



**Hellenic Open University
Supply Chain Management**

Postgraduate Dissertation

**“The importance of sustainability in procurement and how risk
management decreases.”**

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Abstract

The scope of this dissertation is to mention and analyze how the procurement department is crucial for a company or an organization, as through this department the company purchases all the necessary goods or services that are necessary for its operation. Delivering performance in procurement is very important for the overall operation of a company or an organization for accomplishing its goals and a more efficient and sustainable environment. Sustainability in procurement has become increasingly important in recent years, and its significance continues to grow. Here are some key points highlighting the importance of sustainability in procurement and how it contributes to decreased risk management:

- **Environmental impact.** By adopting sustainable practices, organizations contribute to global environmental goals and reduce the risk of regulatory non-compliance related to environmental standards.
- **Social Responsibility.** Sustainable procurement emphasizes fair labor practices, human rights, and ethical sourcing.
- **Regulatory Compliance.** Staying ahead of regulatory changes and ensuring compliance through sustainable practices minimizes the risk of unexpected disruptions to the supply chain.
- **Long-Term Cost Savings.** Cost savings contribute to financial resilience and reduce the risk of financial instability associated with resource-intensive and environmentally damaging procurement practices.

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1 Introduction

Sustainability in procurement has become a crucial matter for businesses, governments and organizations over the years. In today's rapidly evolving business environment with the new technologies, sustainability in procurement has emerged as the central consideration for business across the industries and the world. Because of the environmental and social issues in all industries, businesses and organizations are increasingly recognizing the need to invest and incorporate sustainability in their operations, as it is very important to support social equity and contribute to long-term economic stability.

The importance of sustainability in procurement is not only driven by ethical imperatives but also by practical considerations. As consumers and stakeholders demand more responsible business practices, organizations that prioritize sustainability can gain competitive advantages in terms of reputation, customer loyalty, and regulatory compliance. Furthermore, sustainable procurement supports the broader goals of corporate social responsibility (CSR), helping businesses contribute positively to society and the environment while securing long-term success.

One of the key benefits of integrating sustainability into procurement is its potential to reduce risks, a critical aspect of modern business operations. Procurement is inherently a process fraught with risks — from supply chain disruptions and supplier non-compliance to financial volatility and reputational damage. However, by adopting sustainable procurement practices, organizations can significantly mitigate these risks. There are several risks that can be decreased through sustainable procurement, such as environmental risks, regulatory risks, reputational risks, operational and financial risks.

We can say that sustainability in procurement is not only a trend these days but a strategic approach that can lead to many benefits for an organization, a government or a business, including also risk reduction. By adopting sustainable procurement practices, organizations can enhance their resilience against a wide range of risks, while also contributing positively to the global sustainability agenda. This shift is essential for businesses looking to secure long-term success and navigate the complexities of an increasingly interconnected and environmentally conscious world.

1.1 Research Background

The background of research on this essay is to mention the need to adopt the concept of sustainability, as businesses strive to reduce their environmental footprint and ensure ethical sourcing throughout their supply chains. Research into the relationship between sustainability in procurement and risk management has gained momentum, as it becomes evident that sustainable procurement can play a pivotal role in reducing these risks. By embedding sustainability into procurement processes, organizations can enhance their ability to proactively identify, assess, and mitigate risks associated with environmental impact, regulatory compliance, supply chain integrity, and corporate reputation. This is particularly important in today's globalized economy, where supply chains are often complex, and companies are expected to meet high standards of corporate responsibility. As we stated above there are many risks that can be decreased by sustainability in procurement such as:

- **Environmental risks:** Climate change and pollution inside and outside an organization are increasing concerns for businesses, and supply chains are often vulnerable to these environmental risks. By sourcing sustainably, companies can reduce their exposure to environmental disruptions, such as natural disasters or resource scarcity, by ensuring that their supply chains are more resilient and adaptable to changing environmental conditions (Aragon-Correa, J. A., & Sharma, S. (2003)).
- **Legal or regulatory risks:** The global regulatory landscape is evolving rapidly, with governments introducing stricter environmental and labor laws. For example, regulations such as the European Union's Green Deal or the United Nations' Sustainable Development Goals (SDGs) are pressuring organizations to meet higher standards in their procurement practices. By prioritizing sustainability, organizations can stay ahead of these regulations, ensuring compliance and reducing the risk of legal penalties, fines, or supply chain disruptions caused by non-compliance.
- **Reputational Risks:** In today's socially conscious market, companies that fail to meet sustainability expectations face the risk of reputational damage. A single scandal involving unethical labor practices, environmental degradation, or poor working conditions can significantly tarnish an organization's image and erode customer trust. Sustainable procurement practices help reduce reputational risks by ensuring that organizations only work with suppliers who align with their sustainability values, thereby protecting their brand and fostering long-term loyalty.
- **Operational Risks:** Sustainability in procurement encourages companies to work with suppliers that prioritize long-term sustainability and innovation, which can lead to more resilient supply chains. Sustainable procurement practices can reduce operational risks by ensuring that businesses are not overly reliant on scarce resources, prone to sudden price fluctuations, or exposed to supply chain disruptions due to poor environmental practices or unethical labor conditions. By fostering relationships with suppliers that emphasize sustainability, companies can improve the predictability and stability of their operations.
- **Financial Risks:** Sustainable procurement practices can result in long-term cost savings by promoting resource efficiency, reducing waste, and improving operational efficiency. For example, energy-efficient products or eco-friendly raw materials may cost more upfront but lead to significant savings over time through reduced energy consumption or waste disposal costs. Furthermore, businesses that adopt sustainable procurement are better positioned to withstand price volatility and external economic pressures, reducing their exposure to financial risk.

1.2 Research Aim and Objectives

The aim of this essay is to explore the role of sustainability in procurement practices and examine how the integration of sustainable procurement strategies can lead to a reduction in various procurement-related risks. This essay will analyze the relationship between sustainability in procurement and risk management, highlighting how sustainability initiatives can help organizations mitigate environmental, regulatory, reputational, operational, and financial risks in their supply chains.

To define sustainability in the context of procurement, we will focus on providing a clear understanding of what constitutes a sustainable procurement, including environmental, social, and economic factors, and how these are incorporated into procurement practices.

To examine the key drivers behind the adoption of sustainable procurement practices, this essay will explore why organizations are increasingly adopting sustainability in procurement, including factors such as stakeholder pressure, consumer demand, regulatory requirements, and corporate social responsibility (CSR) goals. To identify the risks associated with traditional procurement practices, we will outline the various risks typically associated with procurement, including environmental risks, supply chain disruptions, legal and regulatory risks, reputational damage, and financial volatility. Furthermore, we will analyze how sustainable procurement reduces procurement-related risks. This section will examine how adopting sustainable procurement strategies can address and reduce risks, focusing on areas such as environmental sustainability, supplier selection, compliance, and long-term supply chain resilience.

To assess the role of sustainable procurement in improving supply chain resilience: The essay will explore how sustainable procurement practices contribute to building more resilient and adaptive supply chains, reducing the impact of disruptions and enhancing operational continuity.

To evaluate the financial benefits of sustainable procurement in mitigating financial risks: This objective will focus on understanding the long-term financial advantages of sustainable procurement, such as cost savings from efficiency improvements, reduced regulatory fines, and the ability to withstand market fluctuations.

To provide recommendations for businesses looking to integrate sustainability into their procurement processes: Based on the findings, the essay will offer practical recommendations for businesses aiming to enhance their procurement strategies through sustainability, helping them manage risks and improve their overall performance.

By addressing these objectives, the essay will provide a comprehensive analysis of how sustainability in procurement not only helps organizations meet their environmental and social goals but also contributes to reducing various risks, thereby enhancing the stability and success of the business in the long term.

1.3 Outline of the study

To begin with, chapter one focuses on the structure of the research and gives an understanding of the objectives of this research. Chapter two, the literature review, provides some knowledge about the theory related to the topic. Chapter three provides a brief description of the research methods and in chapter four discusses and analyzes the findings from the interviews. Chapter five discusses the findings and suggests solutions that can lead to desired results highlighting the important findings of this research. And finally, chapter number six summarizes the findings and the importance of this essay.

2 Literature review

Prior proceeding to analyzing the sustainable procurement, we must analyze and mention the procurement as a part of a company or an organization, its role to all industries and furthermore to supply chain and finally define the term of sustainability in general and specifically to procurement and supply chain.

2.1 Definition of Procurement

Procurement is the process of purchasing goods and services from external sources (suppliers) to meet the required goals or visions of a company while also ensuring compliance with applicable regulations and standards. It's the entire process of obtaining the right products or services at the right price, quality and time, including also activities such as supplier selection, contract negotiations, purchase requisition and order creation, delivery management and payment processing. To get a better understanding of procurement as a part of an organization, we can divide it into several stages as per below:

- Needs identification, where procurement recognizes the requirement for a good or service within the organization.
- Supplier selection, where in this stage, procurement gets in contact with several potential suppliers to evaluate them basis on criteria such as price, quality, sustainability and delivery time to choose the best option to meet the company's objectives.
- Placing the order and delivery management, issuing the purchase orders (basis on the quotation supplier sends), tracking deliveries and ensuring that the purchased product/service are delivered at the desired time and meet the required standards.
- Payment processes to suppliers and evaluating the procurement process for efficiency and effectiveness.

