22.1%), indicating that most organizations have a moderately direct supplier network. Also, 21.1% of the respondents indicated that they

dealt with over 100 suppliers, which indicated very complex and diversified supply chains. Smaller supplier bases are also represented, where 14.7% of the responses were for 51-100 suppliers, and 11.6% of the responses were for 1-10 suppliers. Through this, distribution indicates a balanced representation, making it possible to study the practices of supplier selection in simple and complex procurement settings.

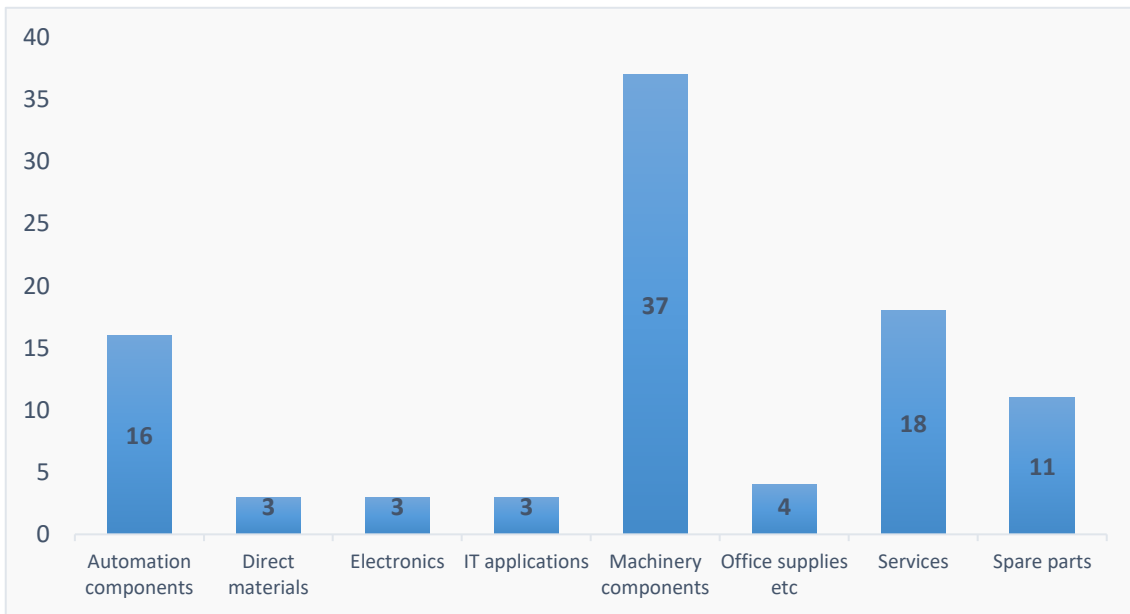


Figure 9. Sample purchasing category

Figure 9 specifies that the overall main categories of purchases are highly concentrated in industrial and technical purchasing. Machinery components (38.9%) make the highest percentage, meaning that a considerable proportion of organizations are in the manufacturing or engineering-based sectors where equipment and component reliability are of the most importance. This is then followed by services (18.9%) and automation components (16.8%), and shows the significance of both operational support and technologically advanced inputs in relationships with suppliers. Other segments, such as spare parts (11.6%), office supplies (4.2%), and smaller segments of direct materials, electronics, and IT applications (each 3.2%), are more specialized or support-based purchasing segments. The variety of categories is indicative of a wide range of suppliers in industries. Altogether, the prevalence of machinery and technical elements implies that the choice

of suppliers will probably be more oriented towards quality, reliability, and performance, as well as providing a chance to incorporate sustainability concerns into multi-layered supply chains.

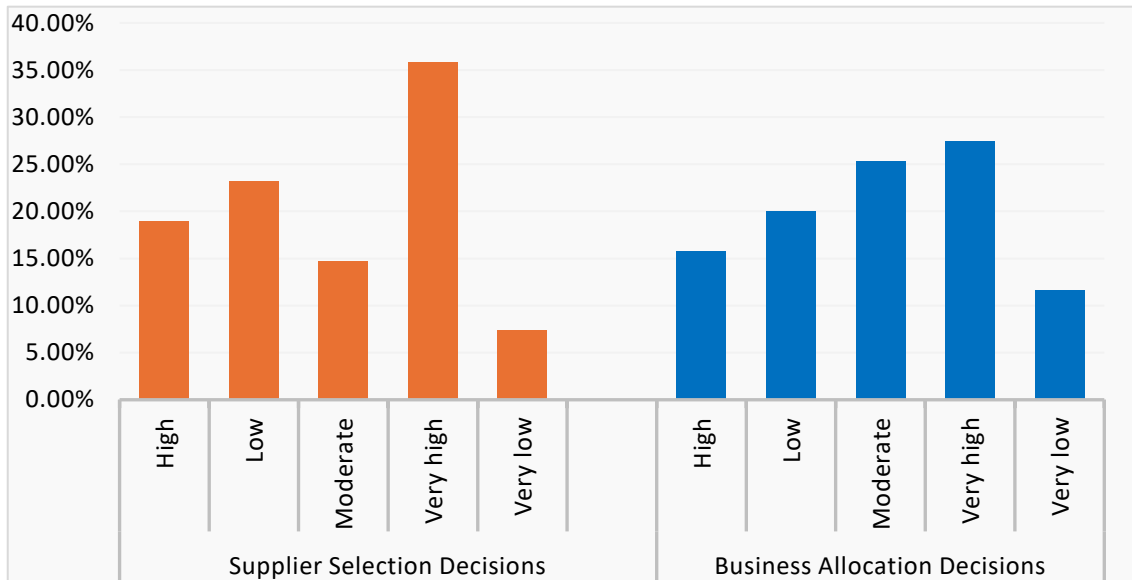


Figure 10. Sample involvement in the decision-making

The researcher developed Figure 10 to indicate the extent of the respondents' involvement in the focused purchasing decision-making within the particular organization. The findings show that there are different levels of participation in the selection of suppliers however, highly engaged individuals are well represented. The highest grouping is the category of very high involvement (35.8%), followed by the high involvement (18.9%), for instance. over 50% of the respondents are active and significantly involved in supplier selection decisions. This increases the reliability of the data, since most of it is based on people in direct charge of the procurement decisions. In the meantime, 23.2% said they had a low level of involvement, and 14.7% said moderate, in terms of supporting roles. Very low involvement is only 7.4%. Generally, the results affirm that experienced decision-makers have a very strong influence on the collected dataset.

On the other hand, respondents' participation in allocation decisions indicates balanced involvement in business allocation decision-making. The highest percentage is under the category of very high (27.4%), then close behind is the category of moderate (25.3%), and lastly is the category of low (20.0%). There is also a high level of involvement reported by 15.8% and a very low level of involvement reported by 11.6%. In summary, the majority of respondents (greater than 40%) are highly involved in the decision-making process, or have very high involvement, indicating that a considerable number of respondents are directly involved in decision-making associated with order allocation. Simultaneously, the existence of moderate and low involvement levels suggests the involvement of supporting roles, which gives a more comprehensive picture. This diversity improves the dependability of the information on the impact of allocation decisions in companies.

