**Czech University of Life Sciences Prague**

**Faculty of Economics and Management**

**Department of Economics**

# Master's Thesis

**Green ethics in business: Case study on sustainable Procurement in ICT**

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# CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

# DIPLOMA THESIS ASSIGNMENT

Bc. Khaled Omari

Informatics

Thesis title

**Green ethics in business: Case study on sustainable Procurement in ICT**

## Objectives of thesis

This thesis will explore the concept of green ethics in business, specifically focusing on sustainable procurement practices in ICT. The thesis will examine the challenges and opportunities of sustainable procurement and analyze the ethical implications of these practices. The main objective of this thesis is a case study of the impact of a specific company's sustainable procurement practices on its own Ecological footprint.

## Methodology

This thesis will use qualitative research methodology, data analysis, basic statistical methods such as index analysis and cost calculation and comparison. The practical part of the thesis will include a showcase of a real example of sustainable procurement in a specific company, with a comparison with traditional procurement using real data of the costs.

**The proposed extent of the thesis**

60 – 80 pages

**Keywords**

Business, Carbon Footprint, Cost, Eco-efficiency, Ecological Footprint, Goods, Green Ethics, Procurement, Services, Sustainability.

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**Recommended information sources**

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**Expected date of thesis defence**

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**The Diploma Thesis Supervisor**

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**Supervising department**

Department of Economics

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Electronic approval: 3. 11. 2023

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Dean

Prague on 20. 03. 2024

**Declaration**

I declare that I have worked on my master's thesis titled "Green ethics in business: Case study on sustainable Procurement in ICT" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the master's thesis, I declare that the thesis does not break any copyrights.

In Prague on 30.03.2024        _____

**Acknowledgement**

I would like to thank Mr. Ing. Jiří Mach, Ph.D. for his supervisory and advise on the diploma thesis.

# Green ethics in business: Case study on sustainable Procurement in ICT

**Abstract**

This diploma thesis selected the Company BES, a global leader in enterprise software solutions, to explore the concept of green ethics in business, specifically focusing on sustainable procurement practices in the category of Technical Services and IT Solutions. The practical part consists of detailed analysis of Company BES's procurement processes and supplier relationships, this research highlights the company's commitment to reducing greenhouse gases that are accumulated by their internal sustainable contracts management process, which saves one tree for every 8,000 paper sheets signed digitally, with a cost of 2,16 US Dollars per contract.

The thesis also analysis the costs of the company's practices with measuring the carbon footprint of their external suppliers, using a third party provider with costs counting for 310,00$ in 2021. The result of this evaluation showed that Microsoft is the supplier with the highest total Carbon emissions standing at 73.43 million kilograms of GHG in that same year, but with a relatively low GHG per 1 US Dollar, couniting for 0.161 which is below the average of the top 100 supplier by spend, Demonstrating a proactive approach by the company to environmental responsibility.

In addition, the result of the analysis shows Company BES's sustainability initiatives is the Procurement with Purpose strategy is proofed to be emphasizing diversity, social inclusion, and responsible resource utilization within its supplier network. With indicators that investments in such tools do not result in direct returns on investment, the results proof that the spend on measuring GHG provides critical insights for informed decision-making, particularly in large-scale procurement endeavors such as procuring personal laptops for its global 400,000 employees workforce.

**Keywords:** Carbon Footprint, Cost, $Co^2$ Emissions, Ecological Footprint, Goods, Green Ethics, Procurement, Services, Sustainability, Suppliers.

# Zelená etika v podnikaní: Případová studie udržitelného nákupu v oblasti ICT.

**Abstrakt**

Tato diplomová práce se zabývá společnosti BES, světovým lídrem v oblasti podnikových softwarových řešení, aby prozkoumala koncept zelené etiky v podnikání, konkrétně se zaměřením na udržitelné postupy při zadávání veřejných zakázek v kategorii technických služeb a IT řešení. Praktická část se skládá z podrobné analýzy nákupních procesů společnosti BES a vztahů s dodavateli, tento výzkum poukazuje na závazek společnosti snižovat emise skleníkových plynů, které se hromadí díky jejímu internímu procesu udržitelného řízení smluv, který šetří jeden strom na každých 8 000 papírových listů podepsaných digitálně, přičemž náklady na jednu smlouvu činí 2,16 amerických dolarů.

Práce také analyzuje náklady na postupy společnosti při měření uhlíkové stopy jejich externích dodavatelů, a to s využitím poskytovatele třetí strany, přičemž náklady se v roce 2021 pohybovaly na 310 00 USD. Výsledek tohoto hodnocení ukázal, že Microsoft je dodavatelem s nejvyššími celkovými emisemi uhlíku, které ve sledovaném roce činily 73,43 milionu kilogramů skleníkových plynů, ale s relativně nízkým množstvím skleníkových plynů na 1 americký dolar, které činí 0,161, což je pod průměrem 100 největších dodavatelů podle výdajů, což demonstruje proaktivní přístup společnosti k odpovědnosti za životní prostředí.

Výsledek analýzy navíc ukazuje, že iniciativy společnosti BES v oblasti udržitelnosti jsou strategií Procurement with Purpose, která klade důraz na rozmanitost, sociální začlenění a odpovědné využívání zdrojů v rámci sítě dodavatelů. Vzhledem k výsledkům, že investice do těchto nástrojů nevedou k přímé návratnosti investic, bylo prokázáno, že výdaje na měření emisí skleníkových plynů poskytují zásadní poznatky pro informované rozhodování, zejména při rozsáhlých akcích v oblasti veřejných zakázek, jako je pořizování osobních notebooků pro 400 000 zaměstnanců společnosti po celém světě.

**Klíčová slova:** Dodavatelé, Emise $Co^2$, Ekologická stopa, Náklady, Procurement, Služby, Uhlíková stopa, Udržitelnost, Zboží, Zelená etika.

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# 1. Introduction

In the modern corporate world, the topic of sustainability has emerged as a main cornerstone of any business strategy, reflecting both ethical imperatives and pragmatic considerations for long-term viability. Among the many ways through which small, medium and large businesses seek to embrace sustainability, the procurement processes stands out as a pivotal domain for transformative action, as it is the part of any organization's supply chain and financial operations. Within this context, this diploma thesis embarks on a comprehensive exploration of sustainable procurement practices within the domain of Technical Services and IT Solutions, with a specific focus on the case study of the global software provider Company BES.

In the theoretical part of this Diploma thesis, the literature review delves into key concepts underpinning the topic of procurement in a depth examination of procurement processes, to help understand its intricacies. Additionally, this Thesis also explores and explains the topic sustainability, the global measures that has been taken and its relation to the corporate business world. With the aim to showcase its measurement tools, encompassing key performance indicators and carbon footprint analyses.

By weaving together the theoretical insights with the analysis and exploration into Company BES's sustainable procurement strategic practices, this diploma thesis aims to examine the challenges and opportunities of sustainable procurement and analyze the implications costs of these practices.

# 2. Objective

This thesis aims to examine and analyze sustainable procurement practices within the Technical Services and IT solutions Procurement Category, focusing specifically on Company BES as a case study. The objective of this research is to gain a holistic understanding of procurement dynamics and practices in relation to sustainability, while offering practical analysis of the costs associated with selected company's sustainable procurement strategy.

The literature review aims to enhance the concept of procurement by exploring the procurement processes and practices, such competitive bidding dynamics, supplier onboarding procedures and supplier relationship management strategies. Moreover, the research delves into sustainability and the measures within the realm including an assessment of the global measures and initiatives, in addition to the assessment tools like performance indicators and carbon footprint. By showcasing the metrics and frameworks used to assess sustainability performance, the thesis aims to serve the objective by providing a comprehensive overview of the landscape in which sustainable procurement operates.

The practical part of this diploma thesis is an integral aspect to the theory, analyzing Company BESs strategies for sustainable procurement. The case-study examines the company's methods and process to assess how they support their sustainability objectives and strategies while analyzing the costs of implementing these measures.

# 3. Literature review

## 3.1. Procurement

The word procurement originated from the Latin term "procurare", which is a combination of the prefix "pro" (meaning "forward" or "on behalf of") and the verb "curare" (meaning "to care for" or "to attend to"). In Latin, "procurare" referred to the act of obtaining or acquiring something on behalf of another person or taking care of someone's interests. *"Procurement is obtaining or purchasing goods or services, typically for business purposes"* (Young J., 2023). In other words, procurement is the process through which an organization acquires goods, services, or works from external sources to meet its operational needs. It involves a series of interconnected activities and steps with aim to identify, evaluate, select, and obtain the most suitable products or services at the best possible value. While companies can be on both sides of the procurement process as buyers or sellers, what is definite is that procurement is most commonly associated with businesses due to the fact that companies need to acquire services or purchase goods, usually on a relatively large scale, weather it is to enable themselves to manufacture and sell products or to obtain a certain knowledge, patents and improve the workers skills.

While procurement and purchasing are both processes that involve the exchange of goods and services, procurement is more of a strategic process involving acquiring goods and services. It emphasizes the value of products and uses a series of steps to complete the acquisition, such as choosing the goods and services required, filling out a purchase request and working out a price and contract with the vendor. Purchasing, on the other hand, is a transactional process. As such, it involves buying goods and services. *"When an entity purchases goods and services, it places greater importance on price rather than value"* (Young J., 2023). Purchasing is usually a reactive process that satisfies a more immediate need.

The procurement process can vary depending on the organization, industry, and specific requirements. While many companies tend to procure various different things depending on their line of business and industry, the process of procurement can be divided into four main types; the first is the so called Direct Procurement,

which involves any goods and services used during the production process, such as raw materials, machinery, and other components. On the contrary, Indirect Procurement, which is the goods and services purchased to be used to meet the operational needs of a business, meaning that they might not contribute to the company's revenues. In addition to the above, there is also goods Procurement; including any physical products that businesses acquire through the procurement process to serve the company's needs, such as end products to resell or ready to use products. And lastly the services Procurement; both direct and indirect rely on services provided by people. Direct services procurement may refer to labor directly involved in the business. While on the other hand, indirect services procurement can include things like on-site security to safeguard the premises.

### 3.1.1. Procurement as a process

The process of procurement is a systematic process, in which organizations undertake to acquire goods, services, or works from external sources. These processes can require a substantial portion of a company's resources to manage, depending on the size of the company. Therefore, the budget is typically provided by managers or Chief Financial Officers (CFO) with a specific value they can spend to procure the goods or services they need. The procurement process is often a vital part of a company's strategy because the ability to purchase specific materials or services can determine if operations will be profitable (Jenkins A., 2021).

In many cases, procurement processes will be dictated by company standards, often centralized by controls from the accounts payable division of accounting. The procurement process includes the preparation and processing of a demand and the end receipt and approval of payment.

Comprehensively, this can involve purchase planning, standards, specifications determination, supplier research, selection, financing, price negotiation, and inventory control. The process of procurement, regardless of the type, involves a series of interconnected steps and activities aimed at efficiently and effectively meeting the organization's needs while achieving value for money (Young J., 2023). This process begins by identifying and understanding the organization's requirements. This involves determining the goods or services needed, quantity,

quality standards, specifications, and any other relevant considerations(Jenkins A., 2021).

This is followed with conducting a market research is crucial to gather information about potential suppliers, available products or services, market trends, pricing, and other relevant factors. Aiming to help in making informed decisions and developing a sourcing strategy. (Young J., 2023). Based on the market research and data, potential suppliers are identified and evaluated. The organization may then issue requests for proposals (RFPs), which is a formal document issued by an organization to solicit proposals from potential suppliers or service providers, outlining the organization's requirements and inviting suppliers to submit their bids or proposals. (Young J., 2023). Negotiations are conducted with the selected suppliers to finalize pricing, terms and conditions, warranties, service level agreements, and other relevant aspects. Once negotiations are complete, contracts or purchase orders are prepared and formalized as the final step of the process. (Jenkins A., 2021).

## 3.1.2. Competitive bidding

Competitive bidding is one of the procurement methods or processes in which organizations seek proposals or bids from multiple suppliers or vendors to acquire goods, services, or projects. The primary objective of competitive bidding is to obtain the best value for the organization by fostering competition among suppliers and ensuring transparency, fairness, and cost-effectiveness in the selection process (Young J., 2023).

The competitive bidding process typically involves several stages, in which companies use paperless methods such as software applications to implement the bidding and selection process (Jenkins A., 2021). One of the most use software used is called CBPP, A cloud-based procurement platform by Company BES. In regard to the process itself, usually organizations publish a request for proposal, also called RFP or invitation to bid, outlining the specific requirements, specifications, and evaluation criteria for the desired goods or services. Interested suppliers then may submit their bids or proposals within a specified timeframe, set and managed by the organization running the competitive bidding. It is also important when suppliers submit their bids, that they provide detailed information

on pricing, capabilities, delivery schedules, and any additional relevant information that would support their bids (Young J., 2023).