The department of procurement has a critical and strategic role in business, affecting various aspects of operations, finance and overall business performance. Firstly, it helps organizations achieve cost savings by identifying the most cost-effective suppliers and negotiating favorable prices and terms (Preuss, L. (2013)). Effective procurement practices can reduce expenses and contribute to better financial management. Procurement is also crucial for ensuring the smooth and continuous flow of materials, goods, and services to meet the business operational needs (Baden, D. A., Harwood, I. A., & Woodward, D. G. (2009)). It helps minimize supply chain disruptions, delays, or shortages that could affect production or service delivery getting a bad reputation for the company and leading to not meeting to organization's objectives. By assessing and managing supplier risks, such as quality issues, delivery delays, and compliance with regulations, procurement helps mitigate potential risks that could disrupt the business operations. Sustainability considerations in procurement further help reduce environmental and reputational risks. In addition, the department of procurement ensures that the goods and services acquired meet the required standards, specifications, and quality expectations. It

establishes processes for monitoring and evaluating suppliers to maintain high-quality standards in the supply chain.

Procurement is also responsible for building and maintaining strong relationships with suppliers. Effective supplier management can lead to improved collaboration, better pricing, and more reliable deliveries, all of which contribute to long-term business success. By sourcing new technologies, products, or services, procurement can drive innovation within a business. A strategic procurement function can help the company access cutting-edge products and services, providing a competitive edge in the marketplace against its competitors. Procurement increasingly plays a role in ensuring that business practices are socially responsible and sustainable. By choosing suppliers who adhere to ethical labor practices, sustainability standards, and environmental regulations, procurement contributes to the company's CSR (Sustainability and Corporate Social Responsibility) initiatives and its long-term sustainability goals. Finally, procurement ensures that all acquisitions comply with relevant laws, regulations, and internal policies. This reduces the risk of legal issues and penalties that could arise from non-compliance with labor laws, environmental regulations, or contractual obligations.

In conclusion, procurement is vital for ensuring the effective and efficient acquisition of goods and services in a business. It supports cost management, supply chain stability, risk reduction, and innovation, all while contributing to sustainability and regulatory compliance. By performing these roles, procurement adds significant value to the overall operations and strategy of a business.

2.2 Definition of Supply Chain

Supply chain is the network of organizations, people, activities, information, and resources involved in the creation and delivery of a product or service from the raw materials stage to the end consumer. It encompasses all the steps required to get a product or service from its origin to its final destination, including sourcing, production, transportation, warehousing, distribution, and customer delivery. The supply chain also involves the coordination of suppliers, manufacturers, logistics providers, and retailers to ensure the efficient flow of goods and services. From the above brief definition of the supply chain, we can see the immediate connection between the department of procurement and supply chain in all industries. So, supply chain can be thought of as a series of stages addressed as per below:

- Procurement and sources: Acquiring raw materials, components, or services needed for production to produce the final product or service that is requested from the market.
- Production: Converting raw materials into finished products or assembling components into final goods or services.
- Distribution (logistics and transportation): Moving products from suppliers to manufacturers, and from manufacturers to warehouses, retailers, or customers.
- Inventory and warehouse management: Storing products in warehouses and managing inventory levels to meet demand.
- After-Sales service: Ensuring products reach customers and providing ongoing support as needed.

The supply chain plays a fundamental role in the success of a business by ensuring that the right products are available at the right time, in the right quantity, and at the right cost. Its significance extends across various business functions, including operations, finance, customer

satisfaction, and overall competitiveness. One of the primary roles of the supply chain is to minimize all costs while ensuring the efficient flow of goods. Effective supply chain management can help businesses optimize processes, reduce waste, and improve operational efficiency, leading to cost savings. This includes minimizing excess inventory, reducing lead times, and streamlining transportation and logistics. A well-managed supply chain ensures that products are available when customers need them. Timely delivery, product availability, and responsiveness to customer demands are crucial for customer satisfaction. An efficient supply chain also helps businesses maintain high-quality standards, ensuring that customers receive products that meet their expectations. Companies with strong supply chains can respond more quickly to market demands, adapt to changes in customer preferences, and bring new products to market faster than competitors. A reliable and efficient supply chain allows businesses to meet customer expectations, offering them a competitive edge in terms of product availability, pricing, and service.

The supply chain is key to managing risks related to supply disruptions, such as natural disasters, geopolitical instability, or supplier failures. A resilient supply chain can mitigate these risks by diversifying suppliers, maintaining alternative sourcing options, and ensuring flexibility in the production and distribution process. The supply chain often plays a key role in driving innovation by facilitating collaboration between suppliers, manufacturers, and customers. Through effective supply chain management, businesses can access the latest technologies, materials, and processes that improve product offerings, reduce costs, and enhance product quality. Today's supply chains are increasingly expected to align with sustainability goals and ethical standards. Companies are adopting greener practices, reducing carbon footprints, and ensuring ethical labor practices across their supply chains. Sustainable supply chain management can improve a business's reputation, help comply with regulatory requirements and contribute to long-term profitability. In an increasingly globalized economy, businesses often rely on international supply chains to source raw materials or distribute products. A well-managed global supply chain allows businesses to tap into international markets, optimize production costs, and reach a wider customer base, helping them scale operations more effectively. Finally, an efficient supply chain directly affects a company's financial performance by reducing operational costs, minimizing delays, and optimizing resource utilization. It can also help improve cash flow by aligning production schedules with customer demand and avoiding overproduction or stockouts.

In conclusion it is very important to emphasize the significance of the supply chain in business success, as a well-structured network that can lead to a reduction in operational costs, leading to better profit margins. Companies can achieve significant cost reductions through better supplier negotiations, reduced waste, and improved inventory management. A strong supply chain provides businesses with the flexibility to scale their operations up or down in response to changing market conditions. This enables companies to maintain operational stability even in times of uncertainty. Businesses with a strong, efficient supply chain are more agile and responsive to market changes, allowing them to capitalize on emerging opportunities and avoid potential disruptions. So, the supply chain is a vital component of any business, influencing everything from cost management and customer satisfaction to risk mitigation and sustainability. A well-optimized supply chain is not just a logistical function; it is a strategic asset that directly impacts a company's competitiveness, profitability, and long-term success.

2.3 Definition of Sustainability

Sustainability refers to the ability to maintain or endure in a way that meets the needs of the present without compromising the ability of future generations to meet their own needs. It involves balancing three main pillars:

- **Environmental Sustainability:** Ensuring that natural resources are used responsibly, minimizing waste, reducing pollution, and conserving biodiversity to protect the planet for future generations.
- **Social Sustainability:** Promoting social equity, community well-being, human rights, and fair labor practices. It aims to improve the quality of life for people and communities, ensuring that no one is left behind.
- **Economic Sustainability:** Ensuring long-term economic growth and development that benefits society without causing environmental degradation or social inequality. This involves creating economic systems that are resilient and can continue to function over time.

The need to adopt sustainability in all industries has become necessary for the best possible outcome for all parties involved (Kurnia, S., & Chien, S. (2017)). Businesses that prioritize sustainability often gain a positive reputation among consumers, employees, investors, and the public. As consumers become more conscious of the environmental and social impact of their purchases, they are increasingly favoring companies that demonstrate a commitment to sustainability. A strong sustainability strategy can enhance brand loyalty and attract environmentally and socially conscious customers. Sustainable practices, such as reducing energy consumption, minimizing waste, and optimizing resource use, can result in significant cost savings for businesses. For example, energy-efficient technologies can lower utility bills, while reducing waste can decrease disposal costs. These improvements can enhance operational efficiency and lead to long-term financial benefits. Governments around the world are implementing stricter environmental and social regulations. Businesses that adopt sustainable practices are better positioned to comply with these regulations, avoiding fines, legal issues, and disruptions. Proactively adopting sustainability initiatives ensures that companies remain competitive and prepared for future regulatory changes.

Sustainability can help businesses reduce various risks, including environmental risks, supply chain disruptions, and reputational damage. For instance, companies that rely on sustainable sourcing practices are less vulnerable to the volatility of raw material prices or scarcity. Additionally, adopting ethical sourcing and fair labor practices can protect businesses from social and reputational risks associated with human rights abuse or environmental harm. Investors are increasingly looking for businesses that prioritize sustainability as part of their long-term strategy. Companies that demonstrate strong environmental, social, and governance (ESG) practices are more likely to attract investment from socially responsible investors and access green financing opportunities. Sustainable businesses are seen as lower-risk investments due to their ability to adapt to future challenges. Embracing sustainability

encourages businesses to innovate in terms of products, services, and processes. Companies that integrate sustainability into their operations are often at the forefront of technological advancements, such as developing eco-friendly products, using renewable energy sources, or employing sustainable manufacturing techniques. This innovation can create a competitive advantage by offering unique value propositions that appeal to sustainability-conscious consumers. In addition, sustainability ensures that businesses are prepared for future challenges such as climate change, resource depletion, and changing consumer preferences. By adopting sustainable practices, companies can future-proof their operations, securing long-term growth and survival in an increasingly complex and environmentally aware market. Many employees today are drawn to companies with strong sustainability initiatives. A commitment to social responsibility and environmental stewardship can help attract top talent, especially among younger generations who value sustainability in their personal and professional lives. Furthermore, employees are more likely to stay with a company that aligns with their values, leading to improved retention rates. Sustainability fosters a more resilient and transparent supply chain by encouraging businesses to work with suppliers who adhere to ethical and sustainable practices. This helps ensure that the supply chain can withstand external shocks such as natural disasters, political instability, or resource shortages, minimizing the risk of disruptions.

In conclusion, sustainability is not just a moral or ethical consideration but a strategic business imperative. By adopting sustainable practices, businesses can enhance their reputation, reduce costs, comply with regulations, manage risks, attract investment, foster innovation, and secure long-term growth. Sustainability is becoming a key driver of success in industries across the globe, and businesses that embrace it are better positioned to thrive in the future.