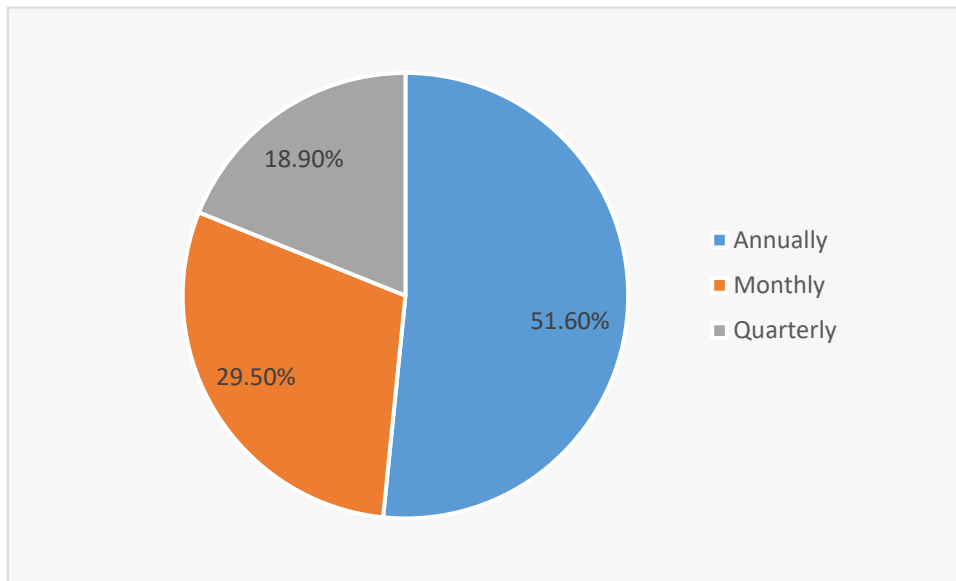


Figure 11. Sample frequency of supplier evaluation

Finally, for the descriptive analysis, Figure 11 illustrates the findings that supplier evaluation is carried out frequently throughout organizations with annual evaluations as the most prevalent (51.6%). This implies that numerous organizations have a systematic, periodic review process in accordance with strategic planning cycles. A large percentage (29.5%) performs monthly assessments, which is more of a continuous monitoring

strategy, most likely in dynamic or risky supply backgrounds. Moreover, 18.9% of the respondents consider suppliers quarterly, which is a moderate frequency of attention and efficiency of resources. Taking everything into account, the results indicate that the majority of organizations are actively evaluating supplier performance, which helps to make successful decisions regarding the selection of suppliers and the distribution of orders, as well as allows integrating sustainability and traditional criteria of performance.

4.2 Descriptive statistics and Hypotheses analysis

Statistical techniques were used to examine the relationships among the main study variables. For the descriptive study, the researcher has formulated the following variables. Sustainable Supplier Selection (SSP) refers to the sustainability-related and operational characteristics of suppliers that buyers consider during the supplier selection process, such as environmental responsibility, social compliance, ethical behaviour, quality performance, delivery reliability, flexibility and innovation capabilities. These strategies are significant since supplier assessment in sustainable purchasing increasingly extends beyond traditional financial considerations and includes broader value creation and responsibility-based criteria.

Also, Business allocation decisions (BAD) highlight how buyers distribute order quantities or business shares among suppliers after the selection phase, making the process a critical sourcing decision that determines not only which suppliers are chosen but also how much business they receive. Further, Cost and innovation-related variables (CIR) are traditional and strategic decision criteria used in supplier assessment, including price, cost effectiveness, quality, responsiveness and support for product or process development. In this study, CIR can be considered as a comparison group to the sustainability criteria, since purchasing professionals frequently measure traditional factors against social and environmental concerns while making decisions. Finally, business performance (B) refers to the broader organizational outcomes generated by purchasing and supplier selection decisions. This research work is interpreted as the expected performance outcome of selecting and allocating business to suppliers who exceed expectations on both traditional and sustainability-related criteria. In other words, the study assumes that supplier selection and business allocation are not focused only on reducing costs, but also on

enhancing overall business performance through strengthened supplier relationships and more sustainable sourcing practices.

The researcher has conducted an ANOVA test to examine the main research question, whether there is a significant difference in buyers' perceptions of the importance of supplier sustainability criteria and traditional criteria when making supplier selection and business allocation decisions in the Finnish industrial technology and automation industry. The following hypothesis is therefore proposed.

H0 There is no significant difference in buyers' perceptions of the importance of supplier sustainability criteria and traditional criteria when making supplier selection and business allocation decisions in the Finnish industrial technology and automation industry

H1 There is a significant difference in buyers' perceptions of the importance of supplier sustainability criteria and traditional criteria when making supplier selection and business allocation decisions in the Finnish industrial technology and automation industry

According to Table 3, the overall model significance is analyzed by comparing the variation to be explained by the independent variables (criteria ratings and scenario-based responses) and the unexplained variation.

Table 3. ANOVA Test

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	21.856	3	7.285	1040.836	<.001
Residual	0.637	91	0.007	-	-
<i>Total</i>	<i>22.493</i>	<i>94</i>	-	-	-

The results in Table 3 indicate that the statistical analysis is significant with an F-value of 1040.836 and a significance of $p = 0.000$. Given that the p-value is way less than the normal significance of 0.05, it proves that the model is significant. Consequently, the overall impact of the independent variables (sustainability criteria or traditional criteria) on the dependent variable (perceived importance rating) is very high and significant, as

the total effect is on the overall decision-making balance regarding the choice and allocation of suppliers. The result initially addresses the main research question as it indicates that sustainability, alongside traditional criteria, possesses a significant role in purchasing decisions within the Finnish industrial technology and automation industry. The sum of squares further analysis reveals that the regression model accounts for a significant amount of total variation. The sum of squares regression (21.856) is near the total sum of squares (22.493), and the residual sum of squares is very small (0.637). This means that a very low percentage of variation is not explained, and therefore, the clarity of the model is very high. Practically, this implies that the criteria chosen, both the traditional aspects of price, quality, and delivery, and the sustainability aspects of environmental, social, and governance aspects, capture the most important features in the supplier selection decision-making. Moreover, this is supported by the mean square values. The regression mean square (7.285) is much greater than the residual mean square (0.007), which led to a very high F-statistic. This significant difference shows that the difference that can be attributed to the model is far greater than the chance, which enhances the acceptance in the accuracy of the findings. Moreover, the model has the right degrees of freedom ($df = 3$ regression and 91 residual), which is well-specified and has a large sample size ($N = 95$) that strengthens the validity of the results. Scientifically, these findings indicate that traditional criteria are not the only factors used by buyers in their supplier decision-making. Rather, the impact of sustainability-related factors on the selection of suppliers and the allocation of business are important and quantifiable. The good fit suggests that the decision-makers are indeed proactive in incorporating sustainability factors along with cost, quality, and delivery performance in instances where suppliers would otherwise be similar.

In compliance with hypotheses, the null hypothesis suggested that buyers perceive no significant difference in the importance of supplier sustainability criteria in contrast to traditional criteria. Since the ANOVA result is statistically significant at the 0.05 level, the null hypothesis is rejected, while the alternative hypothesis is validated. This implies that buyers are to distinguish between sustainability-related and traditional purchasing criteria when making supplier selection and business allocation decisions. The findings thus imply that these factors are not seen as equally significant but rather contribute differently to decision-making in the Finnish industrial technology and automation context. Altogether, the ANOVA results therefore provide quantitative evidence that the balance

between sustainability and traditional supplier criteria is a meaningful concern in buyer decision-making.

Further, the paired sample t-test was conducted to answer sub-research question one and determine the difference between the mean ratings of the importance of traditional and sustainability criteria in the process of selecting suppliers. The constructed hypothesis for this analysis is as follows,

H₀₁ There is no significant difference in the perceived importance ratings of sustainability dimensions and traditional criteria among buyers

H₁₁ There is a significant difference in the perceived importance ratings of sustainability dimensions and traditional criteria among buyers

The null hypothesis (H₀₁) explained that there is no significant difference between perceived importance ratings of the sustainability aspect and traditional criteria among buyers, whereas the alternative hypothesis proposed that a substantial difference exists. The results are detailed below in Table 4.