### 3.1.3. Supplier onboarding

Supplier onboarding in procurement includes the strategic principles and practices employed to effectively incorporate and integrate new suppliers into an organization's procurement system. This process is guided by a structured approach that emphasizes the importance of supplier qualification, onboarding process design, information exchange, relationship building, and continuous improvement (Rohn S., 2022).

Supplier qualification plays a role in supplier onboarding. Organizations regularly evaluate and qualify potential suppliers based on factors such as capabilities, financial stability, industry reputation, regulatory compliance, and alignment with strategic goals. Thorough qualification processes mitigate risks and ensure the selection of reliable and capable partners (Young J., 2023)..

The design of an effective onboarding process tailored to the organization's unique requirements is critical. Clear guidelines, procedures, and documentation requirements are established to facilitate consistency and minimize errors during the supplier onboarding phase (Rohn S., 2022). Information exchange is a fundamental component of successful supplier onboarding. Therefore, organizations in this process share relevant policies, procedures, expectations, and performance metrics with newly onboarded suppliers, with the aim to building strong relationships with suppliers and not just to ensure soft onboarding, but also to support building a strong long-term business relationship with the supplier. Therefore, organizations usually tend to use open and transparent communication, which fosters trust and aligns expectations between the organization and suppliers. As continuous improvement is a key aspect of supplier onboarding, organizations therefore employ feedback mechanisms, performance evaluations, and supplier development initiatives to monitor and enhance supplier capabilities and alignment with procurement goals throughout the onboarding process. The goal of implementing the principles above, is that organizations will establish a solid foundation for successful supplier relationships, and embracing effective supplier

onboarding practices contributes to that and to a competitive advantage and long-term success in procurement endeavors (Rohn S., 2022).

The integration of technology in the supplier onboarding process plays a pivotal role in optimizing efficiency, streamlining operations, and effectively managing supplier data. By leveraging digital platforms, electronic document management systems, and supplier relationship management systems, organizations can establish centralized repositories for supplier information and automate various onboarding procedures. These technological solutions may offer benefits such as standardized templates, streamlined workflows, and enhanced data capture, fostering consistent and accurate supplier data management throughout the onboarding journey.

Many companies and especially large organizations use this method to create a database of only onboarded suppliers which their organization can do business with. In other words, only after the new supplier is onboarded into the system, the use of services or the purchase order can take place.

### 3.1.4. Supplier Relationship Management (SRM)

Supplier Relationship Management, also known as SRM, refers to the strategic approach adopted by organizations to effectively manage and cultivate their relationships with suppliers. It includes a set of practices aimed to optimize supplier interactions, maximize value generation, and establish enduring and mutually beneficial partnerships (Lindau P., 2021).

SRM involves various processes that contribute to the establishment of strong and collaborative supplier relationships. The processes are displayed in the following figure:
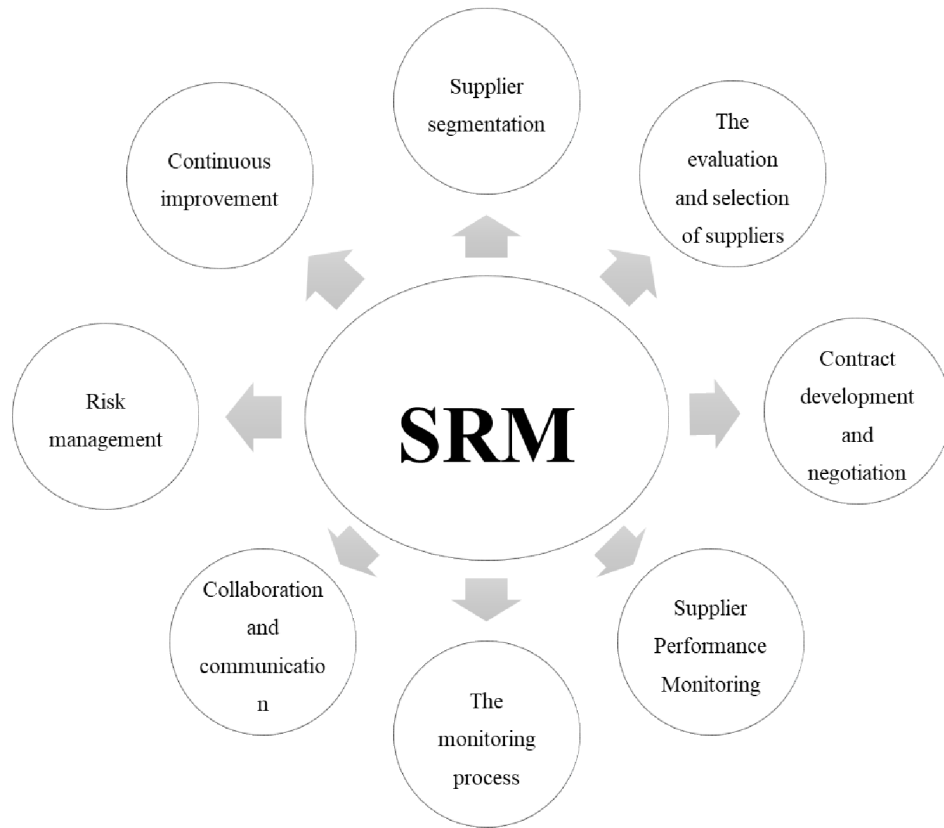
*Source: Created by the Author based on data from Company BES*

Supplier segmentation involves categorizing suppliers based on factors such as strategic significance, performance, and risk. This enables organizations to prioritize resource allocation and tailor relationship management strategies accordingly.

The evaluation and selection of suppliers are critical aspects of SRM, evaluations are conducted to assess supplier's capabilities, reliability, financial stability, and alignment with organizational goals. This includes checking their qualifications, contacting references, and reviewing past performance records.

Contract development and negotiation form an integral part of SRM. Through careful negotiation, organizations establish contracts that clearly describes and meet expectations, obligations, performance metrics, pricing structures, and mechanisms for dispute resolution.

Supplier Performance Monitoring is also a critical component of Supplier Relationship Management (SRM) that focuses on assessing and evaluating the

performance of suppliers to ensure they meet specific standards and requirements. This process involves the systematic collection, analysis, and interpretation of data, with the ultimate goal of enhancing the effectiveness and efficiency of the supplier's contributions to the organization. Supplier Performance Monitoring is regarded as a structured approach for evaluating and tracking supplier performance against predetermined criteria. Organizations establish key performance indicators (KPIs) and metrics that align with their strategic objectives and specific requirements. These metrics typically encompass factors such as quality, timeliness, cost, responsiveness, reliability, and compliance.

The monitoring process includes systematic collection of relevant data and information related to the supplier's performance. This data can be derived from various sources, including internal records, supplier-provided reports, audits, customer feedback, and performance scorecards. The data is then analyzed to assess the supplier's performance against the established KPIs, allowing for a comprehensive evaluation of their adherence to contractual obligations and expectations.

Collaboration and communication are emphasized in SRM. Open and transparent channels of communication are established with suppliers, facilitating regular meetings, feedback sessions, and collaborative problem-solving. Information sharing and joint planning foster trust, encourage innovation, and enhance overall performance.

Risk management is when organizations identify supplier-related risks by monitoring factors such as financial stability, regulatory compliance, geopolitical risks, and supply chain disruptions. Proactive strategies are designed to address potential risks and ensure business continuity, meaning the creation of plans of time to handle risks and keep the business running smoothly.

Continuous improvement is that organizations regularly evaluate and enhance their SRM practices. This involves identifying areas for improvement, seeking supplier feedback, implementing new processes, and fostering a culture of collaboration and mutual growth (Lindau P., 2021).

The implementation of SRM practices brings numerous benefits, including improved supplier performance, cost reduction, enhanced innovation, increased

supply chain resilience, and strengthened competitive advantage. Strategic partnerships with suppliers enable organizations to leverage their expertise, resources, and capabilities, fostering operational excellence and shared success.

## 3.1.5. Procurement categories

As procurement is a critical function within organizations that involves the acquisition of goods, services, and resources necessary for their operations, it encompasses various categories, each serving distinct organizational needs.

*Table 1: Procurement Categories*

| Procurement Category | Description |
| --- | --- |
| Marketing | Goods and services related to Marketing Strategy, Advertising & Brand, Media, Demand Generation, Market Research, Events, Sponsorships, Corporate Communications, Giveaways, Social Media Charges, Web, marketing Agencies, Creative Services, Data Purchase, and Content Production. |
| Car Fleet | Procurement activities related to mobility, including car manufacturers, international leasing companies, and mobility providers. |
| Non-Po Vendor | Involves transactions with State and municipal authorities, tax authorities, Chambers of commerce, and Landlords. |
| Professional Services | Covers HR-related services such as Temporary Staff, Employee Training, Recruiting, Global Mobility, Total Rewards, Health, and more. |
| Travel | Includes Business travel aspects like Airlines, Rental vehicles, Train, Hotels, American Express travel credit card, and other travel service providers. |
| Financial Services | Encompasses Tax, Audit, Accounting, Risk and Compliance, Transfer pricing, SOX/Certification services, Restructuring / M&A, etc. |

| | |
|---|---|
| Legal Services | Provides Legal support for Disputes and litigations, Data Protection and Privacy, IP & Cybersecurity, Corporate & Capital Markets, Corporate law, and more. |
| Strategy and Business Consulting | Covers Corporate Strategy, including company values, mission & vision, corporate goals, resource allocation, company positioning, feasibility studies, and business strategy reviews. |
| Research and Study | Research or Study Projects with organization Research Partners where payment is milestone-based. |
| Interpretation Services | Includes simultaneous, consecutive, whispering, or over-the-phone interpretation for events, visits, workshops, training, seminars, and more. |
| Memberships | Request to be part of business associations (excluding clubs, unions, and religious organizations) with no exchange of goods or services. |
| Technical Services | Comprises Non-billable Technical Services and Customer Facing Services, including Product & application Development/Consulting, IT Infrastructure Services, Testing Services, Translation Services, and more. |
| IT Solutions | Encompasses End-user IT Equipment & related Services, Client & Infrastructure Software, IT Equipment & Supplies, Communication & Collaboration Services, Security Services, Hardware & Software, Network Infrastructure & Connectivity. |
| Real Estate & Facility | Includes Construction, Office Furniture, Facility Services, Maintenance, and Repair for Real Estate and Facility Management. |
| Cloud Infrastructure | Involves Data Center & Co-location services, Server infrastructure equipment, Storage and backup IT infrastructure equipment, and related components. |

*Source: Company BES internal Data*

3.1.5.1.    Technical services

The "Technical Services" procurement category represents a diverse and integral facet of organizational operations. It is also considered vital for organizational sustainability and success in today's technology-driven business environment. It comprises services that range from behind-the-scenes technical support, development, and documentation to customer-facing activities that aim to improve customer satisfaction. This category can be divided into two primary subdivisions, Non-Billable Services and Billable Services, each serving distinct functions within a business.

3.1.5.1.1.    *Non-Billable Technical Services:*

Non-billable technical services encompass a spectrum of activities that are indispensable for a company's overall functionality. These activities include **Product & Application Related Development/Consulting,** covering activities such as software development, application enhancement, and product consulting to make sure they perform optimally and cater to customer needs. In addition to **IT Infrastructure Services** with focus on maintaining and managing the IT infrastructure, guaranteeing smooth network operations, server functionality, and secure data storage. Lastly, none-billable also include **Testing and Translation Services,** covering the quality assurance by scrutinizing software and applications to identify and fix defects, followed by the translation of documents, content, and software is critical for facilitating communication and expanding markets across language barriers.

3.1.5.1.2.    *Billable Services:*

Also known as Customer-facing services, which directly impact the end-users and clients, with a focus on enhancing their experience. These activities encompass Application Consulting and Development, which involves working closely with clients to develop customized applications, ensuring that they align perfectly with their needs. Support for End-Customer Projects, this services guide clients throughout the project execution phase, ensuring the successful completion of their initiatives and meeting their expectations. And lastly Customer Education which focuses

on educating customers about the products and services they use, enabling them to maximize the value of their investments and enhance their overall experience.

## 3.1.6. Contracts

Procurement contracts are legal agreements between the organization and other parties involved in procurement activities that outline the terms, conditions, and obligations related to the acquisition of goods, services, or products. The contracts vary in type, each serves a different role and in many cases in a hierarchical model. Such hierarchy provides both parties with clarity, structure, and consistency in contractual relationships. Moreover, it provides a legal base in a dispute resolution.