2.3.1 Sustainability in Procurement

Sustainable procurement, also known as green procurement or responsible sourcing, has become an essential strategy for companies striving to reduce their environmental impact and enhance their social responsibility (Barnes, D., & Collier, D. A. (2011)). It involves the careful selection and purchase of goods and services that not only meet the company's immediate operational needs but also align with broader environmental, social, and economic goals. With increasing awareness of environmental issues, resource scarcity, and the role businesses play in promoting social responsibility, sustainable procurement has gained prominence across industries. This essay explores the importance of sustainable procurement in a company, highlighting its benefits for the environment, economy, and society, as well as its role in enhancing corporate reputation, reducing risks, and driving innovation (Hall, J., & Wagner, R. (2018)).

One of the main reasons for implementing sustainable procurement practices is the ability to reduce a company's environmental impact (Cottrill, R. (2014)). Traditional procurement practices often prioritize short-term cost savings and the convenience of sourcing low-cost products or services, without considering the long-term environmental consequences. These practices can lead to overuse of resources, increased pollution, and higher levels of waste. Sustainable procurement seeks to mitigate these environmental impacts by focusing on environmentally friendly products and services. This can include sourcing products that are energy-efficient, made from renewable or recycled materials, and produced with minimal carbon footprints. By sourcing suppliers who adhere to sustainable practices, a company can reduce its overall

environmental impact (Linton, J. D., Klassen, R. D., & Jayaraman, V. (2007)). For example, purchasing energy-efficient equipment, switching to renewable energy sources, or using sustainable packaging reduces greenhouse gas emissions, energy consumption, and waste production. The shift toward sustainable procurement can also have a ripple effect throughout the supply chain. By working with environmentally responsible suppliers, a company can encourage others in its supply chain to adopt more sustainable practices, creating a collective impact. For instance, when large companies demand sustainable goods or services, suppliers are often motivated to adopt eco-friendly production processes to meet these requirements. As a result, businesses not only reduce their direct environmental footprint but also help improve the sustainability of their entire supply chain.

Beyond environmental concerns, sustainable procurement also plays a crucial role in promoting social responsibility. This includes ensuring ethical labor practices, supporting fair wages, and ensuring that products and services are sourced from companies that treat their employees and communities with respect. Sustainable procurement helps companies align with broader corporate social responsibility (CSR) goals, which can enhance their social impact and reputation.

A key element of social sustainability is the focus on fair labor practices, particularly in global supply chains. Many companies, especially in industries like fashion, electronics, and manufacturing, have faced scrutiny over the use of child labor, unsafe working conditions, and exploitation of workers. By integrating social responsibility into procurement decisions, businesses can ensure they only source from suppliers who adhere to fair labor standards. This not only protects vulnerable workers but also prevents the company from associating with unethical practices that could damage its reputation.

Additionally, sustainable procurement encourages companies to support local communities and promote diversity within their supply chains. By sourcing from local or minority-owned businesses, companies contribute to the economic well-being of communities and support the growth of smaller, often underrepresented businesses. These practices help promote inclusive economic development, which is vital for ensuring equitable opportunities in the global economy.

Sustainable procurement also plays an important role in reducing risks and enhancing a company's resilience. Businesses today face an increasingly complex and interconnected global environment, where risks such as supply chain disruptions, regulatory changes, and reputational damage can have severe financial and operational consequences. Sustainable procurement helps mitigate many of these risks by encouraging companies to consider long-term sustainability factors in their purchasing decisions.

For instance, by diversifying suppliers and selecting those with environmentally sustainable and socially responsible practices, companies can reduce their exposure to supply chain disruptions caused by environmental disasters, labor strikes, or unethical practices. Companies that rely on unsustainable practices, such as extracting resources in ecologically sensitive areas or depending on low-wage labor in regions with weak labor laws, may be more vulnerable to regulatory changes, social unrest, or consumer boycotts. By choosing sustainable suppliers, companies can mitigate these risks and ensure more reliable, ethical, and stable supply chains.

Furthermore, sustainable procurement helps companies stay ahead of regulatory changes. Governments worldwide are increasingly introducing policies to address climate change, reduce carbon emissions, and promote social equity (Ellram, L. M., & Carr, A. S. (2018)). By adopting sustainable procurement practices, companies can ensure compliance with these regulations, avoiding potential fines or legal penalties. For example, environmental regulations such as the European Union's Green Deal or carbon tax policies are pushing companies to adopt sustainable procurement to reduce their carbon footprints and ensure they meet future environmental standards.

A company's reputation is one of its most valuable assets, and sustainable procurement can significantly enhance this reputation. In today's business environment, consumers, investors, and other stakeholders are increasingly demanding that companies act responsibly and demonstrate a commitment to environmental and social sustainability. Companies that fail to address these concerns risk losing customer trust, facing negative publicity, or damaging their brand.

Sustainable procurement allows companies to showcase their commitment to sustainability, building a positive reputation in the marketplace. Customers are more likely to support businesses that prioritize ethical sourcing and environmental stewardship. In fact, studies have shown that consumers are willing to pay a premium for products that are environmentally friendly or socially responsible. This growing consumer preference for sustainable products is prompting businesses to adopt sustainable procurement practices to maintain competitiveness and appeal to socially conscious consumers.

Moreover, demonstrating leadership in sustainability can differentiate a company from its competitors. Companies that adopt sustainable procurement practices can position themselves as leaders in corporate social responsibility and sustainability, attracting not only customers but also investors and talented employees. The positive reputation associated with sustainable procurement can lead to increased sales, market share, and business opportunities.

Sustainable procurement is also a powerful driver of innovation. As companies seek to meet sustainability goals, they often discover new and more efficient ways of sourcing, producing, and delivering products. For example, the need for environmentally friendly products has spurred the development of innovative technologies, such as biodegradable materials, energy-efficient production processes, and alternative energy solutions. Companies that embrace sustainable procurement can gain a competitive advantage by being early adopters of these innovations, creating new products or services that meet growing consumer demand for sustainability.

Additionally, by integrating sustainability into procurement, companies can achieve long-term profitability. While sustainable products and practices may have higher initial costs, they often result in cost savings over time through greater resource efficiency, reduced waste, and improved operational efficiency. For example, adopting energy-efficient equipment or reducing packaging waste can lower operational costs in the long run. Furthermore, sustainable procurement practices can open new markets, as more consumers and businesses demand environmentally friendly and ethically sourced products.

With sustainability becoming a key concern for governments and regulatory bodies, companies that adopt sustainable procurement practices are better positioned to comply with a wide range

of environmental, social, and governance (ESG) regulations. Increasingly, countries are implementing policies that require companies to disclose their environmental and social impact and failing to comply with these regulations can lead to legal consequences, fines, and reputational damage.

Sustainable procurement helps companies stay compliant with these evolving regulations. By sourcing responsibly, businesses can ensure that they meet regulatory standards on environmental sustainability, labor rights, and corporate governance. This proactive approach not only reduces the risk of non-compliance but also demonstrates a company's commitment to ethical and responsible business practices.

Sustainable procurement is no longer a luxury but a necessity for companies aiming to thrive in the modern business environment. By reducing environmental impact, promoting social responsibility, managing risks, and enhancing reputation, sustainable procurement offers a range of benefits that contribute to the long-term success of a company. Moreover, it drives innovation, ensures regulatory compliance, and helps businesses maintain competitiveness in a market that increasingly values sustainability. As consumers, investors, and other stakeholders continue to demand more from businesses in terms of sustainability, companies that fail to adopt sustainable procurement practices risk falling behind. On the other hand, those that embrace sustainable procurement will be better positioned to build resilient supply chains, foster customer loyalty, and achieve long-term profitability. In today's interconnected world, integrating sustainability into procurement is not only good for the planet and society but also good for business.

2.3.2 Sustainability in Supply Chain

Sustainability has become a central topic for businesses across various sectors. While many companies have focused on sustainable procurement, the role of sustainability in the broader supply chain is equally vital. A sustainable supply chain goes beyond just the purchasing decisions or sourcing of materials as it encompasses the entire flow of goods and services, from raw materials to end consumers, and it includes aspects such as transportation, manufacturing, waste management, and logistics. The importance of sustainability in the supply chain has grown significantly due to increased environmental concerns, social expectations, and economic considerations (Christopher, M. (2016)).

Adopting sustainable practices in the supply chain is no longer a mere option; it has become an essential strategic focus. The pressure from both consumers and regulators to adopt eco-friendly practices is mounting, and organizations that fail to integrate sustainability into their supply chains risk falling behind competitors. This article will explore the importance of sustainability in the supply chain, highlighting key reasons such as environmental responsibility, regulatory compliance, cost savings, and business reputation. Additionally, the article will explore practical ways organizations can incorporate sustainability into their supply chain operations to ensure long-term success.

One of the primary reasons for incorporating sustainability into the supply chain is to reduce environmental harm. Traditional supply chains often have significant negative impacts on the environment, including high levels of carbon emissions, excessive energy use, water consumption, deforestation, and pollution. These activities contribute to global warming, resource depletion, and the destruction of ecosystems. A sustainable supply chain considers the

environmental costs associated with each step in the process. For example, companies can prioritize reducing carbon emissions by optimizing transportation routes, using energy-efficient production methods, and employing green logistics strategies. These changes can significantly lower a company's carbon footprint and contribute to global efforts to combat climate change. Moreover, sustainable practices like using renewable energy sources, recycling materials, and minimizing waste help preserve natural resources and reduce dependency on finite raw materials. For example, a business in the fashion industry can adopt sustainable supply chain practices by using materials such as organic cotton or recycled fabrics, reducing water usage in production, and minimizing chemical waste. In the automotive industry, companies can focus on reducing the energy consumption of manufacturing facilities, sourcing sustainable materials, and optimizing transportation networks to cut down on fuel usage and emissions. By focusing on environmental sustainability, companies contribute to the global effort to protect the planet's resources, making it a critical part of corporate social responsibility (CSR). As the world becomes more concerned with environmental degradation and the ethical implications of production processes, governments and international bodies are enacting stricter regulations to ensure companies adopt sustainable practices. These regulations cover a wide range of issues, from carbon emissions and waste management to human rights and fair labor practices in supply chains. Failure to comply with these laws and regulations can result in significant penalties, fines, or even legal action. For example, European Union regulations such as the European Green Deal, or regulations around carbon emissions in countries like the United States, are pushing businesses to report and mitigate their environmental impact. Similarly, other regulations focus on fair labor practices, ensuring that companies do not exploit workers in their supply chain, particularly in developing countries (Sroufe, R., & Reeve, S. (2018)).