Table 4. Paired- sample t- test

Criteria	Category	Mean Importance	Std. Deviation
Price	Traditional	4.52	0.742
Product/service quality	Traditional	4.41	0.684
Delivery reliability	Traditional	4.41	0.832
Technical capability	Traditional	4.26	0.847
Supplier responsiveness	Traditional	4.19	0.822
Supplier flexibility	Traditional	4.15	0.708
Governance & compliance	Sustainability	4.11	0.835
Delivery lead time	Traditional	4.04	1.004

Compliance with EU regulations	Sustainability	3.96	0.885
Environmental certifications	Sustainability	3.89	1.071
Social practices	Sustainability	3.81	0.775
Environmental practices	Sustainability	3.67	1.160

Table 5. Summary of Paired- sample t- test

Criteria Category	Average Mean Rating
Traditional Criteria (Price, Quality, Reliability, Lead time, Technical Capability, Flexibility, Responsiveness)	4.28
Sustainability Criteria (Environmental practices, Certifications, Social practices, Governance, EU compliance)	3.89

The results show a clear difference in the perceived importance of the criteria. Price had the highest mean rating at 4.52 (N=95, SD=0.74). It was rated slightly higher than product/service quality (M=4.41, SD=0.68) and delivery reliability (M=4.41, SD=0.83). These differences were not statistically significant ($p=0.122$ and $p=0.267$, respectively). This means buyers in the industry perceived price, product/service quality, and delivery reliability as almost equally important. Price was rated significantly higher than several other traditional criteria and all sustainability criteria. For instance, the price was significantly higher than the delivery lead time (M=4.04) with a mean difference of 0.48, $t=4.055$, $p < 0.001$. Among sustainability-related variables, the differences were even more impactful. Price was higher than the environmental practices (M= 3.67) by 0.85, $t=6.514$, $p < 0.001$, higher than environmental certifications (M= 3.89) by 0.63, $t=5.331$, $p < 0.001$, higher than social practices (M= 3.81) by 0.70, $t=7.781$, $p < 0.001$, higher than governance compliance (M= 4.11) by 0.41, $t=4.422$, $p < 0.001$, and higher than compliance

with EU regulations ($M = 3.96$) by 0.56, $t = 5.577$, $p < 0.001$. These findings reinforce the idea that buyers distinguish between primary operational prerequisites and additional supplier characteristics.

Among the sustainability criteria themselves, governance and compliance had the highest mean at 4.11, followed by compliance with EU regulations at 3.96, also the environmental certification at 3.89, social practices at 3.81, and environmental practices at 3.67. The difference between governance and compliance with EU regulations was statistically significant ($t = 2.596$, $p = 0.011$), and environmental practices were significantly lower than environmental certifications ($t = -4.057$, $p < 0.001$), governance and compliance ($t = -4.180$, $p < 0.001$), and EU compliance ($t = -3.793$, $p < 0.001$). This indicates that buyers do not consider all sustainability criteria equally instead, they tend to prioritise those that are more closely related to organizational accountability.

From a hypothesis testing perspective, as per the results of Table 04, the null hypothesis is rejected because the analysis indicates a significant difference in the perceived importance of buyers for the traditional criteria and the sustainable criteria in the supplier selection process. Hence, the alternative hypothesis is validated. More specifically, the results emphasise that sustainability consideration was not neglected by the buyers in the industrial technology and automation industry in Finland, rather it rated lower but remains relevant by giving more attention to traditional criteria such as price, cost, quality, delivery reliability and other operational performances.

Furthermore, to examine the sub-research question two, whether perceived supplier sustainability predicts supplier selection priority beyond traditional criteria, multiple regression analysis was performed with CIR, SSP and BAD as independent variables and supplier selection priority as the dependent variable. The analysis was intended to figure out which factors significantly explain supplier selection priority and whether sustainability contributes additional rationality when traditional criteria are taken into consideration. The formulated hypothesis is as follows,

H02 Perceived supplier sustainability does not significantly predict supplier selection priority beyond traditional criteria

H12 Perceived supplier sustainability significantly predicts supplier selection priority beyond traditional criteria

Table 6. Multiple regression analysis

Variable	Unstandardized B	Std. Error	Standardized Beta	t	Sig.
(Constant)	.196	.084	-	2.319	.023
CIR	.297	.023	.273	12.668	<.001
SSP	-.104	.058	-.132	-1.792	.077
BAD	.753	.056	.951	13.458	<.001

Table 6 presents the regression analysis test results, that two variables, CIR and BAD, significantly affect supplier selection priorities, whereas SSP does not significantly affect the selection priorities at the 5% level of significance. The p-values of CIR (0.000) and BAD (0.000) are much lower than that of 0.05, which confirms that the two variables are significant in explaining the difference in supplier selection choices. On the contrary, SSP has a p-value of 0.077, which does not exceed 0.05, which means that its influence is not statistically significant in this model. Concentrating on the unstandardized coefficients (B), CIR equals 0.297, which implies that a one-unit change in CIR causes a 0.297 change in the dependent variable, other factors remaining constant. Likewise, BAD presents a significantly higher coefficient of 0.753, which means it has a very substantial positive effect on the priorities of supplier selection. This indicates that BAD takes a leading role in decision-making as opposed to CIR and SSP. On the one hand, SSP has a negative coefficient (-0.104), which means that it is an inverse relationship with the dependent variable, but it is not statistically significant, so one cannot be sure of this effect. The standardized coefficients (Beta) give an idea of the relative significance of each variable. BAD

has the largest Beta value (0.951), which means that it is the most significant predictor in the model. The Beta of CIR is 0.273, which has a significant yet relatively minor contribution. SSP exhibits a low negative Beta (-0.132), which is another indication of its low contribution to the priorities of supplier selection. These findings indicate that among the analyzed factors, BAD has the most significant impact on decision-making, then CIR. These are also supported by the t-values. The t-values of BAD ($t = 13.458$) and CIR ($t = 12.668$) are large, which supports their significance and the significant contribution to the model. Conversely, SSP has a t-value of relatively low value (-1.792), which is in line with the non-significant p-value. Also, the constant term is significant ($p = 0.023$), which is evidence that the model does not have a zero value of the baseline. As a whole, the regression analysis shows that the priorities in supplier selection are affected by certain factors, especially BAD and CIR, and SSP is not critical in this situation. These results indicate that decision-makers place more emphasis on some of their criteria in judging suppliers, particularly in situations where the balance of sustainability and the traditional factors exists.

In relation to the hypothesis, the null hypothesis (H02) is accepted as perceived supplier sustainability does not significantly affect supplier selection priority beyond traditional factors. Consequently, the alternative hypothesis (H12) is rejected. The findings reveal that in this sample, buyers place more importance on traditional variables than on sustainability perceptions when setting supplier selection priorities. Finally, the findings emphasise a strong indication that variables do not have equal importance in supplier selection decisions. BAD turns out to be the most influential factor, then CIR and SSP do not have any significant influence. This observation is fundamental in grasping the emphasis of criteria by buyers in their real-life decision-making, and it aids the purpose of this study to determine major drivers in the process of selecting suppliers.