*Table 2: Types of Contracts*

| Contract Type | Description |
|---|---|
| 1. General Terms and Conditions (GTC) | General Terms and Conditions are standard contractual clauses that govern the rights and obligations of the parties involved in a procurement contract. GTC is one of the contracts that are on the top of the hierarchical model of contracts, acting like the main and general constitution of the relationship between parties, and they are often referenced into specific contracts or agreements. GTC covers various aspects such as payment terms, delivery terms, warranties, dispute resolution, intellectual property rights, and termination conditions. |
| 2. Master Service Agreement (MSA) | A Master Service Agreement is another contract which can be placed on the top of the hierarchical model. It is a broad contract that sets out the terms and conditions for a long-term relationship between a buyer and a supplier. It establishes the general framework for multiple future transactions, often including provisions related to pricing, delivery, intellectual property, confidentiality, liability, and dispute resolution. |
| 3. Procurement Framework | A Procurement Framework Agreement establishes the terms, conditions, and procedures for future procurement activities |

| | |
|---|---|
| Agreement (PFA) | between a buyer and one or multiple suppliers. It serves as a flexible framework for subsequent specific contracts, enabling streamlined and efficient procurement processes. PFA can also be used as a master agreement on the top of the hierarchical model. |
| 4. Global Framework Agreement (GFA) | A Global Framework Agreement is a similar concept to a procurement framework agreement, but it typically involves multinational organizations or suppliers. It establishes overarching terms and conditions for procurement across multiple regions or countries, providing consistency and efficiency in procurement practices. |
| 5. Rate Card (RC) | It is a contract that provides a structured list or schedule of pre-negotiated prices or rates for specific goods, services, or works. They outline the unit costs or pricing structures for different items or services, facilitating transparent and consistent pricing during the procurement process. It acts as the main source of predetermined and stable pricing of the services or the goods delivered to the buyer. |
| 6. Statement of Work (SOW) | A Statement of Work defines the specific tasks, deliverables, timelines, and performance requirements for a particular project or service. It outlines the scope of work to be performed by the supplier and serves as a basis for assessing performance and ensuring alignment with the buyer's needs. A Statement of Work can act both as a Sub-agreement of a Master-agreement, meaning at the bottom of the hierarchical model, or as a Stand-alone agreement. |
| 7. Participation Agreement (PA) | A Participation Agreement is a contract that establishes the terms and conditions for collaboration or participation in a project, program, or initiative. It defines the roles, responsibilities, and contributions of each party involved, typically outlining expectations and obligations. This agreement is also at the |

| | |
|---|---|
| | bottom of the hierarchical model. A participation agreement can be also an agreement between two local entities, so-called Local Participation Agreement LPA, which is a specific type of participation agreement that focuses on involving local suppliers, contractors, or stakeholders in a project. |
| 8. Amendments | Agreements may require changes with time, amendments are changes or modifications made to an existing contract, they are used to update terms, conditions, or specifications that need to be revised during the contract period. Amendments require the mutual agreement between the parties involved. |
| 9. Appendix | An Appendix is an attachment or annex to a contract that includes additional details, specifications, or supporting documentation relevant to the main contract. It provides supplementary information to clarify or expand upon the terms and conditions outlined in the main contract. |
| 10. Termination Letter | A Termination Letter is a formal communication issued by one party to another to terminate a contract before its intended completion date. It states the reasons for termination, specifies the effective date of termination, and outlines any obligations or procedures to be followed upon contract termination. |

Source: Company BES internal Data

## 3.2. Sustainability

Sustainability in the scientific meaning has been defined in various ways from different sources, but the Environmental Protection Agency, also know by EPA definitions is: *Sustainability is based on a simple principle: Everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. To pursue sustainability is to create and maintain the conditions under which humans and nature can exist in productive harmony to support present and future generations.* (JAIN C. – page 19)

In other words, sustainability is the concept of meeting present needs without compromising the ability of future generations to meet their own needs. On the other hand, the process of maintaining and promoting sustainability itself is called sustainable development, which is about finding the balance between fairness for everyone, protecting the environment, and promoting economic growth. *"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of needs, in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs."* (GISELLE W. – page 37). To achieve sustainable development, it is a need to understand the consequences of doing nothing and come up with new ideas and actions at all levels, from individuals to global institutions and organizations. In the modern world this concept also applies to businesses and commercial organizations, which follow the principle of the so-called three P's of sustainability (people, planet and profit), to help businesses understand their responsibilities towards their stakeholders and form the pillars of sustainability. In an ideal environment, these three pillars support each other to run a sustainable organization, where it's expected that companies will adopt strategies that meet current needs while ensuring there will be enough resources for the future needs as well. Sustainable development recognizes that social, environmental, and economic issues are all connected, and it highlights the importance of good governance and culture in achieving long-term sustainability.

## 3.2.1. Global measures

The beginning of recognizing the need for environmental conservation and mitigating human impacts on the climate system was only in the 1980s, when the UN Conference on Human Environment was held in 1972. *"The United Nations adopted the Universal Declaration of Human Rights in 1948 and has considered issues such as the environment since the 1972 UN Conference on Human Environment (the Stockholm Conference), which was called to tackle the pollution caused by global industrialization during the 1960s and 70s."* (Smith P. - Page 39). During the 1960s and 70s, climate issues such as pollution caused by

industrialization became a growing concern. The burning of fossil fuels released greenhouse gases, leading to global warming. This prompted international awareness and efforts to address environmental degradation.

In the year 1983, the international community sought to confront mounting concerns surrounding the deteriorating environment and its consequential impact on socioeconomic progress by establishing the Brundtland Commission under the auspices of the United Nations (GISELLE W. – page 37). The Brundtland Report, also known as Our Common Future, which was published in 1987 emphasized the importance of sustainable development, which means meeting the needs of people today without using up all the Earth's resources, so that future generations can still meet their own needs.

In 2015, world leaders signed the 2030 Agenda for Sustainable Development at the United Nations (UN) headquarters in New York, which consists of 17 global Sustainable Development Goals (SDGs) aiming to create a better world. These goals, along with 169 targets, cover a range of areas such as poverty reduction, environmental sustainability, and economic growth. "*The United Nations Sustainable Development Goals include:*

*Table 3: UN Sustainable Development Goals*

| Goal number 1 | *End poverty in all its forms everywhere* |
|---|---|
| Goal number 2 | *End hunger, achieve food security and improved nutrition, and promote sustainable agriculture.* |
| Goal number 3 | *Ensure healthy lives and promote wellbeing for all at all ages.* |
| Goal number 4 | *Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.* |
| Goal number 5 | *Achieve gender equality and empower all women and girls.* |
| Goal number 6 | *Ensure availability and sustainable management of water and sanitation for all.* |
| Goal number 7 | *Ensure access to affordable, reliable, sustainable and modern energy for all.* |

| | |
|---|---|
| Goal number 8 | *Promote sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all.* |
| Goal number 9 | *Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.* |
| Goal number 10 | *Reduce inequality within and among countries.* |
| Goal number 11 | *Make cities and human settlements inclusive, safe, resilient, and sustainable.* |
| Goal number 12 | *Ensure sustainable consumption and production patterns.* |
| Goal number 13 | *Take urgent action to combat climate change and its impacts (taking note of agreements made by the UNFCCC forum)* |
| Goal number 14 | *Conserve and sustainably use the oceans, seas and marine resources for sustainable development.* |
| Goal number 15 | *Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt and reverse land degradation, and halt biodiversity loss.* |
| Goal number 16 | *Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.* |
| Goal number 17 | *Strengthen the means of implementation and revitalize the global partnership for sustainable development.* |

*Source: GISELLE W. - page 42*

## 3.3. Sustainability in relation to businesses

Sustainability has emerged as a crucial concept in the business domain, leading to a transformative change in organizations' and companies' operational and strategic approaches. Over time, sustainability has expanded beyond its conventional environmental focus, taking into account a wide range of factors and aspects that

contribute to the overall sustainability, that includes social responsibility and reputation, economic viability, stakeholder engagement and risk management. In relation to sustainability and the environment, companies can have impact on the environment in many aspects. The first aspects are **products and their manufacturing processes,** producing and selling products that are sustainable in nature or have been manufactured using sustainable processes an important goal of any organization. To manage to achieve this goal, organizations focus on managing the supply chain operations, procuring and sourcing sustainable raw materials such as recycled materials, and to produce sustainable products. Companies then measure their production impact through life cycle assessments of products or measure their environmental and social impact via sustainability measurement tools.

The second aspect is **environmental health and safety.** This aspect is considered a very important sustainability issue for the organization in the cases where the health and safety of workers and the environment are being harmed due to the toxic or harmful nature of products manufactured or the process used, the health and safety of workers and the environment. Many companies that have such an impact work in the oil and mining industries.

Another aspect is **the life cycle,** manufacturing certain products can have a high level of resources consumption in terms of raw materials, energy, and water consumption. Organizations according to this concept measure the life cycle impact of these products and make consumers aware of the environmental footprint left behind by their products. Especially that consumers appreciate these initiatives and want to know more about the environmental impact of the products they consume or use.

The following concept is the **environmental and regulatory compliance**, in which the operations of certain companies could be such that it becomes highly important for them to manage their products and facilities to meet the environmental regulations set by the government. All the operations should be conducted under strict regulations to meet compliance criteria and standards. For example, to sell any food or drug items in the US, a company needs the approval of the US Food and Drug Administration (FDA).

Another concept is the **supply chain sustainability,** which is the impact of the operations of the company's overall supply chain on the environment. The nature of operations could be such that many suppliers, vendors, distributors, or mode of transportation are included to run the day-to-day operations, production, or services. These operations could have huge environmental and social impact, which can be measured and controlled by the organization itself.

The last concept is the measurement of **energy and carbon emissions**, companies that deal with resource consuming production processes may produce high amounts of carbon. While it is almost impossible to stop releasing carbon emissions entirely, companies can measure the overall impact of their operations in terms of energy, a water consumption and waste generation and calculate the total carbon emissions they generate on a yearly basis. Which can help companies know about their high levels of carbon emissions produced as a result of their manufacturing process, and potentially implement changes.

### 3.3.1. Sustainability measurement tools

Sustainability measurement tools provide an important role in helping organizations assess and quantify their progress towards sustainable practices and outcomes, by measuring and monitoring their environmental, social, and economic performance. These tools provide frameworks and indicators that enable companies to track their sustainability efforts, and in result help them set targets and identify areas for improvement. By measuring key performance indicators and analyzing relevant data, companies can gain insights into their resource consumption, emissions, waste generation, community engagement, and other factors critical to sustainable development. Additionally, these tools assist organizations in aligning their sustainability strategies with global frameworks such as the United Nations Sustainable Development Goals. The most commonly used measurement tools of sustainability by business organizations and companies are the Key Performance Indicators (KPIs), Life Cycle Assessment (LCA), Ecological Footprint and Carbon Footprint. In addition, measurement tools include Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), Materiality Assessment and the Triple Bottom Line

### 3.3.1.1.   Key Performance Indicators

Key performance indicators (KPIs) refer to a set of quantifiable measurements used to evaluate the overall long-term performance and progress of an organization towards its strategic goals and objectives. KPIs specifically help determine a company's strategic, financial, and operational achievements, especially compared to those of other businesses within the same sector, which in return enables organizations to set targets, track trends over time, compare performance against industry benchmarks, and communicate results to stakeholders (Twin A., 2023).

Effective KPIs should be a so-called SMART, meaning Specific, Measurable, Achievable, Relevant, and Time-bound. They should also be aligned with the organization's strategy, reflect its priorities, and provide meaningful insights into performance. Companies and organizations can also utilize KPIs as a tool for measuring and monitoring their sustainability performance by using it to track energy consumption, greenhouse gas emissions, waste generation, water usage, employee diversity, community engagement, and supply chain sustainability. As KPIs play a significant role in engaging and informing stakeholders about an organization's performance in various areas, companies employ this can indicator to engage the stakeholders on sustainability matters as well, by transparently reporting KPI data to them (Twin A., 2023).

### 3.3.1.2.   Life Cycle Assessment

Life Cycle Assessment (LCA) is a systematic and comprehensive methodology used to evaluate the environmental impacts of a product, process, or service throughout its entire life cycle, from raw material extraction to disposal or end-of-life. LCA is a tool for assessing the environmental performance of products and systems, it considers all stages of the life cycle of a product, including resource extraction, production, distribution, use, and disposal.

LCA involves quantifying and analyzing the environmental inputs and outputs associated with each stage of a product's life cycle. These inputs and outputs can include energy consumption, raw material use, water usage, emissions to

air, water, and soil, waste generation, and the potential for environmental impacts such as climate change, acidification, or resource depletion.

### 3.3.1.3. Ecological Footprint

The ecological footprint is a tool that measures the impact of humans on the environment. Its primary objective is to help individuals and organizations in comprehend the amount of land and resources necessary to support human activities by measuring the land and water required to sustain various lifestyles. This includes the consideration of energy usage, food production, water consumption, carbon emissions, and waste generation (GISELLE W. – page 42).