By integrating sustainability into the supply chain, companies can proactively address regulatory requirements and mitigate the risks of non-compliance. This ensures they are well-positioned to avoid fines and penalties, safeguard their reputation, and continue to operate without interruption. Furthermore, adopting sustainability helps businesses anticipate and adapt to future regulations, which may become even stricter as governments globally push toward greater sustainability goals. A company that incorporates sustainable practices today is less likely to be caught off guard by regulatory changes tomorrow.

Sustainability in supply chain management is often associated with higher upfront costs, but in the long run, it can result in significant cost savings. Many businesses find that making their supply chains more efficient leads to lower operational costs. For example, reducing energy consumption, optimizing transportation, and minimizing waste can all directly contribute to reducing expenses. Efficient supply chains focus on reducing energy use across production facilities and transportation routes. Companies that implement energy-efficient technologies or adopt renewable energy sources can significantly lower their energy bills. This reduces reliance on fossil fuels, which can be costly, and helps to protect businesses from the volatility of energy prices. In addition, more energy-efficient practices help companies reduce their carbon emissions and make meaningful contributions to global environmental sustainability. Another significant cost-saving opportunity in sustainable supply chains is waste reduction. Traditional supply chains often result in significant amounts of waste in the form of raw materials, packaging, and finished products. Sustainable supply chains, on the other hand, focus on optimizing processes to minimize waste at every step. This might involve repurposing byproducts, improving recycling programs, and reducing packaging materials. Waste reduction also leads to cost savings in waste disposal. Waste disposal can be an expensive aspect of

supply chain management, especially for large companies. By reducing waste, companies can lower these disposal costs while also reducing their environmental impact. Additionally, companies may find that implementing circular economy models, where products are refurbished, reused, or recycled, can save both money and resources (Zhao, X., & Goh, M. (2014)).

In the age of social media and instant access to information, consumers are increasingly making purchasing decisions based on a company's environmental and social responsibility. As public awareness of climate change, pollution, and unethical labor practices grows, more consumers are choosing to support companies that demonstrate a commitment to sustainability in their supply chains. Brands that are seen as environmentally and socially responsible gain a competitive edge in the marketplace. According to studies, consumers are more likely to purchase from companies that are transparent about their supply chain practices and demonstrate efforts to reduce their environmental impact. This shift in consumer preference is also influenced by the rise of ethical consumerism, where individuals prioritize purchasing products that are sustainable, ethical, and fair-trade certified. In addition, a company with a reputation for sustainable practices can strengthen its brand image and foster customer loyalty. Companies like Patagonia, Tesla, and Unilever have all built strong reputations by focusing on sustainability in their supply chains. These companies attract environmentally conscious consumers, who are willing to pay a premium for products that align with their values.

On the other hand, companies that neglect sustainability and are found to be involved in environmentally or socially irresponsible practices may suffer significant damage to their brand reputation. Social media and online reviews can quickly amplify negative publicity, leading to consumer backlash, loss of trust, and even boycotts.

Sustainability in supply chains also entails a strong commitment to social responsibility. Socially responsible supply chains focus on fair labor practices, human rights, community development, and transparency. These aspects are increasingly becoming a focal point for businesses seeking to differentiate themselves in the market and align their operations with the values of their consumers. Ethical labor practices are a critical element of a sustainable supply chain. Many businesses, especially in industries like fashion and electronics, rely on suppliers in developing countries where labor standards can be low. Companies that embrace social sustainability are ensuring that their supply chains operate fairly and ethically, protecting workers' rights, ensuring fair wages, and providing safe working conditions.

One way to promote ethical labor practices is to perform regular audits and assessments of suppliers to ensure compliance with fair labor standards. Transparency in reporting working conditions, wages, and human rights practices is another key factor in maintaining a socially responsible supply chain. Furthermore, sustainable supply chains often focus on contributing to the local communities from which they source raw materials or products. This could involve initiatives to improve local education, healthcare, and infrastructure, which not only benefits the community but also creates a positive reputation for the company. As sustainability becomes an increasingly important factor for consumers, businesses that fail to implement sustainable supply chain practices risk being left behind by more forward-thinking competitors. Companies that integrate sustainability into their operations are more likely to experience a competitive advantage, not only through improved consumer loyalty but also through increased access to partnerships and business opportunities. Sustainable supply chains are attractive to investors, business partners, and stakeholders who are looking to align with companies that have a long-

term vision and commitment to sustainability. Additionally, businesses that invest in sustainability are often seen as leaders in their respective industries, which can open doors to new partnerships and markets.

A sustainable supply chain is more resilient in the face of global challenges such as climate change, resource scarcity, and economic disruption. Companies that focus on sustainable practices are better equipped to deal with supply chain disruptions caused by natural disasters, supply shortages, or shifting regulatory environments. A sustainable supply chain is not just about minimizing environmental impact today, it's about preparing for the challenges of tomorrow. For example, companies that use renewable energy sources are less vulnerable to fluctuations in fossil fuel prices or energy shortages. Businesses that adopt sustainable sourcing practices are less likely to be affected by resource depletion or disruptions in the availability of key materials. Sustainability helps businesses build a more adaptable, resource-efficient, and resilient supply chain, ensuring long-term business continuity.

Sustainability is an essential component of modern supply chain management. It is no longer enough for companies to focus on just procuring materials responsibly; they must ensure that every aspect of their supply chain operates in an environmentally, socially, and economically sustainable manner. Sustainability in supply chains helps reduce environmental impact, ensures compliance with regulations, drives cost savings, builds brand reputation, and provides competitive advantages. By prioritizing sustainability, companies are not only benefiting the planet and society but also positioning themselves for long-term success in an increasingly eco-conscious global marketplace.

2.4 Definition of Risk Management

Risk management is the systematic process of identifying, assessing, and managing potential risks that may negatively impact an organization's objectives, resources, or overall success (Barchiesi, M. (2020)). These risks can arise from a multitude of sources, such as financial uncertainties, operational failures, technological malfunctions, legal liabilities, natural disasters, or even reputational harm. Risk management aims to mitigate or eliminate these threats by using a range of strategies, tools, and techniques, with the goal of reducing the likelihood and impact of potential risks.

In a broader sense, risk management involves understanding what could go wrong in an organization, analyzing the impact of such events, and taking steps to either avoid, transfer, reduce, or accept these risks based on their severity and likelihood. The discipline of risk management can be applied to various sectors, from financial institutions and healthcare to manufacturing, technology, and even government.

We can divide risk management into several stages, as per below:

- **Risk Identification:** The first step is to identify potential risks or threats that could affect the organization's operations, assets, or reputation. This could involve brainstorming sessions, historical data analysis, expert input, or examining industry-specific risks.
- **Risk Assessment:** Once risks are identified, they need to be analyzed and assessed based on their probability of occurrence and the severity of their potential impact. This assessment helps prioritize which risks require immediate attention and which can be managed later.

- **Risk Control and Mitigation:** After assessing risks, organizations develop strategies to manage or mitigate them. This can include developing contingency plans, purchasing insurance, redesigning business processes, implementing preventive measures, or diversifying investments.
- **Risk Monitoring and Review:** Risk management is an ongoing process. After implementing risk mitigation strategies, businesses must continuously monitor the effectiveness of these measures and reassess risks regularly. External conditions, regulations, and internal business changes may introduce new risks that require attention.
- **Risk Communication:** Effective communication is crucial to the risk management process. Stakeholders, including employees, managers, and external partners, should be informed of the risks, their potential consequences, and the mitigation strategies in place.

One of the primary reasons risk management is vital is because it helps protect an organization's assets, including its financial resources, intellectual property, brand reputation, and physical assets. In any business, there are a variety of internal and external risks that could threaten these assets. By identifying and addressing these risks early on, an organization can prevent or minimize potential damage. For example, a manufacturing company might face risks from machinery breakdowns, inventory shortages, or supply chain disruptions. Through effective risk management, the company can put measures in place to maintain machinery, diversify suppliers, and ensure it has the right amount of inventory, thereby protecting its operational capacity and resources. Similarly, intellectual property (IP) theft is a significant risk for technology companies, and risk management techniques such as cybersecurity protocols can protect valuable IP from breaches or unauthorized access.

Risk management is crucial for ensuring that a business remains operational in the event of unexpected disruptions. Whether it's a natural disaster, a sudden market shift, or an IT failure, businesses that don't have effective risk management strategies in place may struggle to recover from crises. A business continuity plan (BCP), which is a fundamental aspect of risk management, helps organizations prepare for and respond to such disruptions. For instance, in the case of a cyberattack or data breach, having risk management processes in place allows an organization to swiftly implement backup systems, mitigate data loss, and ensure that the impact on customers and operations is minimized. Similarly, a company may face risks from economic downturns or supply chain disruptions. A robust risk management plan enables businesses to have contingency measures in place that keep them afloat during challenging periods, ensuring they can continue to serve customers, maintain operations, and avoid a complete shutdown.