Correspondingly, the Chi-square test was conducted to address sub-research question three, examining the relationship between business allocation decision and the level of sustainability consideration among buyers. The hypothesis is as follows,

H0₃ Perceived supplier sustainability is not significantly associated with business allocation decisions beyond traditional criteria

H1₃ Perceived supplier sustainability is significantly associated with business allocation decisions beyond traditional criteria

According to Table 7, the findings show a significant trend among the three sustainability groupings. The majority of respondents who rated low priority of sustainability supported low-cost business allocation, while fewer chose a balanced or sustainability-oriented approach. Among those with mid-level sustainability relevance, responses were more evenly distributed. In the high-importance group, a significant number of respondents supported sustainability-oriented business allocation. This pattern indicates that as perceived sustainability priority improves, buyers are more prone to approve sustainability-oriented allocation decisions.

Table 7. Chi-square test

Sustainability Consideration	Prefer Low Cost	Balanced Approach	Ap-Prefer Sustainability	Total
Low Importance	22	10	3	35
Moderate Importance	10	15	8	33
High Importance	5	9	13	27
Total	37	34	24	95

Moreover, results indicate a Pearson chi-square of 18.742 and a significance value of 0.001, which is below the threshold of 0.05. This supports the fact that the two variables are statistically significant. The cross-tabulation findings indicate that respondents who place low emphasis on sustainability tend to allocate more business to lower-cost suppliers. Conversely, respondents who place a high preference on sustainability tend to give business to suppliers with an improved sustainability performance despite the higher costs. Moderately important ones are prone to take a moderate position. As a result, the alternative hypothesis H13 is supported, while the null hypothesis H03 is rejected. This means that perceived supplier sustainability has a substantial impact on

business allocation decisions beyond traditional criteria. In practical words, the findings show that buyers who place greater value on sustainability are more likely to allocate business in ways that benefit sustainability-oriented suppliers, whereas buyers with lesser sustainability emphasis are more likely to choose cost-based allocation decisions.

4.3 Additional testing

Table 8. Correlation analysis

		SSP	BAD	B	CIR
SSP	Pearson Correlation	1	.967**	.939**	.553**
	Sig. (2-tailed)		.000	.000	.000
	N	95	95	95	95
BAD	Pearson Correlation	.967**	1	.959**	.497**
	Sig. (2-tailed)	.000		.000	.000
	N	95	95	95	95
B	Pearson Correlation	.939**	.959**	1	.672**
	Sig. (2-tailed)	.000	.000		.000
	N	95	95	95	95
CIR	Pearson Correlation	.553**	.497**	.672**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	95	95	95	95

The correlation analysis shown in Table 8, the strength and direction of the relationships between four important variables (SSP, BAD, B and CIR), is based upon a sample of 95 respondents. The Pearson correlation coefficients (with the significance values) indicate that all the relationships are significant at the 0.01 level ($p = 0.000$), showing that there is strong evidence against no relationship among the variables. This implies that there is some significant relationship between the variables, and it can be further regressed or projected. First of all, SSP and BAD have a very positive correlation ($r = 0.967$). This implies that, the higher the SSP, the higher the BAD in an almost proportional relationship. Similarly, SSP also exhibits a strong positive correlation with B ($r = 0.939$). These correlations suggest that SSP is the indicator that is most important in influencing or correlating with the other variables in the model. Besides, there is also a very high correlation between BAD and B ($r = 0.959$), which again suggests the existence of high levels of interdependence between these three variables (SSP, BAD and B). This trend suggests that the variables could be measuring closely related phenomena or constructs. The variable CIR on the other hand shows moderate positive correlations with the rest of the variables. Particularly, CIR correlates with SSP, BAD, and B with 0.553, 0.497, and 0.672, respectively. Although these associations are not as high as the above-discussed relations, they are statistically significant and indicate that there are significant relations. The medium strength suggests that CIR is in a relationship with the other variables, but on a slightly different dimension. The most significant correlation is between CIR and B ($r = 0.672$), which means that B has a relatively bigger impact or association with CIR than SSP and BAD. The values of significance (Sig. All relationships have a 2-tailed = 0.000) indicate that none of the relationships is by chance. Thus, the results are strong empirical evidence of the existence of relationships between the variables taken into consideration in the study.

Furthermore, the correlation analysis shows that a positive relationship exists between all variables that are strong and statistically significant. The relationships between SSP, BAD and B are very strong, which suggests that they are interdependent and may overlap in measurement. Meanwhile, CIR has moderate but significant correlations with the

other variables, which means that it is a rather specific factor in the study. The results show that there are significant associations. In general, the results offer a strong base to develop further statistical analysis and point to the importance of model validation.

Table 9. Summary of the examined hypotheses

Hypothesis	Construct	Status
H0	There is no significant difference in buyers' perceptions of the importance of supplier sustainability criteria and traditional criteria when making supplier selection and business allocation decisions in the Finnish industrial technology and automation industry	Rejected
H1	There is a significant difference in buyers' perceptions of the importance of supplier sustainability criteria and traditional criteria when making supplier selection and business allocation decisions in the Finnish industrial technology and automation industry	Supported
H0 ₁	There is no significant difference in the perceived importance ratings of sustainability dimensions and traditional criteria among buyers	Rejected
H1 ₁	There is a significant difference in the perceived importance ratings of sustainability dimensions and traditional criteria among buyers	Supported
H0 ₂	Perceived supplier sustainability does not significantly predict supplier selection priority beyond traditional criteria	Supported
H1 ₂	Perceived supplier sustainability significantly predicts supplier selection priority beyond traditional criteria	Rejected

H0 ₃	Perceived supplier sustainability is not significantly associated with business allocation decisions beyond traditional criteria	Rejected
H1 ₃	Perceived supplier sustainability is significantly associated with business allocation decisions beyond traditional criteria	Supported

5 Discussion and Conclusion

The primary results of the empirical investigation of this thesis are explained and discussed in this chapter. Additionally, this section addresses the theoretical contribution of the study and presents managerial implications that are relevant to buyers and supply chain operators in the Finnish industrial technology and automation industry. Furthermore, it reflects on the limitations of the study and suggests possibilities for future research.

5.1 Summary of the key findings

The study aimed to investigate the perceived importance of buyers regarding the sustainability in the selection of suppliers and allocation of business in the present purchasing context in the industrial technology and automation industry in Finland. The results give a positive indication that the purchasing decision-making process is not solely guided by the traditional decision-making criteria, which include cost, quality, and delivery, but rather it is increasingly influenced by environmental, social and governance (ESG) considerations. Simultaneously, the outcomes prove that sustainability does not substitute the traditional standards, it interacts with them in a multifaceted and dynamic way. The conclusion synthesizes the theoretical, empirical data and overall implications of the study to give a comprehensive understanding of the behaviour of the buyers' sustainability aspect-driven purchasing process. Based on the main findings of this study is the fact that the selection of the suppliers has become a multi-dimensional decision-making procedure. Historically, the procurement decisions were largely concerned with the economic efficiencies, where cost minimization and operational reliability were the predominant concerns. But the increasing focus on sustainability has increased the range of assessments to cover a wider range of societal and environmental effects. This change is not only driven by transformations in regulatory requirements and stakeholder expectations, but also by a strategic realization of buyers in the industry that sustainability can help in creating long-term value. Consequently, selection of suppliers is no longer a

transactional process but a strategic process that affects organizational performance, reputation and resilience.