The calculation of the ecological footprint is typically expressed in global hectares or acres, representing the average productivity of land and water. It can be applied at individual, community, national, or global levels. By comparing the ecological footprint to the Earth's regenerative capacity, it can assess whether resources are being utilized sustainably. If the footprint surpasses the Earth's capacity, it indicates that resource consumption is outpacing the planet's ability to regenerate them. Conversely, if the footprint is smaller than the Earth's capacity, it suggests that resource consumption is being managed sustainably (GISELLE W. – page 42).

### 3.3.1.4. Carbon footprint

The term Carbon footprint is one of the sustainability measurement tools that refers to the total amount of greenhouse gas emissions, primarily carbon dioxide ($Co^2$), associated with human activities or a specific entity such as an individual, organization, product, or even an event. It serves as a quantitative measure to assess the impact of human actions on climate change and the environment. The concept of carbon footprint emerged in the late 1990s as a response to the growing concern about climate change and the need to account for individual and collective contributions to greenhouse gas emissions. As greenhouse gases are a huge contributor to the growing problem of climate change. Initially, carbon footprint calculations focused on direct emissions resulting from energy consumption. Over time, the concept expanded to include

indirect emissions, including the entire life cycle of products, services, and activities, such as the shipment and manufacturing processes and even the extraction of the raw materials (Seferian S. – Page 4). The process of measuring the carbon footprint involves a systematic assessment of emissions across various sectors, including energy, transport, industry, residential, and commercial domains. The process generally involves three primary steps, which are the data collection, the emissions calculation, and emissions reporting. Commonly used methodologies for calculating the carbon footprints by an organization include the Greenhouse Gas Protocol, from the World Resources Institute and the World Business Council for Sustainable Development, and ISO 14064, a standard developed by the International Organization for Standardization dealing specifically with greenhouse gas emissions (Selin N., 2023).

### 3.3.1.5. Environmental Impact Assessment (EIA)

Environmental Impact Assessments were introduced because of concerns regarding the effects that major development projects were having on the environment. EIA is a systematic process utilized to evaluate the potential environmental effects of proposed projects, policies, or activities, before implementing any project or policy. *Assessments should be conducted as early as possible in the planning and proposal stages and many of the major decisions about the location of a project, the scale, layout, or design, are made at the very beginning and many of these can have a significant impact on the environment* (GISELLE W. - page 510). Generally, the process of implementing EIA usually includes Screening, which is to decide whether or not a proposal needs an EIA. Then the organization will perform a so-called Scoping, to identify the key issues and impacts that are likely to require further investigation. Which will be followed by the Impact analysis, to identify and predict the likely environmental and social impacts of that same proposal. After the analysis the organization must implement impact management, developing measures to avoid or reduce the environmental damage. Finally, this process ends by reporting the results to the decision makers in the organization and other parties of interest (GISELLE W. - page 511).

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3.3.1.6.    Social Impact Assessment (SIA)

Social Impact Assessment is a structured process that examines and manages the potential social effects of proposed projects on communities and stakeholders. Its purpose is to understand and evaluate the social consequences of a project, considering factors like livelihoods, cultural heritage, community well-being, and quality of life (Salim M. – page 186). SIA involves engaging with relevant stakeholders to the project, such as local communities and government agencies, to understand their perspectives and concerns. It also involves gathering data and identifying the risks and benefits, which in result aims to helps organizations minimize the negative impacts, by evaluating both direct and indirect social impacts of the project, which has an influence on the well-being and conditions of individuals, communities, and society as a whole.

3.3.1.7.    Materiality Assessment

A materiality assessment is a structured process that involves a strategic business tool called Materiality Analysis, which organizations use to identify and prioritize the most important sustainability issues. Materiality analysis as a tool is an approach for identifying critical economic, environmental, and social issues, which may have an impact on the company's business performance or substantially influence the assessments and decisions of its stakeholders (Charu J. - page 78). *Organizations can mostly benefit from their materiality process by using it as an opportunity to apply a sustainability lens to business risk, opportunity, trend spotting and enterprise risk management processes. Rather than creating a separate, isolated process, leading companies embed sustainability with- in these existing processes* (Charu J. - page 78).

3.3.1.8.    Triple Bottom Line

The triple bottom line or TBL is a framework that suggests businesses and companies should measure success beyond just financial gains and commit to focusing on social and environmental concerns in the same level as they do on profits. TBL is made of three dimensions, which are social and environmental, alongside economic performance. In other words, the triple bottom line consists of profit the traditional measure of corporate profit, people as measuring how

socially responsible an organization has been throughout its history, and the planet as measuring how environmentally responsible a firm has been (Kenton W., 2023).

The TBL as a sustainability measuring tool encourages businesses to consider their responsibilities beyond financial outcomes and incorporate social and environmental considerations into decision-making. In addition to that, it promotes a holistic approach to business that aims to create value for stakeholders, society, and the environment (Smith P. – Page 171).

# 4. Methodological Framework

## 4.1. Research Approach

The action of acquiring goods and services in the world of business and large corporations can be complex and challenging. Company Business Enterprise Software (Company BES) is a large corporation that occupies a large portion of the industry of software solutions for businesses globally, with over 450 thousand employees all around the world, such organization tend to use special team with a professionally planned procurement strategy to purchase goods and service for Company BES. The methodological framework in the thesis is rooted in a qualitative research methodology, chosen for its capacity to search deep into the sustainable procurement practices in Company BES. In addition, the research approach adopted for this thesis is also quantitative, which allows for an in-depth exploration of the complex interplay between green ethics and sustainable procurement practices, offering an in-depth and comprehensive approach to exploring complex phenomena, affording a holistic understanding of the interplay between ethical considerations and economic imperatives that define sustainable procurement in Company BES. The strategy adopted by Company BES will be presented and supported by real data, showcasing the costs of implementing sustainable practices in procurement. Qualitative research will be used to enable a comprehensive exploration of the motivations, values, and factors that shape sustainable procurement practices.

## 4.2. Data Collection

Data will be collected as primary data and secondary data.

### 4.2.1. Primary Data

The gathering of the primary data will be conducted by receiving all the data from the key stakeholders involved within the selected Company BES, with a primary focus on gathering cost-related data pertaining to sustainable procurement practices in the Technical Service & the IT Solutions procurement categories. To obtain a comprehensive understanding of the financial implications of sustainable procurement within the selected company, detailed financial records, including budgets, expenditure reports, and cost allocation breakdowns, will be obtained from

the selected Company BES. These records will provide valuable insights into the direct and indirect costs associated with sustainable procurement, such as sourcing sustainable materials, supplier engagement, and compliance with eco-friendly standards, and as well the cost of using sustainable methods of sourcing these services and goods.

### 4.2.2. Secondary Data

Supplementary to the primary data, secondary data sources will also be utilized in this thesis. These sources encompassed existing financial reports, sustainability reports, and industry benchmarks related to sustainable procurement practices. Secondary data provided context and allowed for benchmarking the company's financial performance in sustainable procurement against industry standards and best practices.

By focusing on cost-related primary data collection methods, this research aims to provide a detailed and nuanced analysis of the financial aspects of sustainable procurement practices within the selected company. This approach aims for a comprehensive evaluation of the economic implications of green ethics in business within the Company BES, specifically in the context of Procuring Technical Service and IT Solutions.

## 4.3. Data Analysis

### 4.3.1. Cost Data Analysis

Given the exclusive focus on cost-related data, the data analysis approach will adapt to primarily center around the examination of financial records and cost-related information which will include Cost Breakdown and Allocation Analysis, Cost Comparison, and Trend Analysis.

#### 3.1.1.1. *Cost Breakdown and Allocation Analysis*
The financial records obtained from the selected company will undergo a detailed cost breakdown analysis. This process involves assessing the cost data to identify specific expenses associated with sustainable procurement practices. Costs related to sourcing sustainable materials, supplier engagement, compliance with eco-friendly standards, and other relevant categories will be meticulously examined.

*3.1.1.2.*    *Cost Comparison*

A critical aspect of the analysis will involve comparing the costs associated with sustainable procurement to those of traditional procurement practices. This comparative analysis will provide insights into the financial implications of adopting green ethics in business operations.

*3.1.1.3.*    *Trend Analysis*

Historical cost data will be analyzed to identify trends and patterns in the company's sustainable procurement expenses over time. This analysis will help in understanding the financial trajectory of sustainable procurement initiatives.

Trend function.. use trend function on general form the same as you would use year on your

4.3.2.   Basic Statistical Methods

In addition to scrutinizing cost-related data, the study adopts a suite of carefully selected financial metrics to gain an all-encompassing grasp of the fiscal outcomes linked to sustainable procurement practices within the chosen Company BES. These financial metrics include Sustainable Procurement Costs and Cost per Unit of Sustainable Product or Device. By deploying these financial metrics, the research endeavors to execute a meticulous quantitative analysis of the financial facets of sustainable procurement practices within the selected Company BES. These metrics have the goal to showcase and present the immediate cost-effectiveness of eco-friendly procurement practices and will also unveil insights into prolonged financial sustainability, cost savings, and the comprehensive economic repercussions of embracing ethical business practices.

*4.3.2.1.*    *Return on Investment (ROI) of Sustainable Procurement*

Return on Investment or ROI for sustainable procurement measures the financial gains or benefits obtained from investing in sustainable procurement practices and it emerges as a pivotal metric for assessing the financial returns from investments in the sustainable procurement initiatives. Calculating ROI involves comparing the net financial benefits of sustainable procurement to the costs associated with implementing and maintaining these practices.

**ROI = (Net Financial Benefits / Total Costs) x 100 (1)**

In other words, ROI equals the Net Financial Benefits divided by the Total Costs multiplied by on hundred to get the result in percentage. A positive ROI not only implies cost recovery but also signifies the generation of additional financial benefits. This is because the Net Financial Benefits represents the total financial gains or savings directly attributable to your sustainable procurement initiatives. It includes cost reductions, efficiency improvements, increased sales, and any other financial benefits that can be quantified. While the Total Costs encompasses all the costs incurred to implement and sustain the sustainable procurement practices. It includes expenses like employee training, certification fees, technology investments, and any other costs directly related to sustainable procurement.

4.3.2.2.   *Cost per Unit of Sustainable Product or Service*

This metric showcase a perspective on cost efficiency by gauging the cost incurred for each unit of a sustainable product or service procured or produced. The calculation encompasses the aggregation of sustainable procurement costs divided by the total units of sustainable products or services. Continual monitoring of this metric will help to spot fluctuations in cost efficiency, potentially instigating adjustments in the procurement strategies in selected Company BES. In addition, it will also help with understanding the expenses incurred in producing each unit, which can be useful for pricing decisions and cost management. To calculate the Cost per Unit, the total cost of producing sustainable products or providing sustainable services need to be divided by the number of units produced or services delivered.

$$\text{Cost per Unit} = \text{Total Cost} / \text{Number of Units} \quad (2)$$

The Total Cost represents all the expenses associated with producing sustainable products or delivering sustainable services. It includes costs such as raw materials, labor, overhead, energy, transportation, and any other expenses incurred during the production or service delivery process. This includes all direct and indirect costs related to sustainability initiatives. On the other hand the **Number of Units** refers to the total quantity of sustainable products manufactured or sustainable services provided during a specific period.

*4.3.2.3.*   *Percentage Change*

Percentage Change or Percentage Difference quantifies the proportional variance between two values, often used to assess alterations in costs, prices, or quantities. This calculation enables the comparison of the difference between an initial and subsequent value in terms of percentage. Understanding this percentage change assists in evaluating shifts in economic indicators, aiding decision-making processes. The Percentage Change is calculated by determining the difference between two values, dividing it by the initial value, and then multiplying by 100 to express it as a percentage.

**Percentage Change = [(New Value − Old Value) / Old Value] × 100 (3)**

This calculation will be applicable in various scenarios such as determining price fluctuations, assessing cost increases, or evaluating changes in production quantities, offering insights into economic trends and aiding in strategic decision-making.

# 5. Practical Part

## 5.1. Company Profile

Due to the integrity and confidentiality of the data provided by the selected company, the author of this Diploma Thesis has provided an alternative name for the case-study and analysis of the selected company, which is the fictional name "Company BES". Company BES is a global software company headquartered in Germany and was founded in the 70s. The company initially emerged as a producer of standard software for real-time business processing and data management. Over the years, it has evolved into a leading global company in the enterprise software industry, transforming the way businesses operate and make decisions through technology.

With a presence in over 180 countries and more than 440,000 customers worldwide, Company BES's innovative solutions that serves businesses of all sizes and industries in their operations.