Risk management aids in decision-making by providing leaders with the necessary data and analysis to make informed choices. Understanding the risks involved in any decision allows businesses to plan for potential adverse outcomes, which helps reduce uncertainty. For example, when launching a new product, a company faces risks related to market demand, production timelines, and competition. By conducting a thorough risk assessment, the company can determine the potential challenges and prepare strategies to address them. Moreover, risk management helps prioritize projects and investments based on the likelihood of success and potential return on investment, thereby aligning resources with the areas that will benefit the organization the most. Managing risk effectively is essential for protecting a business from

financial losses. Unmanaged risks, especially in areas like investments, contracts, or market conditions, can lead to unexpected costs or significant financial setbacks. Risk management helps mitigate the financial impact of various risks. For instance, a financial institution might face risks from credit defaults or changes in interest rates. By assessing these risks and creating measures such as hedging, diversification, and maintaining liquidity, the institution can protect itself from large-scale financial losses. Insurance is another key component of financial risk management. Companies often purchase policies to cover certain risks—such as property damage, employee health issues, or liability claims, thereby ensuring that they are financially protected when the unforeseen occurs. Without these measures, businesses could face crippling financial repercussions in the event of an incident.

Compliance with laws and regulations is a key aspect of risk management. Non-compliance can lead to legal penalties, financial fines, or even lawsuits that can have severe consequences for an organization. Many industries are subject to specific laws regarding environmental impact data protection, financial transparency, health and safety, and labor practices. Risk management involves identifying regulatory requirements and ensuring the business is compliant with them. This is not only important for avoiding penalties but also for maintaining good relationships with regulatory bodies and demonstrating corporate responsibility. For example, a pharmaceutical company must adhere to regulations concerning drug safety and testing protocols. A financial services company must ensure that it complies with regulations related to data privacy and anti-money laundering practices. Risk management processes help ensure that businesses are aware of and align with all necessary legal requirements, thereby reducing the chances of non-compliance. A business's reputation is one of its most valuable assets. Customers, investors, and other stakeholders want to know that they can trust an organization to operate ethically, maintain security, and deliver on its promises. Effective risk management is essential in maintaining and enhancing a company's reputation. For instance, a company that actively manages cybersecurity risks shows its commitment to protecting customer data and ensuring the safety of its services. Similarly, businesses that take proactive steps to manage risks related to product quality, customer service, and environmental responsibility will earn customer loyalty and brand recognition. On the other hand, failing to address risks appropriately—such as ignoring product defects, not complying with environmental regulations, or failing to respond to customer complaints—can lead to a damaged reputation, loss of customers, and reduced market share. Reputation management is, therefore, an important aspect of risk management that impacts the long-term success of any organization. Risk management fosters a culture of awareness and responsibility throughout an organization. When employees at all levels are educated about risks and their potential impacts, they become more vigilant and proactive in preventing and addressing issues before they escalate. A risk-aware culture ensures that employees understand their roles in managing risk and are empowered to make decisions that minimize potential threats. It also encourages open communication about risks, allowing issues to be raised early and solutions to be implemented quickly. For example, employees in a manufacturing plant may notice potential safety hazards or operational inefficiencies, and a culture of risk management will encourage them to report these issues promptly, helping the company avoid accidents or production delays. By embedding risk management practices into daily operations, companies can create a resilient organization capable of handling challenges effectively.

Companies that implement risk management practices can gain a competitive edge over their peers. Being able to identify, mitigate, and respond to risks in a timely and effective manner,

positions a company as a stable and reliable player in the market. This is especially important in industries where rapid changes, volatility, and unpredictability are common. For example, a technology company that consistently manages the risks of cyber threats and data breaches will build trust with customers, ensuring that their information is safe. This trust can help the company differentiate itself from competitors, attract more clients, and build long-term relationships. By managing risks proactively, organizations can also avoid disruptions that could affect their market position, such as regulatory penalties, supply chain issues, or economic downturns, which can impact their ability to deliver products and services on time.

Risk management is a critical practice that allows organizations to identify, assess, and control the risks they face in today's dynamic and interconnected world. From protecting financial resources and ensuring business continuity to enhancing decision-making and fostering a risk-aware culture, risk management plays a vital role in safeguarding an organization's long-term success. By understanding the importance of risk management and implementing robust strategies to address potential risks, businesses can minimize the likelihood of adverse events and maximize opportunities for growth, stability, and resilience.

2.5 Risk management in procurement and supply chain

In today's globalized and highly interconnected economy, businesses face a lot of challenges, particularly when it comes to procurement and supply chain management (Gauthier, A., & Brossard, R. (2020)). With complexities such as fluctuating demand, geopolitical risks, environmental disruptions, and regulatory changes, it has become essential for organizations to manage risks effectively within their procurement and supply chain operations. Risk management refers to the identification, assessment, and prioritization of risks, followed by the application of resources to minimize, monitor, and control the probability and impact of such risks. In procurement and supply chain management, risk management is a critical process that helps businesses mitigate vulnerabilities, ensure operational continuity, and improve decision-making, ultimately leading to improved organizational performance. As we already mention on previous chapters, the role of procurement and supply chain in business operations It's very important. Procurement and supply chain are fundamental to the successful functioning of any organization. Procurement refers to the process of sourcing goods, services, or works from external suppliers, while the supply chain encompasses the entire flow of goods and services, from raw material acquisition to final product delivery to consumers. Both procurement and supply chain are interconnected processes that determine the efficiency of production, distribution, and customer satisfaction (Williams, P., & Hesterly, W. (2019)).

The procurement and supply chain functions play a significant role in ensuring that products are delivered on time, costs are managed effectively, and quality is maintained (Manuj, I., & Mentzer, J. T. (2008)). Given their centrality to business operations, any disruptions or inefficiencies in these functions can lead to operational delays, financial losses, and reputational damage. This is where effective risk management comes into play, as it helps organizations anticipate, prepare for, and mitigate potential risks that could disrupt their procurement and supply chain processes. Risk in procurement and supply chain refers to uncertainties that could affect the smooth operation of sourcing, transportation, and delivery of goods or services. These risks can arise from both external and internal factors, and their potential impact can vary from minor

disruptions to significant financial losses. Some of the most common risks faced by organizations in procurement and supply chain management include:

- **Supply Chain Disruptions:** Disruptions can occur due to natural disasters (earthquakes, floods, hurricanes), political instability, or trade barriers. These disruptions can prevent the timely delivery of raw materials or finished products, leading to production stoppages and delays.
- **Supplier Risk:** Supplier-related risks encompass issues such as the failure of suppliers to meet delivery deadlines, changes in supplier financial stability, quality problems, or the bankruptcy of key suppliers. Relying heavily on a limited number of suppliers can increase exposure to these risks.
- **Logistics and Transportation Risks:** Transportation risks include delays, accidents, and challenges in customs clearance. These issues can arise due to poor infrastructure, regulatory changes, or weather conditions.
- **Cybersecurity and Data Breaches:** As organizations increasingly rely on technology for procurement and supply chain management, the threat of cyberattacks and data breaches has become more pronounced. A data breach can expose sensitive supplier information, disrupt communication channels, and compromise operational efficiency.
- **Regulatory and Compliance Risks:** Changes in laws, regulations, and industry standards can affect procurement practices and supply chain operations. Non-compliance can result in penalties, fines, or damage to the organization's reputation.
- **Demand Variability:** Demand fluctuations can create risks in inventory management. If demand is underestimated, an organization may face stockouts and lost sales, while overestimating demand can lead to excess inventory and increased holding costs.
- **Currency and Exchange Rate Risks:** For organizations that operate internationally, fluctuations in currency exchange rates can have significant implications on procurement costs, pricing, and profitability.

Risk management helps businesses identify potential disruptions that may impede operations and take steps to mitigate or eliminate them. By proactively addressing risks, organizations can minimize the likelihood of supply chain interruptions and ensure business continuity. Managing risks effectively allows organizations to reduce unexpected costs that arise from disruptions or inefficiencies. By identifying risks early and implementing mitigation strategies, businesses can avoid costly delays, inventory shortages, and penalties. In addition, it provides valuable insights into potential threats, enabling managers to make informed decisions. For instance, when a company identifies a volatile supplier or a high-risk transportation route, it can evaluate alternative options to reduce the exposure to risk. The ability to bounce back from unforeseen challenges is critical for long-term success. Risk management fosters resilience by ensuring that organizations are prepared to handle disruptions, recover swiftly, and adapt to changing circumstances (Zheng, D., & Zheng, P. (2020)).

Managing supplier risks through effective risk management can strengthen supplier relationships. By working with suppliers to mitigate shared risks (such as logistics disruptions or regulatory changes), organizations can foster collaborative partnerships that enhance reliability and trust (Duffy, C., & Foster, S. T. (2013)). Businesses with robust risk management frameworks in place are better positioned to handle uncertainties, adapt to market changes, and offer products or services on time. This can result in a competitive edge, as customers and clients increasingly prioritize businesses that can deliver with consistency and reliability. As

organizations face growing scrutiny from regulators, stakeholders, and the public, risk management helps them stay compliant with legal and ethical standards. Non-compliance risks, if left unaddressed, can tarnish a company's reputation and result in legal consequences. By managing regulatory risks, businesses can safeguard their reputation and avoid costly penalties.