This interpretation is supported by the empirical results of the research since these outcomes show that there exist strong correlations between the variables that are related to sustainability and the outcomes of the supplier selection process in the industrial technology and automation industry. The correlation analysis has shown that the sustainability supplier practices, business allocation decisions, and other important variables are highly interrelated and that the positive correlations between them are very strong. These findings imply that the sustainability considerations are highly integrated into the process of making procurement decisions by the buyers and are not perceived as distinct and secondary factors. They are rather incorporated as part of the overall evaluation process, affecting both the selection of suppliers and the distribution of purchasing volumes by the buyers, not perceived as distinct and secondary factors. They are rather incorporated as part of the overall evaluation process, affecting both the selection of suppliers and the distribution of purchase volumes by the buyers. Nevertheless, the findings should be generalized with more caution, as the indirect circulation of the questionnaire through organizational contact persons may have initiated the potential response and sampling biases.

5.2 Discussion of the key findings

The main conclusions in connection with the research questions are covered in this section. It focuses on the way buyers in the Finnish industrial technology and automation sector consider sustainability considerations in addition to traditional supplier selection criteria, and how these assessments affect decisions on supplier selection and business allocation.

5.2.1 Main RQ: Sustainability and traditional criteria

The main objective of the study was to explore how buyers in the Finnish industrial technology and automation industry perceive the importance of sustainability criteria relative to traditional criteria when making supplier selection and business allocation decisions. The findings explain that procurement decision-making within the industry is increasingly influenced by sustainability-related concerns alongside traditional operational criteria. This indicates that the supplier evaluation process has evolved from a purely cost- and performance-oriented activity into a broader strategic decision-making process that incorporates environmental, social, and governance (ESG) dimensions. The findings discovered that buyers no longer perceive sustainability as a secondary or isolated purchasing concern. Instead, sustainability criteria are increasingly integrated into the overall supplier evaluation framework together with traditional factors such as cost competitiveness, quality performance, and delivery reliability. Nevertheless, the findings also indicate the continued importance of traditional purchasing criteria. Although sustainability is an important criterion in decision-making, variables of operational performance are still the center of the decision-making process, particularly in industrial environments where efficiency, technical precision, and supply continuity are highly critical. Therefore, sustainability does not replace traditional purchasing standards but rather functions alongside them within a multidimensional supplier evaluation structure.

The results of the analysis directly answer the main research question by demonstrating that buyers perceive a meaningful distinction between sustainability criteria and traditional purchasing criteria when making supplier selection and business allocation decisions. The rejection of the null hypothesis (H0) and support for the alternative hypothesis (H1) further confirm that there is a statistically significant difference in buyers' perceptions regarding the importance of sustainability and traditional supplier selection criteria. This outcome highlights that buyers determinedly differentiate between operational performance-related factors and sustainability-related considerations during the process of purchasing decision-making. Furthermore, the empirical outcomes indicate that sustainability is progressively viewed as a strategic element of purchasing rather

than simply a compliance requirement. Buyers appear to recognize that sustainability contributes to long-term organizational value, supply chain resilience, corporate reputation, and regulatory alignment. This reflects the broader transformation occurring in industrial purchasing, where organizations are increasingly expected to balance economic objectives with environmental and social responsibilities. Mostly within the Finnish industrial technology and automation industry, sustainability expectations are reinforced by EU sustainability regulations, stakeholder pressures, and increasing organizational commitments toward responsible business operations. At the same time, the findings clearly indicate that buyers continue to highly consider operational reliability when selecting suppliers. Traditional criteria such as product quality, technical capability, delivery reliability, and cost efficiency remain essential because industrial operations heavily depend on supplier performance continuity. This indicates that sustainability considerations are integrated into purchasing decisions only after suppliers are capable of meeting the minimum operational requirements necessary for production efficiency and technological performance. To summarize, the results therefore reveal that purchasing decision-making within the industry represents a balancing process between operational efficiency and sustainability expectations. Buyers are involved to simultaneously achieve cost control, supply reliability, and sustainability objectives while managing increasingly complex supply chains. Consequently, supplier selection and business allocation decisions have become strategically interconnected processes that influence not only operational performance but also long-term organizational competitiveness and sustainability performance in the respective companies.

5.2.2 Sub RQ1: Criteria importance ratings

To conclude the first sub-research question of the study, results indicate that buyers in the industry perceive allocating different levels of importance to separate supplier evaluation criteria, demonstrating that purchasing decisions are influenced by a combination of operational, strategic, and sustainability-related priorities. The statistical analysis discovered significant differences in the perceived importance ratings of sustainability criteria and traditional criteria. As a result, the null hypothesis (H_0) was rejected, and the

alternative hypothesis (H1₁) was supported. This confirms that buyers do not perceive all supplier evaluation criteria equally but rather prioritise certain factors more strongly depending on their operational and strategic relevance. The traditional criteria, price, quality and delivery reliability emerged as the most highly valued supplier evaluation factors. This finding reflects the operational realities of the industrial technology and automation industry, where production continuity, technical precision, system reliability, and financial efficiency are highly important. Buyers operating within technologically advanced industrial environments are likely to prioritize suppliers who can consistently deliver high-quality products and maintain stable delivery performance to minimize operational disruptions and maintain cost efficiency. Perceived importance regarding the sustainability aspect of the buyers, governance and compliance-related aspects received relatively high consideration. Ethical labour practices, compliance standards, transparency, and responsible governance structures were conceded as relevant aspects of supplier performance. Followed by environmental and social sustainability practices, which received relatively high importance ratings among buyers. This indicates that buyers are increasingly aware of environmental issues, such as carbon emissions and energy efficiency, when assessing suppliers. The emphasis on environmental considerations may be linked with increasing institutional pressures within the European industrial environment, particularly due to stricter sustainability regulations and climate-related business expectations (Okereke & Küng, 2013). The outcome highlights that buyers continue to consider traditional operational performance factors as a higher priority in overall supplier evaluations when making decisions about supplier selection and allocation, despite the growing importance of sustainability criteria. Therefore, it was determined that buyers in the industrial technology and automation industry in Finland evaluate these traditional and sustainable aspects differently while making strategic purchase decisions.

5.2.3 Sub RQ2: Supplier selection priorities

The findings determined that, once traditional operational factors were taken into account, sustainability-related variables did not significantly impact supplier selection priority, validating the second sub-research question. As a result, the alternative hypothesis

(H12) was rejected, and the null hypothesis (H02) was accepted. During the initial phase of supplier selection, buyers in Finland's industrial technology and automation industry typically depend on traditional operational factors. The primary considerations that determine supplier selection priority are still criteria such as cost competitiveness, quality performance, technological capability, and delivery reliability. These results demonstrate the continuing significance of operational effectiveness in industrial purchasing contexts where production systems require to be extremely reliable and functionally consistent. Although buyers perceive sustainability as essential, the results reveal that it alone is insufficient to significantly influence supplier selection beyond traditional operational criteria. This reflects the complex nature of purchasing-decision making in industrial sectors. Buyers often discover the strategic value of sustainability when navigating organizational boundaries, financial constraints, production pressure and technical performance requirements (Xiao et al., 2019). Consequently, sustainability factors are typically weighted carefully against practical operational demands during supplier selection decisions. Nevertheless, these findings do not suggest that sustainability lacks relevance in purchasing decisions. Rather, the results indicate that sustainability gains prominence once suppliers meet the minimum operational and technical requirements for acceptance. Operationally qualified suppliers can then leverage sustainability as a key differentiator. To conclude, supplier selection in the Finnish industrial technology and automation industry remains primarily operationally driven, despite the growing sustainability awareness. Buyers prioritized traditional criteria, treating sustainability criteria as an additional strategic layer in purchasing.