### 5.1.1. Basic information

The company's Main Products include **Company BES Analytics Software (XAS),** which is considered to be a flagship product for the company, that is an integrated ERP suite designed to operate in real time, with in-memory computing and advanced analytics. Its goal is to help organizations to streamline processes, gain deeper insights, and make data-driven decisions. Another main product of the company is **X Business Functions Suite (XBFS),** comprising a range of applications for various business functions such as finance, HR, supply chain management, and customer relationship management, the Business Suite helps companies orchestrate their operations efficiently. The company also sells a **Business Reporting Objects (BRO) software, which is a** suite of analytics and reporting tools with the goal to enabling businesses to access, analyze, and visualize data to derive actionable insights, facilitating informed decision-making. Additionally, the company also provide a software called **X's Success Platform (XSP),** which is a cloud-based human capital management solution that supports HR processes, employee engagement, and talent management, helping companies maximize their workforce potential. As well as its **cloud-based procurement**

**platform (CBPP),** an end-to-end procurement platform that compresses many procurement processes by digitizing and optimizing them, with the goal to enhancing collaboration with suppliers and driving cost savings according to Company BES.

## 5.1.2. Global Procurement Organization (GPO)

The Global Procurement Organization (short for GPO) serves as a strategic enabler in Company BES, responsible for managing the company's procurement processes and supplier relationships worldwide. GPO operates with a main mission to optimize costs, improve efficiency, and ensure the reliability and quality of the supply chain encompassing several key areas. One of which is the Strategic Sourcing, where GPO identifies opportunities for cost reduction and value creation through strategic supplier partnerships, negotiations, and market intelligence, according to Company BES.

In addition, GPO Supplier Relationship Management aim to foster a collaborative relationships with suppliers, emphasizing transparency, sustainability, and innovation. It works closely with suppliers to drive continuous improvement and mitigate risks in the supply chain. And the last key area is the Procurement Technology, where GPO Leverages Company BES's cloud-based procurement platform solutions internally, by deploying the procurement technologies to automate processes, enhance visibility, and enable data-driven decision-making across the procurement lifecycle.

According to BES, by mobilizing the company's technology, data analytics, and strategic practices, GPO's goal is to continually seek to optimize procurement processes, drive innovation in the supply chain, and contribute to Company BES's goals of operational excellence and sustainable growth.

## 5.2. GPO Collective Sustainable Strategy

Company BES's sustainability strategy in procurement covers and includes several key components, as it is a global leading company in Software and enterprise solutions, it also provides and runs its own integrated Solutions. The company uses integrated solutions for procurement processes that help organizations optimize their supply chains with a goal to make more sustainable choices. These solutions

often include tools for tracking and managing environmental, social, and economic impacts across the entire procurement lifecycle. According to Company BES, the company implements a strategic supplier collaboration, where they emphasize collaboration with suppliers to promote sustainability. This involves working closely with suppliers to ensure that they adhere to ethical and sustainable practices.

## 5.2.1. Sustainable supply chain

The sustainable approach of Company BES is deeply rooted in their supply chain practices, a pivotal aspect of their social and environmental impact strategy. They've undertaken significant measures within their supply chain, aiming to eliminate single-use plastics, reduce carbon emissions, enforce human rights standards, and foster a diverse and responsible supplier network. These efforts collectively contribute to building a sustainable supply chain model.

Central to this initiative is their Global Procurement Organization (GPO), which operates with a strong focus on transitioning into a purpose-driven entity. The GPO leads a global initiative called the Procurement with Purpose (PwP) with the goal to drive purpose-oriented initiatives such as diversity and social inclusion, as well as responsible resource utilization across their supply chain operations.

One of the cornerstone elements ensuring ethical practices within their supplier network is the Company BES Supplier Code of Conduct (SCoC). This code is integrated into standard supplier contracts and is a mandatory component of supplier registration. Through this approach, potential suppliers are made aware of and commit to upholding the company's ethical standards outlined in the SCoC.

The commitment to upholding these standards is reinforced through periodic reviews and updates to the SCoC. The most recent update in July 2022 demonstrates the company's dedication to continuously improving and aligning with evolving global ethical standards.

The Code of Conduct encompasses a comprehensive set of provisions addressing labor standards, human rights, environmental considerations, and diversity and inclusion. While also it aims to encourage suppliers to ensure their goods and services are accessible to all, including people with disabilities, according to

Company BES. This emphasis on inclusivity highlighting the company's commitment to fostering a socially responsible and accessible supply chain environment.

## 5.2.2. Suppliers Greenhouse Gases

A major sustainability strategy in procurement is Data Analytics for Sustainable Decision-Making. Company BES leverages data analytics to enable organizations to make more informed and sustainable decisions in their procurement processes. This involves obtaining and analyzing data related to supplier performance, carbon footprint, and other relevant metrics. Company BES uses a third-party software called Integrity Next which is a platform designed to assess, monitor, and improve social and environmental compliance within supply chains. It's essentially a digital network that allows companies to collaborate with their suppliers, ensuring adherence to ethical and sustainability standards. The platform provides technology to streamline the monitoring process, enabling Company to track and evaluate various aspects of supplier compliance, including labor standards, environmental practices, and ethical conduct. Integrity Next provides tools for supplier self-assessments and certifications, enabling suppliers to showcase their compliance with specific standards. Through this platform, companies gain visibility into their supply chains, identifying potential risks and areas for improvement related to social responsibility and environmental impact.

According to Company BES data about spending, GPO has spent $200,000 in 2021 on supplier assessment using of the first time the third-party platform Integrity Next. The service provided covered the assessment of the preferred suppliers that Company BES's GPO procures products and services from and enabled the ranking of the top 100 suppliers with highest spend by greenhouse gases emissions, which stands at $3,190,489,578 accounting for 55% of the total pend in 2021. Company BES hired integrity next with the goal of enabling the tracking and evaluating various aspects of its supplier compliance, with the main focus on the environmental practices and greenhouse gasses (GHG) emissions.

### 5.2.2.1. GHG by Supplier

The pie chart below is detailing the greenhouse gas emissions in kilograms per supplier, resulting from the products and services acquired by Company BES

GPO in 2021 from the top 100 suppliers by GHG Emissions, showcases the narrative of environmental impact within the procurement activities of that year.

*Graph 1: The top one hundred suppliers by emission 2021.*
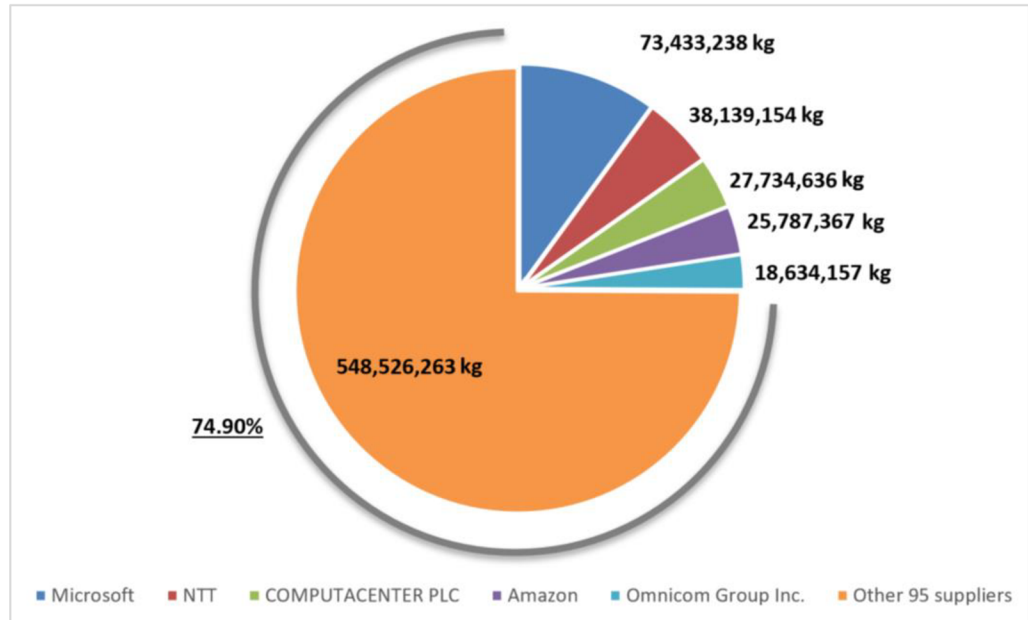


*Source: Created by the author based on Company BES's Internal Data.*

Each segment of the pie showcases the proportional contribution of suppliers to the overall emissions landscape. Microsoft emerges as the largest individual contributor, contributing approximately 10.03% of the total emissions, counting for 73.43 million kilograms of GHG. This is followed closely by NTT, whose share amounts to approximately 5.20% of the overall emissions, standing at 38.13 million kilograms of GHG and marking it as another substantial contributor within this framework.

Delving further into the ecosystem of emissions, COMPUTACENTER PLC and Amazon exhibit comparable figures ranking at the third and fourth place, each contributing about 27.73 and 25.78 million kilograms of GHG, which counts for 3.78% and 3.52% respectively to the total emissions pie. While they do make large contributions to the total GHG, they're not as big as Microsoft and NTT's emissions. Similarly, Omnicom Group Inc. accounting for approximately 2.54% of the emissions, making its impact within the GPO procurement network with 18.6 million kilograms of GHG.

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However, a striking revelation lies in the collective footprint of the other 95 suppliers. Despite the relatively smaller individual footprints showcased by Microsoft, NTT, and other major names, the emissions from these additional suppliers amount to a considerable 74.9% of the total emissions of the top 100 suppliers by spend.

This comprehensive analysis underscores not only the importance of recognizing the contributions of prominent suppliers like Microsoft and NTT but also the crucial role played by a multitude of smaller contributors in shaping the environmental impact of the procurement practices within GPO. It showcases the need for Company BES to approach for a holistic approach toward sustainability, advocating for strategies that address emissions across the spectrum of suppliers, with an aim to achieve meaningful reductions and a so called more sustainable procurement ecosystem.

5.2.2.2. GHG by Spend

The graph below shows the top five suppliers with highest spend by emissions in the year 2021.

*Graph 2: Top five supplier by their total emissions and the spend from year 2021*
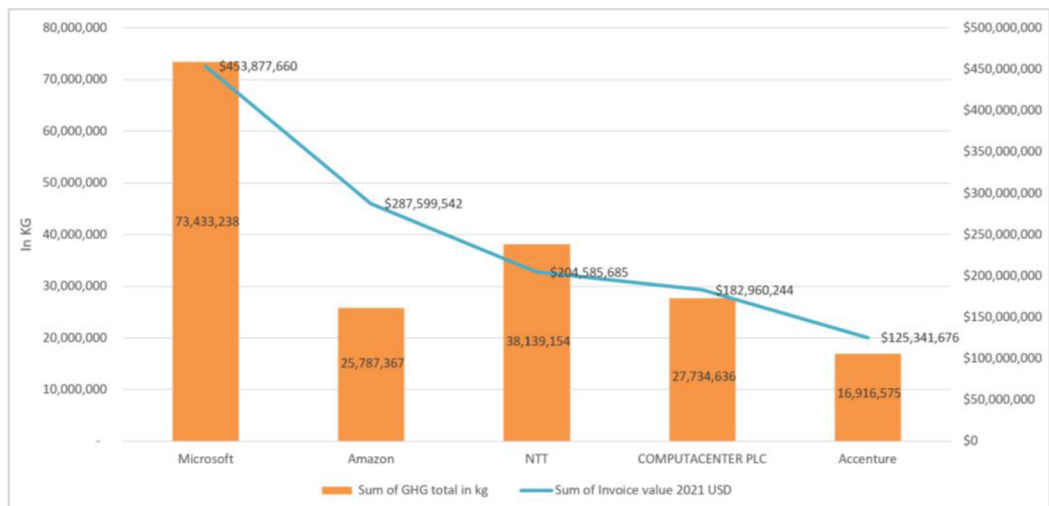


*Source: Created by the author based on Company BES's Internal Data*

Microsoft remains as the highest with total emissions and spend in the year 2021, followed by Amazon with second highest spend and fourth highest GHG emissions. This analysis Compares the environmental impact, measured in

greenhouse gas (GHG) emissions in kilograms, with the financial expenditure on these suppliers in terms of invoiced value in USD. Microsoft emerges as the supplier with the highest emissions and spend in the year 2021, accounting for approximately 73,433,238.79 kg of GHGs, coupled with a invoice value totaling $453,877,660. On the other hand and despite being the top contributor in emissions, Microsoft's financial expenditure reflects a proportional alignment with its environmental footprint, indicating a sizeable but relatively correlated spend.

Following Microsoft, Amazon holds the second position in emissions and fourth highest GHG emissions. Amazon's emission levels stand at a lower magnitude compared to Microsoft's, yet the invoiced value remains at $287,599,541.7. NTT secures the third position in emissions, generating around 38,139,154.29 kg of GHGs, paralleled with an invoiced value of $204,585,685.3.

COMPUTACENTER PLC is contributing approximately 27,734,636.06 kg of GHGs and invoiced at $182,960,243.5, while Accenture, positioned as the fifth highest emitter, produces 16,916,575.28 kg of GHGs with an invoiced value of $125,341,676.4. This alignment between environmental impact and financial spend across these top suppliers showcases varying degrees of correlation. While some suppliers with higher emissions also show larger expenditures, others, despite lower emissions, reflect a large sum of financial transactions, showcasing at potential for exploring sustainability practices and cost-efficiency within the procurement landscape of Company BES.