Effective risk management requires a structured approach, as haphazard efforts may not be sufficient to identify and mitigate risks. A well-designed risk management framework enables organizations to systematically assess risks and develop strategies to address them. Some common frameworks and strategies used in procurement and supply chain risk management include:

- **Risk Assessment and Analysis:** The first step in risk management is identifying potential risks and assessing their likelihood and impact. Techniques such as SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis and Failure Mode and Effect Analysis (FMEA) can help organizations identify vulnerabilities in their supply chain and procurement processes.
- **Risk Mitigation and Contingency Planning:** After identifying risks, organizations should develop mitigation plans. This may include diversifying suppliers, establishing alternative transportation routes, or implementing stock buffers. A contingency plan ensures that the organization is prepared to respond to unexpected disruptions.
- **Supplier Risk Management:** Developing strong relationships with suppliers and evaluating their financial health, performance, and capacity is crucial. Implementing a dual-sourcing strategy or creating long-term contracts with suppliers can help mitigate the risks of supplier failure.
- **Technology and Data Analytics** (Iyer, K. C., & Lucker, K. (2015)): Technology plays a key role in modern risk management. Advanced data analytics, artificial intelligence (AI), and machine learning can be used to predict potential risks, optimize supply chain operations, and improve decision-making. Blockchain technology also enhances transparency and traceability, which can reduce fraud and counterfeiting risks in the supply chain.
- **Collaboration and Communication:** Effective risk management involves strong communication and collaboration across the supply chain. This includes working with suppliers, logistics providers, and other stakeholders to share risk information and develop joint strategies for mitigating risks.
- **Regular Monitoring and Review:** Risk management is not a one-time effort but an ongoing process. Organizations should continuously monitor the risk landscape and adjust their strategies as needed. Regular reviews and updates to risk management plans ensure that businesses stay ahead of emerging threats.

In conclusion, risk management in procurement and supply chain is essential for maintaining the smooth and efficient operation of business activities. By identifying, assessing, and addressing risks early, businesses can avoid disruptions, reduce costs, enhance resilience, and maintain strong supplier relationships. Furthermore, effective risk management can provide a competitive advantage by enabling companies to adapt to changing market conditions and fulfill customer demands reliably. As supply chains become more complex and interconnected, the importance of risk management will only continue to grow. Organizations that prioritize risk management

within their procurement and supply chain functions are better positioned for long-term success, profitability, and sustainability.

2.6 The research gap

Sustainability in Procurement and Risk Management in Supply Chain

The integration of sustainability within procurement and risk management in supply chains is an increasingly important and evolving area of research. However, there remains a significant gap in understanding how sustainability can be effectively integrated with risk management practices in procurement processes, and how such integration can lead to more resilient, efficient, and sustainable supply chains. Although a growing body of literature has explored sustainability and risk management separately, there has been limited research on the intersection between these two areas, particularly in the context of procurement and supply chain management. This gap presents an opportunity to develop a more comprehensive framework that combines sustainable procurement practices with risk management strategies. Several specific research gaps can be identified within the broader topic of sustainability in procurement and risk management in supply chains:

- **Limited Integration of Sustainability in Risk Management Frameworks:** Traditional risk management models tend to focus primarily on mitigating operational and financial risks, such as disruptions, delays, and cost fluctuations. However, the environmental and social dimensions of sustainability—such as carbon emissions, labor conditions, and resource depletion—are often overlooked. While some studies have begun to address the inclusion of environmental, social, and governance (ESG) risks, a unified framework that integrates these sustainability risks with conventional supply chain risks is still lacking. Research is needed to develop risk management models that simultaneously consider environmental, social, and economic factors in procurement decisions.
- **Inadequate Exploration of the Role of Procurement in Promoting Sustainable Supply Chains:** Procurement plays a central role in shaping supply chain practices and driving sustainability, yet there is limited research examining how procurement professionals can mitigate sustainability risks through their decision-making processes. While sustainable procurement practices, such as sourcing from ethical suppliers, prioritizing eco-friendly products, and considering life-cycle impacts, have been discussed, there is a lack of research that directly links these practices to risk management strategies. Understanding how procurement can proactively identify and mitigate sustainability-related risks (such as reputational risks from poor supplier practices or risks from non-compliance with environmental regulations) remains underexplored.
- **Challenges in Measuring Sustainability Risks in Supply Chains:** A significant challenge in integrating sustainability into supply chain risk management is the lack of standardized methods and metrics for measuring sustainability risks. Existing research has often focused on specific aspects of sustainability, such as carbon footprint or waste management, without offering a holistic approach to quantifying and evaluating sustainability risks across the entire supply chain. There is a need for research that explores methodologies to measure and assess sustainability-related risks in procurement, including the development of key performance indicators (KPIs) that align sustainability objectives with risk management goals.

- **Impact of Regulatory and Policy Changes on Sustainable Procurement and Risk Management:** The evolving regulatory landscape surrounding sustainability is another area that requires more attention. As governments around the world increasingly impose stricter environmental and social regulations on businesses, procurement managers face new risks related to compliance. However, research has yet to fully explore how procurement strategies can be aligned with changing regulations while minimizing risk. The role of global trade agreements, sustainability certifications, and national policies in shaping procurement decisions and influencing risk management practices has not been sufficiently investigated. This gap presents an opportunity to study the impact of emerging regulations on procurement strategies and the broader supply chain.
- **Supplier Collaboration and Risk Mitigation:** Collaboration with suppliers is essential for reducing risks related to sustainability. However, there is limited research on how procurement departments can engage suppliers to address both sustainability and risk concerns collaboratively. Supplier engagement strategies, such as creating joint sustainability initiatives, sharing data for risk mitigation, or developing long-term partnerships that emphasize mutual sustainability goals, are underexplored in the context of risk management. Research is needed to investigate how supply chain collaboration can lead to better risk management outcomes while also promoting sustainability across the supply chain.
- **Technological Innovations and Data-Driven Risk Management for Sustainability:** The role of technology in enhancing both sustainability and risk management in supply chains is an area that remains underdeveloped. Emerging technologies such as artificial intelligence (AI), blockchain, Internet of Things (IoT), and big data analytics have the potential to improve transparency, traceability, and efficiency in procurement and risk management processes. However, the integration of these technologies with sustainability efforts in procurement is not well-documented in existing literature. There is a need for research that examines how technological innovations can help manage sustainability risks, track the environmental and social impacts of supply chains, and improve decision-making in procurement.

In summary, while there has been significant progress in the research surrounding sustainability in procurement and risk management in supply chains, many gaps still exist. The integration of sustainability with traditional risk management practices remains underexplored, and more research is needed to create a unified framework that accounts for environmental, social, and economic factors. Key areas for further investigation include the development of measurement tools for sustainability risks, strategies for supplier collaboration, the role of technology in managing sustainability, and the impact of regulatory changes. By addressing these gaps, future research can provide organizations with the insights and frameworks necessary to create more sustainable and resilient supply chains, ensuring that sustainability and risk management are no longer seen as separate challenges but as complementary components of effective supply chain management.

2.7 Conclusion

Sustainability has become a cornerstone of modern business operations, offering not only environmental and social benefits but also contributing to long-term financial performance. By adopting sustainable practices, businesses can enhance their brand reputation, meet regulatory requirements, improve operational efficiency, and create value for stakeholders. Sustainability in

procurement and supply chain management plays a pivotal role in mitigating risks such as supply chain disruptions, reputational damage, and compliance issues, ensuring the continuity and resilience of operations.

However, there remains a notable research gap in understanding how sustainability can be effectively integrated with risk management practices in procurement and supply chain. Despite growing interest in both areas, limited research exists on their intersection, particularly in developing frameworks that combine sustainability goals with risk mitigation strategies. Furthermore, challenges in measuring sustainability risks, engaging suppliers, and adopting technologies to enhance both sustainability and risk management are areas that require further exploration.

By bridging these research gaps, organizations can better leverage risk management to decrease vulnerabilities and improve supply chain resilience. Effective risk management not only reduces exposure to environmental, social, and economic risks but also supports the achievement of sustainability objectives, enabling businesses to thrive in an increasingly complex and demanding global market.

3 Methodology

3.1 Introduction

The aim of this dissertation is to explore the relationship between sustainability in procurement and the reduction of risks in supply chain management. The methodology is designed to investigate how sustainable procurement practices can be integrated with risk management strategies, assess their impact on reducing risks, and identify practical approaches that organizations can adopt to enhance both sustainability and risk management outcomes. This section outlines the research design, data collection methods, data analysis techniques, and the rationale behind the chosen approach.

3.2 Research Philosophy

The research philosophy underpinning this dissertation on the importance of sustainability in procurement and how risk management in supply chains can decrease is guided by a pragmatic approach. Pragmatism as a research philosophy is grounded in the belief that both practical consequences and real-world applications should guide inquiry. This approach is particularly suitable for exploring complex and multifaceted topics such as sustainability and risk management, where the integration of theoretical insights with practical, actionable strategies is crucial.

3.3 Research sampling

In order to identify the significance of sustainability in business operations and specifically in procurement and supply chain management and how risks decrease, we have created a questionnaire and proceeded with interviews with company executives.

4 Data Analysis

4.1 Introduction

Procurement professionals play a critical role in shaping a company's sustainability practices by selecting suppliers and managing resources in ways that align with both financial goals and environmental responsibility. However, the challenge of balancing sustainability with operational efficiency and cost-effectiveness is heightened by the increasing uncertainty surrounding global supply chains and procurement processes. This dissertation explores the relationship between sustainability in procurement and risk management, with a specific focus on how effective risk management strategies can contribute to reducing risks associated with sustainable procurement practices. The research presented here is based on data gathered from a questionnaire distributed to executives in procurement roles within various companies. By analyzing their responses, this study seeks to uncover insights on how sustainability practices are integrated into procurement decisions and the role that risk management plays in mitigating potential challenges. Through this analysis, the dissertation aims to answer key research questions related to the adoption of sustainable procurement practices, the perception of risk in this context, and how robust risk management approaches can reduce these risks, ultimately contributing to more sustainable and resilient supply chains. Below you can find the relevant questionnaire that was given to buyers to analyze and explain the sustainability in procurement and how risks can be decreased.