5.2.4 Sub RQ3: Business allocation decisions

The third sub-research question examined whether perceived supplier sustainability is associated with business allocation decisions beyond traditional supplier evaluation criteria. The findings verified that sustainability significantly influences business allocation decisions, resulting in the rejection of the null hypothesis (H0₃) and support for the alternative hypothesis (H1₃). This is one of the study's most significant conclusions, as it indicates that sustainability has a more substantial effect on purchasing decision-making

during the allocation phase than it does during the initial supplier selection step. Although traditional criteria lead to the initial screening of suppliers, sustainability gains importance when allocating business volumes and long-term business among qualified suppliers. Sustainable supplier allocation decisions are increasingly associated with broader strategic business objectives, including long-term value generation, resilience enhancement, reputational protection, and operational risk reduction (Negri et al., 2021). Businesses, therefore prioritize sustainable suppliers to improve stakeholder legitimacy and regulatory compliance. Overall, the results express that sustainability perceptions of buyers' integration within purchasing decision-making occur progressively. Traditional operational criteria remain dominant during initial supplier selection, whereas sustainability considerations become more influential during business allocation and long-term supplier relationship decisions. This confirms that sustainability complements rather than replaces traditional purchasing criteria within the Finnish industrial technology and automation industry.

5.3 Theoretical Contribution

Through generating empirical data on how sustainability and traditional purchase criteria relate in practical industrial purchasing environments, the study's findings theoretically add to the existing collection of research knowledge on sustainable procurement, supplier selection, and organizational purchasing behaviour.

Institutional theory perspective, the results strengthen the argument that supplier assessments and organizational purchasing practices are becoming increasingly impacted by external institutional forces. The empirical findings demonstrated that sustainability criteria, including environmental practices, governance compliance and social responsibility, have received comparatively high importance ratings among buyers alongside traditional criteria such as price, quality, and delivery reliability. These results show that stakeholder pressure, industry sustainability expectations, and expanding regulatory demands have integrated sustainability into purchasing assessment procedures. Also, the findings indicate that buyers are affected by normative, coercive, and potentially mimetic influences; despite this, such pressures do not convert into purchasing practices

in a straightforward or equal manner. Decisions about business allocation and sustainable supplier selection are significantly influenced by coercive institutional pressures. By assessing suppliers, respondents emphasized the increasing significance of adhering to corporate governance requirements, sustainability standards, and environmental regulations. Buyers are progressively allocating higher business volumes to suppliers with high-level sustainability performance in response to increased European sustainability rules and growing climate-related compliance demands. In order to provide regulatory validity while lowering compliance risks, this trend demonstrates how firms are increasingly incorporating sustainability factors into procurement. Simultaneously, the findings based on the scenario questions indicate that normative institutional pressures influence purchasing procedures. Buyers are increasingly associating supplier sustainability performance with organisational and professional norms for responsible purchasing, ethical sourcing, and stakeholder accountability. As a result of such factors, businesses grant priority to suppliers with great sustainability credentials in order to improve their overall sustainable positioning, stakeholder confidence, and corporate reputation. Based on the findings of the present study, although not directly measured the mimetic pressure but can be interpreted that buyers may perceive sustainable supplier allocation as a strategic practice related with long-term value generation, supply chain resilience, and reputational protection. As a result, firms increasingly adopt sustainability practices observed among successful industry peers to enhance competitiveness and legitimacy.

Resource- Based View (RBV) of the findings supported the argument that purchasing competencies that prioritize sustainability could function as strategic organizational assets that support sustainable competitive advantage. The findings showed that sustainability has an important effect on business allocation selections that extend beyond traditional requirements. According to the survey findings, buyers are increasingly connecting supplier sustainability performance with more comprehensive organizational goals, including long-term value creation, supply chain resilience, reputational protection, and the formation of strategic partnerships. Furthermore, firms operating within the Finnish industrial technology and automation industry may use sustainability-oriented supplier evaluation practices as a strategic competence that strengthens purchasing effectiveness

and competitive positioning. Buyers are willing to assign more business volumes for suppliers demonstrating stronger sustainability performance once those suppliers have already fulfilled the required operational standards related to traditional criteria. Therefore, sustainability seems to serve as a strategic differentiating factor in long-term supplier selection and allocation decisions by the buyers. At the same time, the results expand over RBV by demonstrating that supplier selection priority is not solely determined by sustainability competence. Regression results suggest that traditional operational capabilities predominate in the initial selection, despite being positively appraised and correlated with business allocation. Thus, in industrial purchasing, sustainability serves as a substitute rather than a replacement and generates strategic value typically when paired with adequate operational performance.

Buyer – centred approach also indicates the findings of the present study in order to comply with the literature. This implies that, although the respondents held different job titles and did not all hold formal purchasing titles, they responded because they were involved in supplier selection, evaluation, or business allocation decisions within their respective organisations. This means that the exploration does not define “buyer” narrowly as a job title, but rather as a decision-making role linked to purchasing activities. In practice, this is important because procurement decisions in industrial organisations are often shared across functions, and responsibility for supplier assessment may extend beyond personnel formally named as buyers or purchasers. As a result, the study captures the perceptions of individuals who actively participate in purchasing-related decisions, regardless of whether procurement is their primary title or only one part of their wider job role. This interpretation further enhanced the relevance of the findings because it reflects how purchasing actually operates in many industrial contexts. In large and medium-sized firms, supplier selection and business allocation are often influenced by cross-functional collaboration, where category managers, project managers, sourcing specialists, operational staff, and sustainability-focused roles all contribute to decision-making. Therefore, the findings represent a decision-making community rather than a single occupational group. This is theoretically useful because it shows that sustainability and traditional criteria are evaluated not only by dedicated purchasing professionals, but

also by other organisational actors who influence sourcing outcomes. In this sense, the study contributes to a more realistic understanding of buyer behaviour for supplier selection and allocation decisions, since purchasing decisions in complex industrial environments are often distributed across several roles rather than clustered in one formal position.

Overall, by offering real-world data from a specific industrial setting where sustainability and traditional purchasing criteria interact in a dynamic manner, this thesis contributes to the existing body of knowledge on sustainable purchasing. The results reveal that sustainability is important, but its impact differs according to the stage of decision-making and the nature of the criteria taken into account. While sustainability has greater explanatory significance in business allocation decisions, traditional factors continue to be the fundamental basis of supplier selection. This pattern deepens buyer-centred purchasing research by exposing the real-world trade-offs that influence actual procurement decisions, expands RBV by presenting sustainability as a strategic purchasing function, and advances institutional theory by illustrating selective legitimacy-driven behaviours.