5.2.2.3.   Kilograms of GHG per US Dollar Spend ratio
The graph below shows the Supplier Greenhouse Gas Emissions per Dollar Spent by GPO within Company BES throughout the year 2021. The metric which is expressed as the ratio of greenhouse gas (GHG) emissions in kilograms per USD spent, is offering the insight into the efficiency and sustainability alignment within the procurement network of the selected company.

*Graph 3: Greenhouse emissions per US Dollar spent by Company BES*
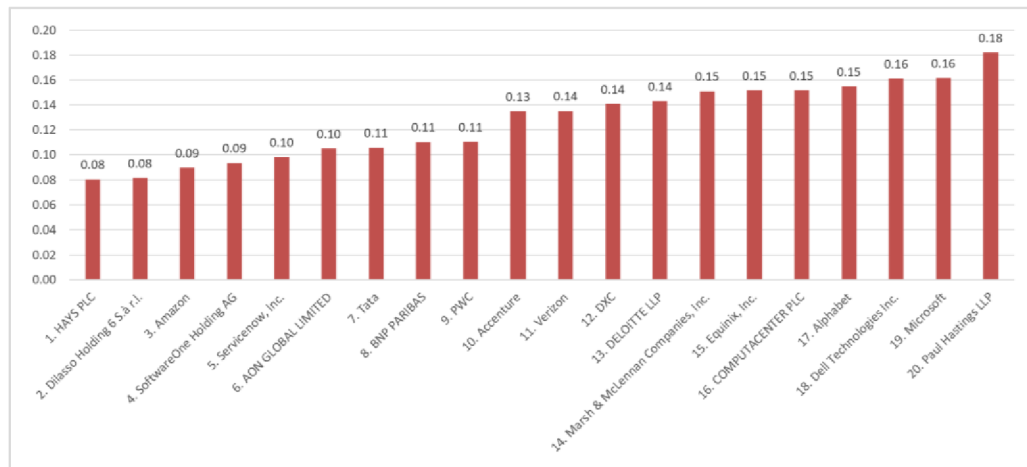


*Source: Created by the author based on Company BES's Internal Data*

Analyzing the emissions-to-dollar spent ratios among the top twenty suppliers unravels a wide range of values, signifying how much greenhouse gas emissions are produced for each dollar spent. Suppliers like HAYS PLC and Dilasso Holding 6 S.à r.l., which were on the 80st and 8st place in terms of the suppliers with highest total GHG emissions, showcase significantly lower emissions concerning the money spent, with their ratios at 0.080 and 0.081 kilograms of greenhouse gases per US dollar spent, respectively. However, suppliers like Paul Hastings LLP exhibit higher emissions-to-dollar ratios, standing at 0.182.

Taking into consideration the median and average of these ratios, which will indicate the finding of the middle and the typical value in numbers. The median emissions-to-dollar ratio is $0.33, which is the middle point of all these values when lined up. This means that half of the suppliers have ratios below $0.33, and the other half have ratios above it. On the other hand, the average ratio stands at $1.05, which is found by adding up all the ratios and then dividing that sum by how many ratios there are. The mentioned average can be higher than what most suppliers have because it gets affected by really high or really low values in the data, so-called outliers or extremes.

On the other hand, the maximum and minimum ratios with the highest observed ratio is $12.44, which shows that some suppliers have a big $Co^2$ environmental impact for each dollar spent. On the contrary, the lowest ratio recorded is $0.06,

indicating a supplier with a notably lower environmental impact per one US dollar spend.

The most notable suppliers are Microsoft and Amazon, despite their high emissions, their emission-to-dollar ratios stand at 0.161 and 0.089 kilograms of greenhouse gases per dollar, respectively. These ratios show that for every dollar spent, they contribute a relatively higher environmental impact compared to some other suppliers. This means that although some suppliers emit less overall, their impact per dollar spent is higher, which helps evaluating the real level of emissions per supplier, adding to the analysis not just a showcase of who emits the most, but also about how efficiently the use of the money is implemented to control emissions. These results ahow a potential optimization of spending to reduce environmental impact by Company BES.

### 5.2.3. Products and Services Carbon footprint

Sustainability Scorecards and Reporting within the Company BES cloud-based procurement platform represent a tool for evaluating and comprehending the environmental aspects associated with the procurement process within the organization. This functionality allows the company to gather and assess data related to various environmental factors, such as carbon emissions, energy consumption, waste management, and other ecological considerations, with a primary objective in obtaining a comprehensive overview of the ecological impact stemming from the supply chain activities and supplier engagements.

*Figure 2: Example of Company BES Scorecard of emissions.*
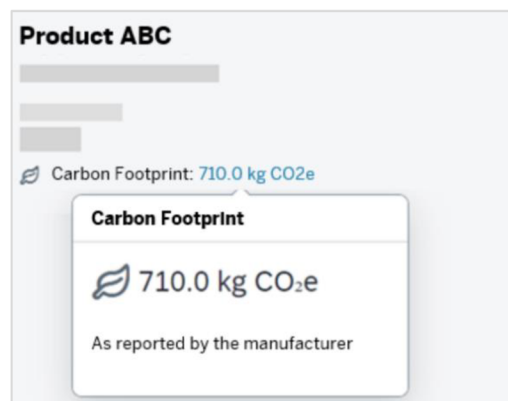


*Source: Company BES Internal Platform*

The Company BES Global Procurement Organization uses a third-part platform called Ditch-Board to collect the data about emissions per product or service resulting in what is shown in figure 2. This includes data on carbon emissions, reflecting the amount of greenhouse gases released during the production and transportation of goods, energy consumption metrics highlighting the usage of energy resources like electricity or fuel, waste management figures detailing the handling of waste generated, and other environmental factors such as water usage or pollution levels within their operations.

The chart below reflects the yearly spend on Ditch-Board Services by Company BES. The provided data from the Company BES Global Procurement Organization

*Graph 4: Global Procurement Organization Spend on Ditch-Board*
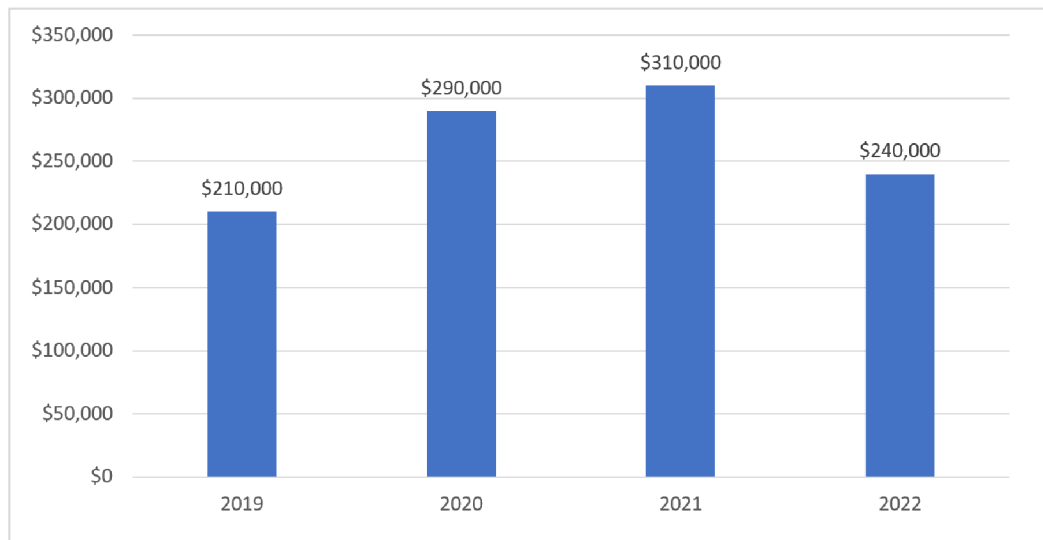


*Source: Created by the author based on Company BES's Internal Data*

The cost trends demonstrate an irregular pattern of increasing a decreasing spend, with a progression from 2019 to 2021 in costs rising from $210,000 to $310,000, indicating a substantial increase in expenditure within this timeframe. However, the subsequent year, 2022 saw a decrease in spending to $240,000. Using the Percentage Change equation number 3, the change in the cost between the years 2019 and 2020 was an increase of 38.1%, a lower increase at 6.9% was followed between the year 2020 and 2021, while the year 2021 to 2022 saw a decrease in 22.6%. These fluctuations in costs are changing in relation to the number of suppliers that are registered in Company BES's system and the number of the

products and services offered. The graph below shows the number of suppliers from the year 2019 to 2022.

*Graph 5: Number of registered suppliers that are used by Company BES*
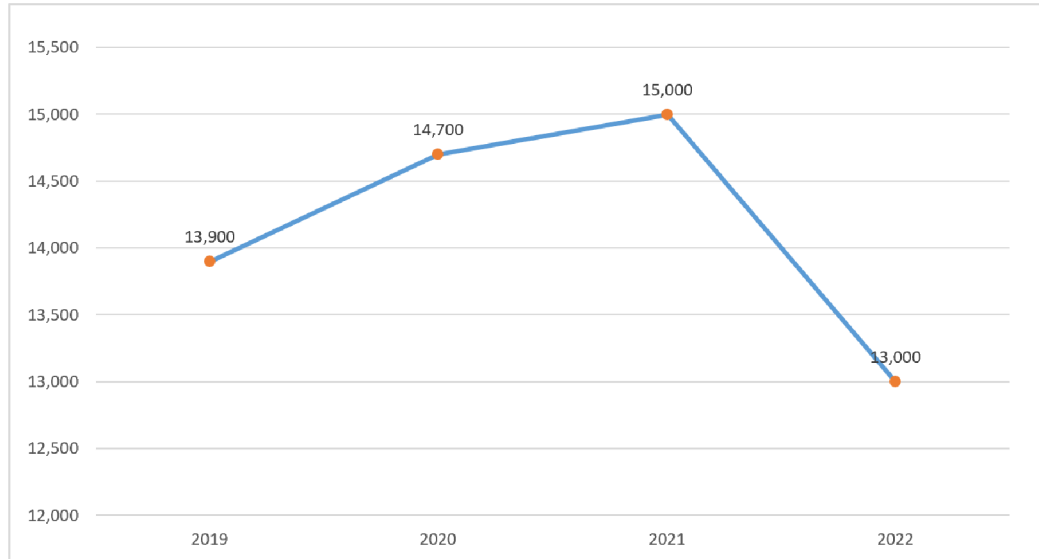


*Source: Created by the author based on Company BES's Internal Data*

Examining the number of registered suppliers reveals a similar but not directly proportional trend. There is a consistent increase in the number of suppliers from 13,900 in 2019 to 15,000 in 2021 with a 7.9% growth, demonstrating a gradual expansion in the supplier base. Nevertheless, the subsequent year, 2022, showed a 13.33% decrease in registered suppliers to 13,000 based on the implementation of equation number 3. This decrease in the registered supplier numbers didn't correspond to a proportional decrease in the costs incurred, suggesting a potential decoupling between the expenses and the supplier count.

Between the year 2021 and 2022, changes in pricing models or negotiated agreements have influenced the costs despite a reduction in the number of suppliers in accordance to company BES. Additionally, the notable increase in costs from 2020 to 2021, despite a relatively smaller increase in the number of suppliers, indicates a possible strategic shift towards intensifying engagement with existing suppliers rather than solely concentrating on acquiring new ones.

The result of this analysis showcases that the changes in the costs of using the Ditch Board platform by Company BES's Global Procurement Organization are not solely dependent on the number of suppliers. The variety and quantity of products

and services displayed by these suppliers also play a crucial role in determining expenses. Increases or decreases in the range or volume of offerings showcased on the platform can affect the pricing structure. Therefore, alongside fluctuations in the number of suppliers, shifts in the extent and quantity of displayed products and services contribute significantly to the changes in expenses incurred by Company BES according to their internal data.

## 5.2.4. Contract management

In the field of contract management in procurement, the usage of digital technologies has offered new possibilities for enhancing the efficiency and cost-effectiveness of handling contracts, legal agreements, and documents. One way of creating and signing contracts has taken an electronic form through software platforms. Company BES uses a third-party platform called DocuSign to sign and execute agreements and contracts digitally with various suppliers. The shifting landscape of contract execution and management come with a financial and operational considerations involved in adopting digital solutions in relation to the conventional method of paper-based contracts.

DocuSign is a cloud-based electronic signature and digital transaction management platform that allows individuals and organizations to securely sign, send, and manage documents and agreements electronically. It is widely used platform for automating and streamlining the process of obtaining signatures on various types of documents, such as contracts, agreements, forms, and other paperwork. With DocuSign, users can sign documents from anywhere with an internet connection, on various devices like computers, smartphones, and tablets.