Questionnaire:

1. How does your organization define sustainability in the context of procurement and supply chain management?
2. What specific sustainability goals or objectives has your organization set for its procurement processes? How are these goals aligned with your overall corporate strategy?
3. How do you evaluate the sustainability practices of your suppliers? Do you incorporate environmental, social, and governance (ESG) criteria in your supplier selection process?
4. How does your organization integrate risk management into its supply chain and procurement strategies?
5. What specific measures have you implemented to mitigate risks related to sustainability in the supply chain (e.g., environmental impacts, supply chain disruptions, ethical sourcing)?
6. How has technology (e.g., AI, data analytics, blockchain) helped your organization address sustainability and risk management challenges in procurement?
7. How does your organization stay compliant with sustainability-related regulations and standards in procurement?

8. How does your organization engage with suppliers to improve sustainability practices and manage shared risks in the supply chain?
9. In the face of supply chain disruptions (e.g., natural disasters, pandemics), how does your organization balance sustainability with the need for operational continuity and risk management?
10. What metrics or KPIs does your organization use to track the success of sustainability initiatives in procurement and supply chain risk management?

In the next chapter of this essay, we will analyze the data we got from the executives, from the interviews, to reach into conclusions that will help us define how they define sustainability at their organizations.

4.2 Results from the Questionnaire – Analyzing the data

In question one all the participants addressed sustainability as an important tool for their businesses to achieve their goals by maintaining a good social, ethic, economic and environmental profile confirming the topic of this essay. It is also important to waste less and create value for our businesses for long-time period as all buyers mention from a manufacturing company. It's worth mentioning that 2 of the buyers that are working in a shipping company (supply department) mentioned the need and try of the company to reduce emissions (trying to reduce the CO2 emissions by consolidating raw materials to major warehouses for further dispatch to our factory), sourcing eco-friendly materials, promoting fair labor practices, and ensuring compliance with international maritime sustainability standards like the International Maritime Organization (IMO) guidelines. It is also important to check this also from the side of the shipping industry, which is the major sector where products and materials are distributed around the world. All the participants lead to the conclusion that sustainability concerns their organization a lot at the moment and it's the key to greater results in the future.

In the second question, the majority of our sample mentioned objectives such as reducing environmental impact, promoting ethical sourcing, and supporting local and diverse suppliers which will align with the corporate strategy by driving innovation, ensuring compliance with sustainability standards, and fostering long-term economic and social value creation. The shipping purchases mentioned that shipping companies have as goal to achieve zero emissions by sourcing low-carbon fuels and eco-efficient equipment, collaborating with suppliers that adhere to IMO regulations and demonstrate commitment to sustainable practices. These goals align with corporate strategy of positioning the company as a leader in green shipping. We have mentioned many times that our organization must choose wisely the correct suppliers to cooperate with and build strong relationships to achieve the best results through sustainability. It is also interesting to mention the answer from a buyer that the goal for 2025 is to source 50% of goods from suppliers with certified carbon neutrality programs and prioritize suppliers located closer to production facilities to minimize transportation distances and associated emissions. In this way the company will have a better position in compliance with ISO regulations, being more attractive to new

customers, possible candidates for new jobs at our company and making more attractive our products and services.

At question number three, all the participants referred to how important it is to choose your suppliers to get better results for your company. Frequently mentioned criteria on choosing their suppliers are the environmental-carbon footprint, waste management practices, recycled raw materials and compliance with regulations. We have mentioned numerous times all the previous criteria as key criteria for choosing the companies/suppliers that we will cooperate with. One of the buyers that works for the shipping company also persisted on the environmental criteria such as carbon footprint, waste management practices and compliance with environmental certifications such as ISO 14001 and SA8000 for social accountability, proving how important it is to adopt these kinds of practices in all fields and sectors. By evaluating the sustainability practices of their suppliers and incorporating ESG criteria into their supplier selection processes, the organizations can reduce their environmental impact by working with suppliers who have strong environmental practices, organizations can reduce their own carbon footprint and help to protect the environment. They can also improve their social impact by working with suppliers who have fair labor practices and support their communities, organizations can help to improve the lives of people around the world.

In question number four all of the participants mentioned the need to identify these risks and categorize them into operational, financial, social and maybe technological. The first step in integrating risk management is identifying potential risks across the supply chain. Risk Assessment and Prioritization, companies assess the likelihood of each risk occurring and the potential impact it would have on the business. It is also important to identify these potential disruptions by assessing supplier reliability and diversifying sourcing to ensure continuity. Proactive measures like regular audits, contingency planning, and monitoring geopolitical, environmental, and market risks help safeguard operations and align with organizational objectives.

Then the participants had to answer what specific measures they have implemented to mitigate risks related to sustainability in the supply chain. The most common answer was regular audits conducted to assess suppliers' sustainability practices, focusing on environmental impact, labor conditions, and ethical sourcing. These assessments help identify any risks related to unethical practices or unsustainable environmental impact early on. They also mentioned a lot the importance of blockchain technology and collaboration closely with suppliers to ensure they meet specific sustainability goals (including reduced carbon emissions, waste minimization, and responsible resource usage). Two of the participants also mentioned that their company always seeks to train procurement and logistics teams on sustainability issues and how risk management is key, ensuring that decision-makers are equipped with the knowledge to select suppliers that align with the company's sustainability goals and can anticipate potential risks in the supply chain.

At question number six all the responses reflect how technology, such as AI, data analytics, and blockchain, aids in improving sustainability and risk management within procurement—aligning with the essay's premise that technology enables better-informed, more resilient, and sustainable procurement strategies. Through AI some of the participants mentioned that they had identified and mitigated risks early and automated several risk assessment processes. This has not only saved time but also allowed them to better predict supply chain vulnerabilities and adopt more

sustainable alternatives. Blockchain technology has greatly improved transparency in our procurement practices. By ensuring traceability of materials, we can verify the sustainability of products, reduce the risk of unethical sourcing and track the entire lifecycle of products, ensuring ethical sourcing and minimizing environmental impact.

In question number seven we had similar answers to each interview. Participants advise that it's very important to stay up to date and be informed with regulatory regulations/standards related to sustainability on procurement (international standards like ISO 20400 and regional or country-specific regulations). Intergrade also sustainability considerations into all procurement procedures, from supplier selection and evaluation to contract negotiation and performance monitoring, evaluating always the sustainability performance of cooperative and potential suppliers. It was also frequently mentioned that reports about the sustainability practices of the company to stakeholders are also good metrics to help the organization stay compliant with sustainability-related regulations. And once more the buyers from the shipping company mentioned about the compliance to IMO regulations and tracking the latest updates of them to be always updated.

At question number 8 participants, once more advised that the company must choose and cooperate with suppliers that follow ESG criteria and evaluate them basis on sustainable practices. It is also very important to communicate and have an open collaboration with the suppliers and jointly overcome sustainable challenges. Another method mentioned by a purchaser of the maritime industry is the continuous training and education of the personnel of the company (and push suppliers also to do the same). In cooperation also with suppliers, companies must share risks, such as fluctuations in raw material costs, regulatory compliance, or climate-related events. This might include shared investments in renewable energy or new technologies. Finally, by working closely with suppliers and addressing both risks and opportunities, companies can foster long-term sustainability in their supply chains while also ensuring compliance and managing shared risks effectively.

Question number nine was a tricky one, someone might say as we wanted to check how companies managed to face sustainability issues during the pandemic (Covid 19) and in general how their organization balanced sustainability with the need for operational continuity and risk management would. Below are the four most common reasons that the participants advised:

- Building Resilience into the Supply Chain: Organizations often focus on making their supply chains more resilient by diversifying suppliers and sourcing from different geographical areas. This helps to mitigate the risk of disruptions due to natural disasters or pandemics in a particular region. At the same time, they are looking for suppliers who follow sustainable practices to ensure that even as they diversify, they maintain their commitment to sustainability.
- Sustainability as a Risk Management Tool: In some cases, companies align their sustainability initiatives with risk management. For example, investing in renewable energy or local sourcing materials can reduce dependency on volatile global supply chains and minimize environmental risks, making the company more adaptable in times of crisis.
- Collaboration with Suppliers: During disruptions, organizations must work closely with their suppliers to share resources, manage risks together and find sustainable alternatives. For example, if a supplier faces a delay due to a disaster, the company might collaborate with

them on finding alternative, sustainable sourcing options or adjust production schedules to accommodate.

- **Digitalization and Transparency:** Maritime companies (not only) often use advanced digital tools (like blockchain or AI-powered platforms) to track and manage their supply chains. This gives them real-time visibility into risks, from supplier delays to environmental concerns. By improving traceability, they can also ensure that they are maintaining sustainability standards, even in times of disruption.

And finally at question number ten, the participants had to answer what metrics or KPIs their organization use to track the success of sustainability initiatives in procurement and supply chain risk management. Below is a list with the most frequently mentioned KPIs during these interviews:

- **Sustainable Sourcing Ratio:** Measures the percentage of procurement spent dedicated to sustainable or ethically sourced materials, products, or services. This helps track how well the organization is meeting its sustainability goals in procurement.
- **Sustainability Compliance Rate:** Tracks the percentage of suppliers that comply with sustainability-related regulations or corporate sustainability standards (e.g., ISO 14001, fair labor practices). High compliance rates suggest a strong alignment between sustainability goals and supplier behavior.
- **On-Time and In-Full Delivery:** Measures the reliability of suppliers in delivering on time and in full. Reduces risks related to supply chain disruptions and shows supply chain resilience, which is crucial for sustainability.

In general and besides KPIs, the participants also mentioned that usually their companies use metrics such as supplier diversity, incident response times and progress toward specific sustainability targets, like renewable energy use or reduced emissions.

5 Discussion and Suggestions

5.1 Introduction

In this chapter we will briefly analyze the findings of this essay and mention the significance of sustainability practices for a company in procurement and supply chain management to achieve its goals.