5.4 Managerial Implications

The findings of this study have several important managerial implications for purchasing managers, category managers, sourcing specialists, and other decision-makers involved in supplier selection and business allocation. First, the results show that traditional supplier selection criteria remain the primary basis of supplier evaluation. This implies that decision makers should not consider sustainability as a replacement for operational performance, but rather as an additional decision dimension that needs to be integrated into existing purchasing frameworks. In practice, this proposes that supplier assessment systems should continue to ensure strong attention to cost efficiency, product/service quality, and delivery reliability while also combining sustainability criteria in a structured and measurable way. Secondly, the study indicates that business allocation decisions are more influenced by sustainability than initial supplier selection. This has significant managerial implications. Decisions about volume distribution need to take sustainability into account in addition to screening and ranking. When operational requirements are

already satisfied, managers can apply this knowledge to reward suppliers who show better environmental, social, and governance performance by giving them a greater percentage of the business. This strategy can assist businesses in promoting improved supplier behaviour and creating more enduring, ethical supplier relationships. As per the results, although each sustainability criterion is equally important, governance, compliance, and EU regulations matter more than general environmental practices. Instead of using comprehensive approaches, managers should give priority to these realistic features in purchasing procedures. Further, the study highlights the importance of cross-functional decision-making. Because the respondents came from different roles and positions, the results suggest that supplier selection and allocation are not always the responsibility of a single buyer itself. Instead, purchasing decisions may involve project managers, category managers, sourcing professionals, and sustainability-related roles. Managers should therefore strengthen internal coordination between purchasing, operations, sustainability, and project functions. This can improve consistency in evaluation criteria and reduce the risk that sustainability goals are applied unevenly across departments. A shared supplier assessment framework could help align strategic sustainability objectives with day-to-day purchasing decisions. Also, the conclusions imply that in order to successfully incorporate sustainability into purchasing, improved analytical skills are required. Decision makers need better tools, such as supplier scorecards, defined ESG criteria, transparent weighing systems, and objective monitoring techniques, as sustainability does not include direct predictive potential for supplier selection. Beyond informal judgments, more visible, actionable, and transparent decision-making is made possible by developing internal competence in these areas. Finally, sustainability supports competitive advantage when integrated into long-term sourcing strategy rather than simple fulfilment. Finnish industrial technology and automation industry players should consider sustainable procurement as a strategic approach to supplier portfolio management. Allocating business to high-sustainability considered suppliers enhances validity, strengthens relationships, and advances broader goals for transforming purchasing from cost control into a force for a responsible, resilient supply chains within the company.

5.5 Limitations and future research suggestions

There are indeed many limitations with this study that should be taken into consideration when understanding and interpreting the results. Similar to most studies, this research has substantial drawbacks due to the sample size. The present research project's sample is quite specific and limited to mostly buyers and the supply chain operators who are employed in the industrial technology and automation sector in Finland. Although the study's conclusions are based on a sufficiently large data set, a bigger sample size would be preferred, as it could enhance the ability to generalize the findings by offering a more complete representation (Saunders et al., 2019, p. 608). Consequently, this thesis is relatively narrow and industry specific, which limits the extent to which the findings can be generalized to other sectors such as consumer goods, construction, services or the public sector. Since purchasing decisions may differ across industries due to many factors such as market structure, supplier relationships, and the strategic importance of sustainability, the perceptions of buyers in this study should be considered as specific to the industry context rather than representative of buyers in general. Another sample-related limitation is the use of a non-probability sampling approach. Because respondents were selected through online distribution channels and professional networks, the sample has been affected by self-selection bias. Furthermore, the sample size does not fully represent the industry's diversity in terms of decision-making authority, purchasing expertise, etc. Therefore, some groups have been underrepresented, which may influence the external validity and balance of the findings. Another limitation is related to the research methodology design and data collection method. As the study employs a quantitative methodology, this means the results reflect how respondents perceive and interpret the questions, as well as how honestly and accurately they answer them. Hence, it is useful for identifying general decision-making patterns capturing buyers' perceptions, although it may not fully reflect their actual decisions.

Besides, the scope of the thesis is narrowed to a specific context, which gives considerable contextual relevance and data accessibility to the researcher; however, it constrains the transferability to other nations. In addition, the study also excludes other stakeholders, including suppliers, customers and other relevant stakeholders, whose perceptions regarding the main focus areas are not captured. The results of this study represent only

one part of the broader organizational decision-making context. On the other hand, the study also has theoretical limitations due to the emphasizes the relative importance of sustainability in contrast to traditional criteria, simplifying a decision-making process that is generally more complex in practice. While this method improves in the identification of essential priorities, it is insufficient to explain entirely the behavioural dynamics that drive actual purchase decisions.

One limitation of this study relates to the circulation process of the questionnaire. Although the survey was distributed to potential respondents through identified contact persons and team leaders within the selected case companies, the researcher was not able to directly control or examine the internal distribution of the survey link to identify the respondents' job roles directly. As a result, the exact reach of the questionnaire among potential respondents could not be fully verified. This may have introduced potential sampling and response bias, as the participation of respondents depended on the extent to which the intermediary contact persons shared the survey within their respective networks and teams. Consequently, the representativeness of the sample within each organization may have been affected to some extent. Future studies could address this limitation by employing more direct organizational access and systematically controlled respondent selection procedures to improve the representativeness and reliability of the collected data.

Further discoveries may expand on this research in many different ways. First, future research may examine a broader and more diverse sample of enterprises across sectors such as manufacturing, logistics, construction, and public procurement to determine whether the importance of sustainability criteria differs by sector. This would help to improve the findings' generalizability and indicate whether those patterns discovered in the Finnish industrial technology and automation industry are also found in different business sectors. Secondly, future studies could employ a long-term approach to explore how purchasing professionals' priorities evolve. This would be particularly valuable in a context where sustainability standards, stakeholder expectations, and market pressures are continually changing. A continuous method could indicate whether sustainability becomes increasingly essential in supplier selection and business allocation decisions as organizations expand in their sustainability policies and procedures. In addition to that, further studies could employ both quantitative and qualitative methodologies to obtain

a better understanding of purchasing decision-making. While surveys are useful for evaluating perceptions and comparing criteria, conducting interviews or analysing case studies may demonstrate why specific criteria are prioritized and how trade-offs are made in practice. Moreover, it will be useful in finding actual purchasing behaviours rather than perceived importance. This could provide a deeper understanding of the logic behind supplier selection and allocation decisions. Also, supply chain decision-makers are aware of the limitations and constraints related to achieving sustainability therefore, future studies could further investigate these constraints in more depth to provide a better understanding and explanation of sustainable decision-making practices. Finally, it would also be interesting to explore how external pressures, such as customer expectations and supply chain disruptions, influence the balance between sustainability and traditional purchasing criteria. These directions would deepen understanding of sustainable purchasing and strengthen the theoretical and practical relevance of this focus.

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Appendices

Appendix 1. The questionnaire

Dear respondent,

I am a second-year student in the Master's degree program in International Business Management at the University of Vaasa, Finland. I am conducting a study to explore how buyers in the Finnish industrial technology and automation industry take sustainability considerations into account when making purchasing decisions, in addition to traditional criteria.

Your participation is voluntary and anonymous. All responses will be used solely for research purposes, and the survey will take approximately 5-10 minutes to complete. No personally identifiable information will be collected. By continuing, you provide your consent to participate.

If you have any questions or comments about the survey, please contact me at the following:

Researcher- Hirushi Nanayakkara/ x3568564@student.uvasa.fi

Section 1: Respondent Profile

1. Your Current role in the organisation

- Buyer/Purchaser
- Project Manager
- Project Engineer
- Project controller
- Category Manager
- Service Manager
- Sales Manager
- Administration

- Other
2. Approximately how many years have you been involved in (or have experience with) purchasing activities?
- Less than 1 year
 - 1-5 years
 - 6- 10 years
 - More than 10 years
3. What is the size of your company?
- Small (1–49 employees)
 - Medium (50–249 employees)
 - Large (250+ employees)
4. Are your purchases (materials/services) directly related to the company's core business operations?
- Yes
 - No
5. Main purchase category for your key supplier
- Machinery parts
 - Automation components
 - Service
 - Other
6. What is the annual purchasing volume of your organisation?