This study aims to provide an objective analysis of the financial and operational aspects of contract management, focusing particularly on the role and impact of DocuSign. Identifying the Costs for DocuSign will be accumulated by determining the subscription cost for using DocuSign in comparison to the costs of physical paper. Overhead costs associated with both methods, such as the cost of maintaining a printer, scanner, and other equipment for physical contracts, as well as any costs related to storage or archiving will also be considered. In order to achieve this comparison, the volume of contracts will also be included.

5.2.4.1.    Cost analysis

Company BES reported that DocuSign costs 480 US Dollars a year per employee, considering that the number of employees who are using it from the Procurement category of Technical Services and IT Solutions is 37 according to the Company's reports. The amount paid for the annual subscription covers an unlimited number of contracts to be signed, meaning the number of contracts sent for signature via DocuSign does not increase or decrease the annual cost. Based on the data acquired from Company BES, the number of contracts and documents signed in the year 2022 globally was 7216 documents, 4856 of which were signed under the Category of Technical Services and 2360 contracts under the category of IT Solutions.

By implementing equation number 2, the cost of using e-signature per contract via DocuSign will be calculated as the 480 USD (DocuSign cost per employee per year) multiplied by the number of employees which is 37, which will put the total cost at 17760 USD. The total cost will be then divided by the number of contracts signed on the year 2022, which is 7216 contracts. As result, the cost of the using the E-signature process via DocuSign costs **2.16 US Dollars** per contract. According to Company BES the cost of printed and signed contracts can be estimated between 0.2 to 0.6 US Dollars with an average of 0.4 USD, making the cost of using the e-signature process **440%** more expensive than the traditional printed version based on equation number 3.

The percentage change was calculated as the 2.16 USD (New Value) deducted by 0.4 USD (Old Value) and divide by 0.4 USD, resulting in 4.4 multiplied by 100. Based on the above, if Company BES is dealing with a high volume of contracts, the cost savings of using DocuSign may be more significant due to reduced administrative overhead, illustrated by the below graph.

*Graph 6: Cost of contract management per unit in comparison to the volume of contracts.*
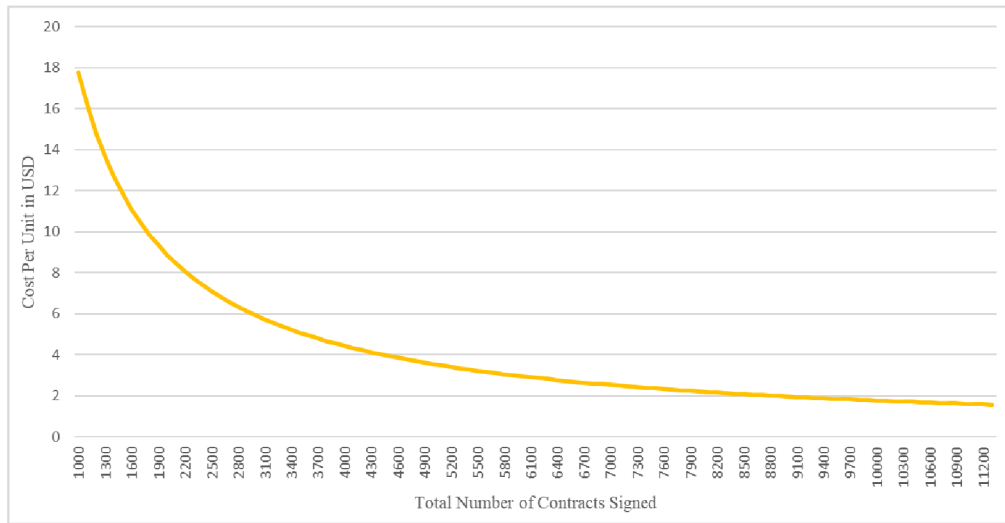


*Source: Created by the author based on Company BES's Internal Data*

The relationship between cost compared with volume in the graph above demonstrates how the cost per contract decreases as the total volume of contracts increases, highlighting potential cost efficiencies when dealing with larger contract volumes.

According to Company BES, the usage of the e-signature Platform DocuSign has mainly a strategic business advantage while also focusing on environmental considerations, as using the relatively more costly electronic signatures can reduce paper usage and contribute to environmental sustainability, but also reduce the time and increase the security of the business processes.

According to the DocuSign official website, DocuSign has helped to replace over 20 billion sheets of paper with digital processes that do not require paper since 2003, preserving over 2.5 million trees and 2.5 billion gallons of water required to make paper.

Based on equation number 2, dividing 20 billion by 2.5 million results in a cost per unit of 8,000. Meaning that with every 8 thousand sheets of paper replaced, Company BES managed to save 1 tree. The usage of E-signatures does not just help Company BES to be more environmentally efficient, but also more business efficient. As the third-party platform DocuSign allows Company BES to manage, draft and send contracts faster than the traditional methods. Which

in some cases requires employees to send the printed contract by Fax to a supplier from another country, forcing both parties to lose time by waiting until the other party signs and send it back.

5.2.4.2. Security and adaptation costs

The advantage of using DocuSign for Company BES also comes with the security and record keeping by offering enhanced security and record-keeping mechanisms that are covered with the costs mentioned above, 480$ per year per employee account. Employing authentication processes, DocuSign ensures the integrity of the signed documents by Company BES and guards it against unauthorized alterations. The platform's audit trails systematically record every signatory action, providing transparency and authentication. Utilizing encryption for documents in transit and at rest, coupled with secure cloud storage, it provides a level of data protection superior to traditional systems. In addition the platform also provide a legal compliance with international regulations, such as eIDAS and the ESIGN Act, which reinforces the legal validity of electronically signed documents.

DocuSign also employs comprehensive methods of security measures designed to safeguard the confidentiality, integrity, and authenticity of documents and transactions processed within its platform. These measures encompass multifaceted authentication protocols, including SMS codes, email verification, and hardware tokens to provide user account security. Industry-standard encryption mechanisms, both for data in transit (TLS/SSL) and data at rest, are also part of DocuSign's protective infrastructure, ensuring the secure transmission and storage of sensitive information, according to Company BES internal data. Document encryption, managed through secure key management, has the goal to fortify the contents of documents sent and stored within the platform. Third-party audits validate the platform's adherence to SOC 2 and SOC 3 standards, emphasizing its commitment to security controls.

## 5.3. Spend and Cost Analysis

Analyzing the data presented over the four-year period unveils trends and shifts in the company's financial landscape. The graph below depicts three crucial aspects,

which are the GPO Spend, Total Costs, and the proportion of GPO Spend to Total Spend, in the time period from 2019 to 2022.

*Graph 7: Total costs by Company BES compared to its GPO*
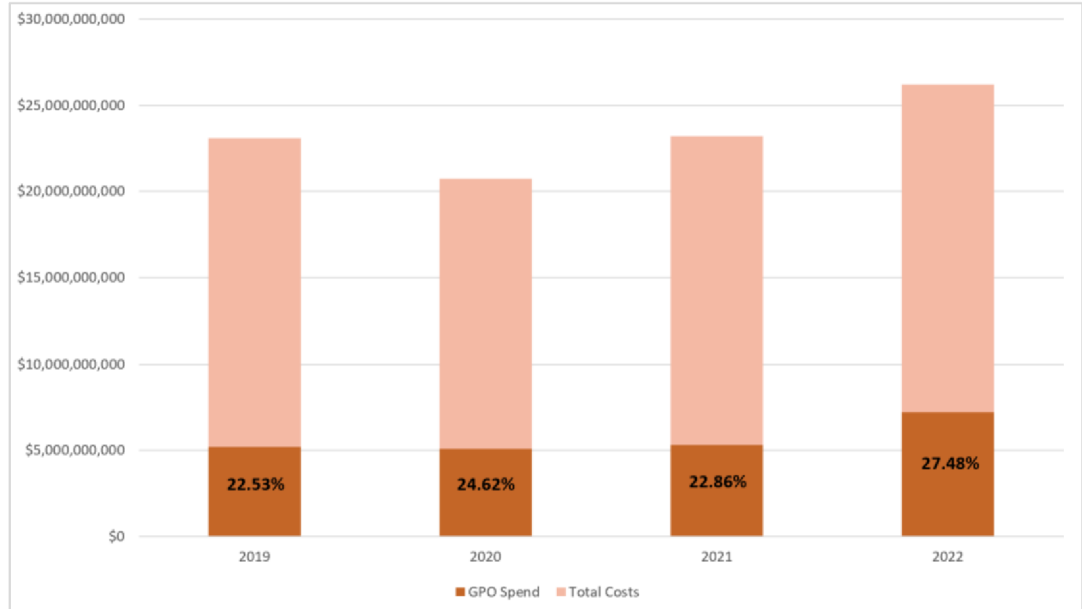


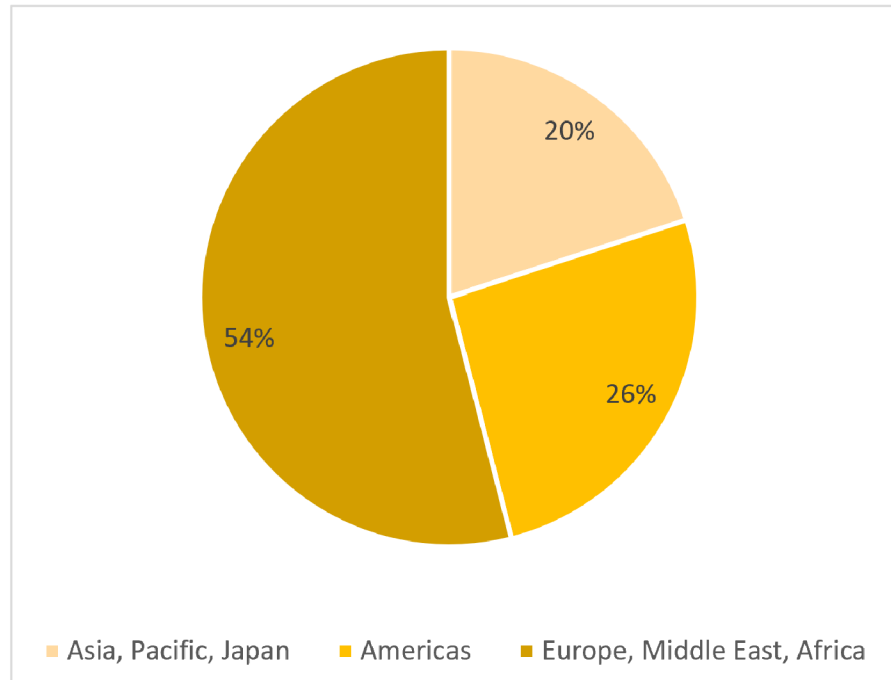*Source: Created by the author based on Company BES's Internal Data*

The GPO Spend experienced changes throughout the observed years. It sets at $5.2 billion in 2019, remains relatively steady in 2020 and 2021, and sees a relatively large increase to $7.2 billion in 2022. Total Costs reflect an upward trend as well, rising from $23.08 billion in 2019 to $26.20 billion in 2022. The proportion of GPO Spend to Total Spend varies annually, depicting shifts in spending patterns. Starting at 22.53% in 2019, it notably increases to 24.62% in 2020, decreases slightly to 22.86% in 2021, and experiences an increase to 27.48% in 2022.

The fluctuating proportion of GPO Spend to Total Spend underscores dynamic changes in spending dynamics. This trend highlights the impact of procurement strategies on the overall financial structure of the company, emphasizing cost control and efficient resource utilization on the total level is also implied on the GPO level. This strategic approach might signify an intentional effort to optimize procurement strategies and control costs, impacting the company's financial dynamics and operational efficiency.

### 5.3.1. GPO spend by category 2021

In 2021, Company BES managed a total expenditure of $23.186 billion, with $5.3 billion directed specifically by the GPO, making up approximately 22.9% of the overall costs. The engagement spanned over 15,000 suppliers who fulfilled goods and service requirements across the organization according to Company BES.