5.2 Important Findings of the research

The growing demand for sustainability in procurement and risk management in supply chains has become a significant focus for organizations worldwide. As environmental, social, and governance (ESG) factors play a larger role in business strategies, understanding how sustainability influences procurement and supply chain risk management is crucial. Recent research has highlighted several important findings regarding the integration of sustainability into these domains. The research reveals that organizations are increasingly viewing sustainability not as a regulatory requirement but as a competitive advantage. Businesses that prioritize sustainable procurement practices, such as sourcing from suppliers with strong environmental and social performance, are better positioned to differentiate themselves in the market. This can lead to enhanced brand reputation,

customer loyalty, and long-term profitability. Companies are now aligning their procurement strategies with sustainability goals, recognizing that consumers, investors, and partners are becoming more environmentally conscious.

A key finding is that sustainability practices are closely linked to risk management in supply chains. Traditional risk management primarily focuses on financial, operational, and geopolitical risks, but sustainability-related risks—such as environmental hazards, labor violations, and poor governance—are increasingly seen as critical threats. The research indicates that incorporating sustainability into risk management frameworks can help organizations identify and mitigate these emerging risks early. For example, a supplier's environmental violations or unethical labor practices can expose a company to legal, reputational, and financial risks. By proactively managing sustainability risks, companies can avoid disruptions, reduce potential liabilities, and ensure business continuity.

Another important finding is the importance of collaborating with suppliers to improve sustainability outcomes. Research shows that organizations with successful sustainable supply chains are those that work closely with their suppliers to foster mutual understanding and joint problem-solving. By engaging suppliers in sustainability initiatives—such as reducing carbon emissions, improving labor standards, and enhancing waste management—organizations can create a more resilient and responsible supply chain. This collaboration also fosters innovation, leading to the development of new sustainable practices and technologies that can benefit both parties. Transparency and supplier audits are vital tools for ensuring sustainability across the supply chain. The study highlights that companies are increasingly relying on third-party audits and performance assessments to verify their suppliers' adherence to sustainability standards. This level of oversight helps organizations manage risks related to human rights violations, environmental damage, and non-compliance with regulations. It also encourages greater accountability among suppliers. However, the research points out that the effectiveness of audits depends on their frequency and the rigor with which they are carried out. Ensuring transparency in the supply chain requires comprehensive reporting and traceability, which are often enabled through technology solutions like blockchain.

The research also underscores the transformative role of technology in advancing sustainability in procurement and risk management. Digital tools such as data analytics, blockchain, and artificial intelligence are increasingly being used to track supply chain performance, assess sustainability risks, and optimize procurement decisions. For example, blockchain provides transparency and traceability in supply chains, enabling companies to verify the sustainability claims of suppliers. Artificial intelligence and machine learning are being used to predict risks related to climate change, political instability, and regulatory changes, allowing organizations to make more informed decisions. Despite the growing emphasis on sustainability, the research reveals several challenges that organizations face in implementing sustainable procurement and risk management strategies. These challenges include the lack of standardized sustainability metrics, difficulty in measuring the true impact of sustainability initiatives, and resistance to change within supply chains. Many companies struggle to balance short-term financial goals with long-term sustainability objectives, making it difficult to prioritize investments in sustainability. Moreover, the global nature of modern supply chains often complicates efforts to monitor and enforce sustainability practices.

6 Conclusion

As the global economy continues to evolve, sustainability has emerged as a crucial driver of strategic decision-making within procurement and supply chain management. The relationship between sustainability and risk management is becoming increasingly evident, as businesses seek to build resilient, future-proof supply chains that can navigate both short-term disruptions and long-term shifts in environmental, social, and economic conditions. This thesis has explored the significant role sustainability plays in procurement, emphasizing how it can help decrease risk exposure and improve the overall effectiveness of supply chain risk management.

One of the most prominent insights of this research is that sustainability in procurement is not just a moral imperative or regulatory requirement but also an effective risk mitigation strategy. By incorporating environmental, social, and governance (ESG) factors into procurement processes, organizations can reduce a range of risks within their supply chains. This includes risks related to environmental degradation, resource scarcity, labor exploitation, political instability, regulatory non-compliance, and reputational damage. Sustainable procurement practices, such as sourcing from certified sustainable suppliers, auditing supply chains for ethical practices, and focusing on energy-efficient and eco-friendly products, enable businesses to foresee and mitigate these risks in a proactive manner. This research also highlighted the importance of supplier collaboration in fostering a sustainable supply chain. As supply chains grow more complex and global, the need for strong relationships with suppliers becomes critical. Collaborative efforts can include joint initiatives aimed at improving environmental performance, reducing waste, ensuring fair labor practices, and driving innovations in sustainable products. By actively engaging with suppliers on sustainability issues, companies can better manage risks associated with environmental regulations, labor strikes, or social unrest. Furthermore, when suppliers embrace sustainability, they are more likely to ensure the continuity of the supply chain, preventing disruptions and delays that might otherwise stem from their non-compliance with evolving global sustainability standards.

The role of technology in supporting sustainable procurement and risk management practices was another key focus of this research. Tools like blockchain, data analytics, and artificial intelligence (AI) have empowered companies to gain greater visibility and traceability within their supply chains. Blockchain, for instance, helps to ensure transparency, verifying claims made by suppliers regarding sustainability practices and providing a secure, immutable record of transactions. AI and data analytics allow organizations to predict and manage risks, such as supply chain disruptions caused by environmental disasters or geopolitical shifts. By utilizing these technologies, companies can not only track sustainability performance in real-time but also assess potential risks and take corrective actions before they escalate into major issues.

One of the primary risks organizations face in today's globalized supply chains is environmental and social risk. Unsustainable practices such as deforestation, overuse of natural resources, poor labor conditions, and human rights violations can lead to supply chain disruptions, regulatory fines, legal challenges, and public backlash. As consumers and investors become more socially conscious, businesses are under increasing pressure to mitigate these risks through sustainable procurement strategies. By integrating sustainability criteria into procurement decisions, businesses reduce their vulnerability to environmental and social risks while contributing to broader societal goals, such as reducing carbon emissions, ensuring fair labor practices, and promoting biodiversity.

An important theme in this research is that sustainability in procurement is not merely a cost or a regulatory compliance expense but an investment in long-term financial stability. While the initial costs associated with sustainable procurement practices—such as sourcing from ethical suppliers or investing in environmentally friendly technologies—might be higher, the research reveals that these costs are often outweighed by the long-term benefits. These include cost savings through waste reduction, energy efficiency, and improved supply chain operations. Additionally, by proactively managing risks through sustainable practices, organizations can avoid costly disruptions, legal liabilities, and reputational damage, all of which could lead to significant financial losses. Over time, sustainable procurement practices contribute to more stable and resilient supply chains, which ultimately result in enhanced profitability.

Despite the many benefits, this research also uncovered several challenges that organizations face when integrating sustainability into procurement and risk management. These challenges include the lack of standardized sustainability metrics, the complexity of measuring the impact of sustainability initiatives, resistance to change within organizations, and the difficulties associated with monitoring a global supply chain. The research highlights that many businesses struggle with the complexity of tracking sustainability performance across multiple tiers of the supply chain. Without clear, universally accepted metrics or frameworks, organizations find it challenging to assess the effectiveness of their sustainability efforts and ensure consistent performance across different suppliers and regions.

Another critical area that this research addressed is the increasing regulatory pressures companies face related to sustainability. As governments and international organizations introduce stricter environmental and social regulations, businesses must adapt their procurement practices to ensure compliance. Non-compliance can result in legal and financial consequences, as well as damage to a company's reputation. Sustainable procurement practices not only help mitigate the risk of regulatory fines but also ensure that organizations remain ahead of changing legislation, positioning them as leaders in sustainability and risk management. Finally, this thesis affirms that sustainability is not just a compliance or risk mitigation issue, it is a strategic business imperative. As the global market becomes more focused on sustainability, organizations that integrate sustainability into procurement are better positioned to thrive. This is not only because they reduce their exposure to risk but also because they improve their overall competitiveness. Sustainability-driven companies often benefit from enhanced consumer trust, improved stakeholder relationships, increased operational efficiency, and greater innovation in products and processes. These factors contribute to stronger market positioning, attracting investors, customers, and employees who share the same sustainability values.

Looking forward, the future of sustainability in procurement and risk management is promising, but challenges remain. As sustainability continues to evolve, too must procurement practices and risk management strategies. Companies that can integrate sustainability into their core operations, adopt innovative technologies, and develop collaborative partnerships with suppliers will be better equipped to navigate the complexities of the global supply chain. Companies will continue to invest in advanced technologies like AI and machines, learning to gather real-time data from across their supply chains. By analyzing large volumes of data, businesses can identify potential risks related to sustainability and mitigate them more effectively. Furthermore, these technologies can help in

measuring the impact of sustainability efforts, ensuring that organizations can quantify their environmental and social contributions and communicate them to stakeholders.

Another important trend is the growing emphasis on circular supply chains. In the future, many organizations will increasingly focus on adopting circular economy principles—reducing waste, reusing resources, and recycling materials—across their supply chains. This shift will not only help organizations meet sustainability goals but also reduce risk by minimizing dependence on finite resources and improving overall supply chain resilience.

In conclusion, this thesis has demonstrated that sustainability in procurement plays an essential role in reducing risk across the supply chain. By adopting sustainable procurement practices, businesses can mitigate a wide range of environmental, social, financial, and reputational risks. Sustainability not only enhances risk management but also creates opportunities for innovation, operational efficiency, and long-term profitability.

The integration of sustainability into procurement is no longer optional for companies that fail to incorporate these principles into their strategies risk being left behind. Those that embrace sustainability and manage risks effectively will not only thrive in the face of global challenges but also lead the way in shaping the future of supply chain management. As the world continues to face pressing environmental and social challenges, sustainable procurement will be key to building resilient, ethical, and competitive supply chains that benefit both businesses and society.

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