- Less than €5M
- €5M–€20M
- €21M–€50M
- €51M–€100M
- More than €100M

7. What is your level of involvement in supplier selection?

- Very low
- Low
- Moderate
- High
- Very high

8. What is your level of involvement in business allocation decisions?

- Very low
- Low
- Moderate
- High
- Very high

9. How many direct suppliers does your organisation work with?

- 1–10
- 11–25
- 26–50
- 51–100
- 100

10. How frequently does your organisation evaluate suppliers?

- Monthly
- Quarterly
- Annually
- Every two years
- Only when needed

11. How familiar are you personally with sustainability assessment frameworks?

- Not familiar
- Slightly familiar
- Moderately familiar
- Very familiar
- Expert level

Instructions: When selecting suppliers or allocating business to them in your role, rate the importance of these criteria (1 = Not at all important, 5=Extremely important).

Section 2: Criteria Importance Ratings

12. How important is the following criterion when selecting a supplier?

Traditional criteria:

- Price / Cost competitiveness
- Product/service quality
- Delivery reliability (on-time consistency)
- Delivery Lead time (Speed)
- Technical capability
- Supplier Flexibility (Volume changes)
- Supplier responsiveness (Communication speed)

Sustainability criteria:

- Environmental practices (e.g. carbon footprint, waste, energy use)
- Environmental certifications (ISO 14001, etc.)
- Social practices (labour standards, working conditions)

- Governance & compliance (anti-corruption, transparency)
- Compliance with EU regulations (CSDDD, Green Public Procurement)

***Instructions:** For Questions 6–10, assume all suppliers are equally competitive on price, quality, and delivery reliability unless stated otherwise. Rate only the influence of sustainability factors.*

Section 3: Supplier Selection Priority

13. When two suppliers are equally competitive on traditional criteria, how much does the following factor influence your final selection?

- Supplier's environmental sustainability rating
- Supplier's social responsibility record
- Supplier's ESG/governance rating
- Regulatory compliance with EU sustainability directives

14. Think about the most recent time you selected a new supplier or re-awarded a contract for an existing supplier.

a) Which option best describes the outcome?

- I selected the supplier with the lowest price, even though their sustainability performance was weaker.
- I selected a supplier with better sustainability performance, even though their price was higher.
- I selected a supplier that balanced both price and sustainability at an acceptable level.
- Other (please specify): _____

b) By approximately how much was the selected supplier more expensive or cheaper than the main alternative?

- More than 10% cheaper
- 5–10% cheaper
- Within $\pm 5\%$

- 5–10% more expensive
- More than 10% more expensive
- Don't know / Cannot say

c) Compared with the main alternative, how would you rate the selected supplier's sustainability performance?

- Clearly weaker
- Slightly weaker
- About the same
- Slightly better
- Clearly better
- Don't know / Not evaluated

15. In the past 12 months, how often have you chosen a supplier who had better sustainability performance but a higher price than the main alternative?

- Never
- Once
- Less than 5 times
- More than 5 times
- Not applicable (No such situations)

16. In your current supplier portfolio for your main category, which statement best describes how business volume is distributed?

- Most volume goes to suppliers with lower price, even if their sustainability performance is weaker.
- Volume is roughly balanced between lower-price and more sustainable suppliers.
- Most volume goes to suppliers with better sustainability performance, even if their price is higher.
- I do not know / Cannot estimate.

17. In the majority of your recent supplier selections, how were sustainability aspects considered?

- Only informally (general impression, no structured criteria or scoring)
- Through basic checks (e.g., certifications, code of conduct, simple yes/no requirements)
- Through structured scoring or weighting alongside traditional criteria (e.g., formal evaluation matrix)
- Not considered at all
- Not sure

18. When traditional criteria are similar, rate influence on your selection

- Environmental rating
- Social responsibility
- ESG governance
- EU compliance

Section 4: Business Allocation Decisions

19. When allocating order volume among approved suppliers, how much does each factor influence the share of business you assign?

- Price/cost
- Quality track record
- Delivery performance
- Environmental sustainability performance
- Social/labour compliance
- Governance standards

20. Would you increase business allocation to a supplier who improves their sustainability performance significantly, even if their price is slightly higher?

- Yes / No/ It depends

21. Have you ever chosen a more expensive supplier because of their better sustainability performance?

- Yes / No/ Not sure

22. To what extent does your organization's sustainability policy influence your purchasing decisions? (1 = *Not at all important*, 5=*Extremely important*)

Section 5: Barriers

23. What makes it difficult to prioritize sustainability in purchasing decisions? (Select all that apply)

- Price pressure
- Lack of reliable supplier sustainability data
- Sustainability is not a priority in our organization
- No clear guidelines or policy
- Time constraints
- Other

Would you be interested in a summary report of the findings?

- Yes
- No

Thank you for completing this survey! Your insights are invaluable for advancing research on sustainable supplier selection, and they will help shape better procurement practices. Your time and thoughtful responses are greatly appreciated - kiitos paljon!

Appendix 2. Statistical Summary of the Analysis

Table 2 -A. Statistical analysis of the sample's current job role

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Buyer/Purchaser	31	32.6	32.6	32.6
	Category Manager	10	10.5	10.5	43.2
	Field Service Coordinator	4	4.2	4.2	47.4
	Inventory Planner	3	3.2	3.2	50.5
	Marketing Manager	4	4.2	4.2	54.7
	Operational excellence	3	3.2	3.2	57.9
	Project controller	4	4.2	4.2	62.1
	Project Engineer	3	3.2	3.2	65.3
	Project Manager	19	20.0	20.0	85.3
	Responsible for Sourcing & Procurement	4	4.2	4.2	89.5
	Sales Manager	4	4.2	4.2	93.7
	Service Manager	3	3.2	3.2	96.8
	Sustainability Manager	3	3.2	3.2	100.0
	Total	95	100.0	100.0	

Table 2 -B. Statistical analysis of the sample working experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5 years	43	45.3	45.3	45.3
	6-10 years	30	31.6	31.6	76.8
	Less than 1 year	4	4.2	4.2	81.1
	More than 10 years	18	18.9	18.9	100.0
	Total	95	100.0	100.0	

Table 2 -C. Statistical analysis of the sample size of the organization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Large (250+ employees)	37	38.9	38.9	38.9
	Medium (50–249 employee)	45	47.4	47.4	86.3

	Small (1–49 employees)	13	13.7	13.7	100.0
	Total	95	100.0	100.0	

Table 2 -D. Statistical analysis of the sample size of the organization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	20	21.1	21.1	21.1
	Yes	75	78.9	78.9	100.0
	Total	95	100.0	100.0	

Appendix 3. Declaration on the use of AI in the study

The University of Vaasa supports students and teachers in applying AI tools for learning and teaching in an ethical manner. The policy mandates students to declare any application of artificial intelligence when writing their thesis, and the declaration needs to properly define the AI tools and language models being used, along with their intended uses (University of Vaasa, 2025).

In this study, AI tools were used ethically with the purpose of enhancing efficiency, brainstorming and academic accuracy. The researcher used the Copilot AI assistant tool to draft the sentences and paragraphs in a detailed way to give a comprehensive way. The university's online library was mostly used to find the relevant academic sources, and at the same time, 'ChatGPT Go version' helped to locate the directly relevant journal articles and expand the originally written sentences in line with academic writing style. In addition, to accurately interpret statistical outputs and present the results in a clear and meaningful way for the reader and also worked for visualization of the outputs. Mendeley reference manager software was used to generate the APA style in-text citations and final reference list, preventing duplication of the academic sources. Also, Grammarly and QuillBot helped the researcher with further writing by polishing wordings, correcting grammar to enhance clarity and paraphrasing for a summary without altering the meaning of the original sentence. Basically, for proofreading-related work. These tools enhanced the writing efficiency while maintaining academic integrity.