*Graph 8: Percentage of the total number of suppliers per region in 2021*



*Source: Created by the author based on Company BES's Internal Data*

The supplier distribution across regions demonstrates significant regional variations within the network. Europe, the Middle East, and Africa (MENA region) hold the largest share at 54%, signifying a dominant presence in 2021. The Americas follow with 26%, showcasing a considerable but smaller presence than MENA. In contrast, the Asia-Pacific and Japan (APJ) region represent the smallest segment at 20%, suggesting comparatively lower engagement within Company BES's procurement network.
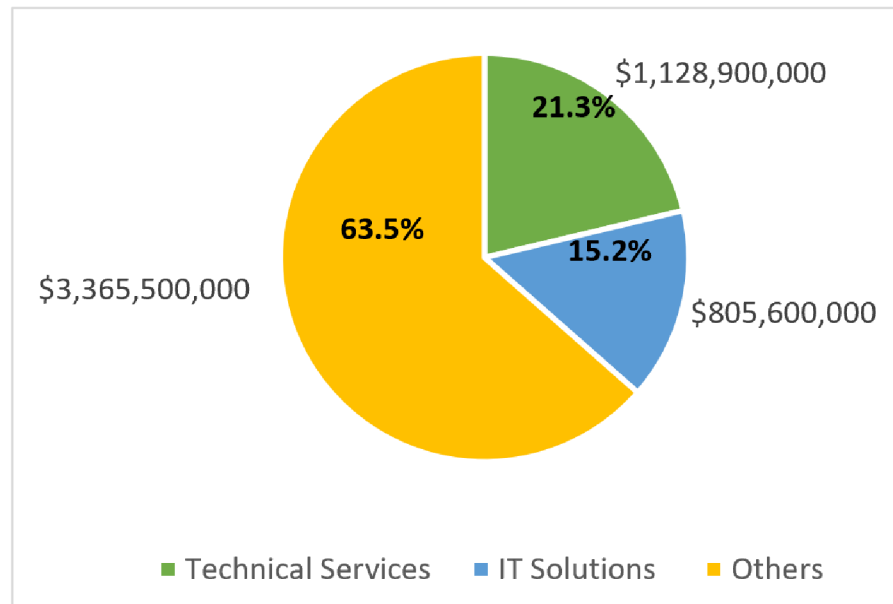
*Source: Created by the author based on Company BES's Internal Data*

Withing the GPO's $5.3 billion expenditure, the graph shows the allocations of spend among GPO Categories including the Technical Services, accounting for 21.3% at $1.13 billion, signifying a relatively large investment in specialized technical services. Similarly, IT Solutions represented 15.2% of the spend, totaling $808 million, showcasing a substantial commitment to technology-driven solutions. The rest of the spending constituted $3.36 billion, encompassing a range of other categories within the GPO's procurement landscape.

5.3.1.1.   Technical Services Category Spend Analysis

In 2021, the Technical Services Category within Company BES's expenditure showed a diverse allocation across subcategories presented in the Pie Chart below.
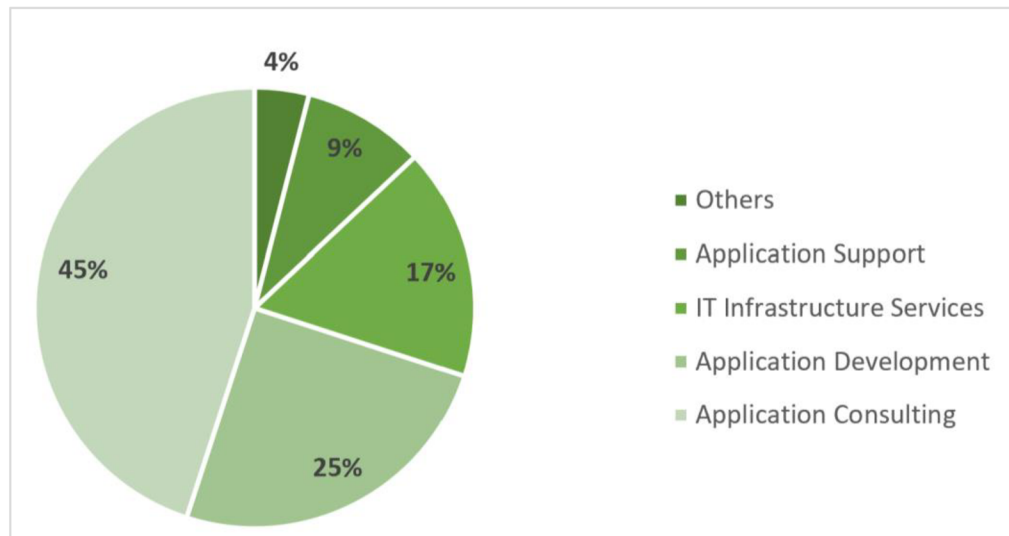
*Source: Created by the author based on Company BES's Internal Data*

Among these divisions, Application Consulting, which is the most important Sub-category in GPO, as it it's the only procured service that generate profit for the company, stood out as the largest recipient with a portion at 45% of the total spend, amounting to $507,005,000. This significant investment reflects a strategic focus on seeking expert advice services, potentially for specialized application-related solutions and consultancy services within the technical domain. According to Company BES, over 86% of the procured Application Consulting Services are Billable Services, which Company BES later sells to its customers.

Following closely behind, Application Development claimed a notable allocation, representing 25% of the Technical Services Category spend, totaling $282,225,000. This substantial investment signals a commitment to software development and includes expenses related to coding, programming, and application design according to Company BES.

Meanwhile, IT Infrastructure Services hold a considerable share, accounting for 17% of the spend, equivalent to $191,965,000. This allocation suggests an investment in maintaining and enhancing the underlying technology infrastructure, which is critical for Company BES's operations, encompassing hardware, networks, and associated services.

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Another segment is Application Support, claimed 9% of the Technical Services Category spend in that same year, amounting to $101,610,000. This allocation signifies resources directed toward maintaining and troubleshooting existing applications, ensuring their smooth functioning and providing user support. Lastly, the other subcategories accounted for 4% of the spend, totaling $45,095,000.

The total Technical Services Category spend in 2021 amounted to $1,128,900,000, showcasing a strategic allocation strategy across diverse subcategories. This breakdown offers valuable insights into spending priorities, emphasizing significant investments in Application Consulting, Application Development, and IT Infrastructure Services by Company BES, indicating key areas of focus within the technical domain for the company during that period.

5.3.1.1.1.    *Application Consulting Sub-Category*
In 2021, Application Consulting emerges as a profit generating segment within Company BES's Technical Services Category, commanding the largest share of expenditure at 45%, totaling $507,005,000. However, a significant shift occurred within this segment due to the prevailing Covid restrictions, where a notable 85% of the Application Consulting services were conducted remotely.

*Graph 11: Type of Service Delivery Shares for Application Consulting*
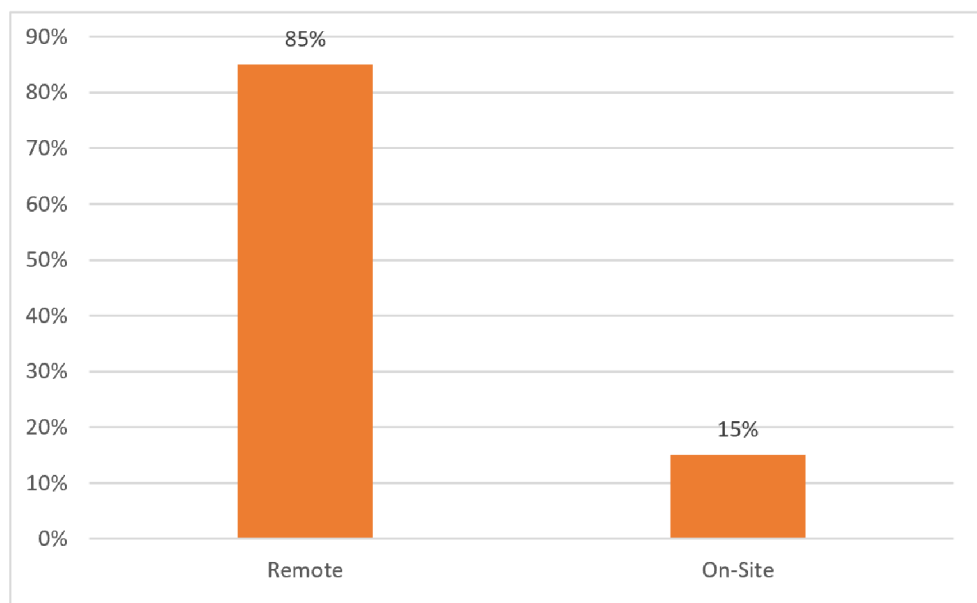
This shift to remote services was prompted by safety measures and limitations on in-person interactions, leading to an adaptation towards virtual consultation.

This transition to remote consulting not only addressed immediate safety concerns but also contributed significantly to sustainability goals. By conducting the vast majority of consulting remotely, Company BES managed to reduce carbon emissions associated with travel and transportation. The reduced need for physical travel meant fewer carbon emissions from vehicles and reduced overall environmental impact, aligning with the company's sustainability objectives.

Moreover, the cost-efficiency of remote consulting, which incurred approximately 25% lower costs compared to on-site services according to Company BES, was not only financially advantageous but also contributed to sustainability efforts. The reduced costs translated into reduced resource consumption, aligning with the goal of optimizing resource utilization within the company.

On-site consulting incurred higher costs and environmental impact due to travel requirements. The strategic shift towards remote consulting within the Application Consulting sub-category during 2021 showcased more than just adaptation to pandemic restrictions; it underscored the company's commitment to sustainability. By leveraging remote platforms, the company not only optimized costs but also reduced its environmental footprint, contributing positively to its broader sustainability objectives amidst challenging circumstances.

5.3.1.2.    IT Solutions Category Spend Analysis

The Pie Chart below showcases the allocation of expenditure across various subcategories within the IT Solutions domain for the year 2021.

*Graph 12: IT Solutions category spend per Sub-Category for the year 2021*
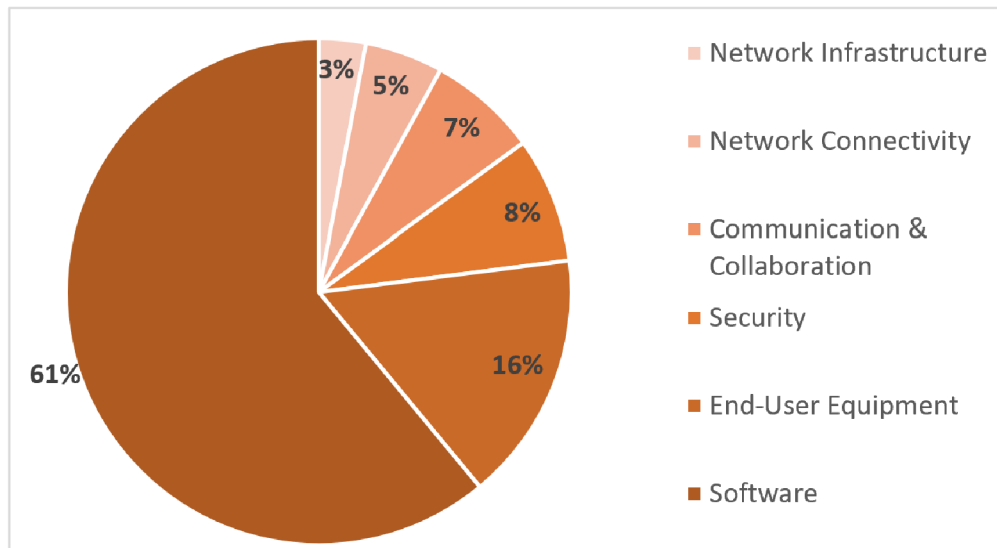


*Source: Created by the author based on Company BES's Internal Data*

The spend across IT Solutions subcategories in 2021 underscores again Company BES's commitment to technological advancement and operational efficiency, aligning these endeavors with sustainability objectives. The primary emphasis on Software, encompassing 61% of the total spend which is $491,416,000, reflects a pivotal focus on digitalization. This strategic allocation not only streamlines operational processes but also aligns with sustainable practices by potentially reducing paper consumption and physical resource usage, contributing to a more environmentally friendly work culture.

Furthermore, the allocation toward End-User Equipment, representing 16% of the spend, highlights a commitment to providing efficient tools for employees. This investment potentially facilitates remote work capabilities, reducing the need for extensive commuting and subsequently aims to contribute to minimizing the company's carbon footprint. Additionally, by promoting the use of updated equipment, the company promotes longer-lasting and energy-efficient devices, further supporting sustainable practices.

The allocations to Security and Communication & Collaboration subcategories, is smaller in comparison to the rest of the subcategories, but it plays a pivotal roles in fortifying the company's IT infrastructure according the Company BES. Strengthening cybersecurity and enabling effective communication channels not only ensures operational resilience but also aligns with sustainability goals

by safeguarding against potential breaches and optimizing remote work capabilities, thus reducing the carbon footprint associated with travel. Similarly, the investments in Network Infrastructure and Connectivity, which is a relatively smaller segments, contribute to the foundational elements of the IT framework as well. These allocations are foundational according to Company BES's head of GPO Category of IT Solutions, as it potentially reduces energy waste and resource consumption by optimizing hardware and connectivity, thus contributing to the company's sustainability initiatives.

The strategic distribution of expenditure across these IT Solutions subcategories in 2021 demonstrates Company BES's holistic approach toward operational efficiency and sustainability, by emphasizing digitalization and aiming to optimize the end-user tools.

## 5.3.2. GPO spend by category 2022

In 2022 the number of suppliers dropped to 13,000, the pie chart below shows the distribution of the supplier per region.

*Graph 13: Percent of the registered supplier used by Company BES for the year 2022*
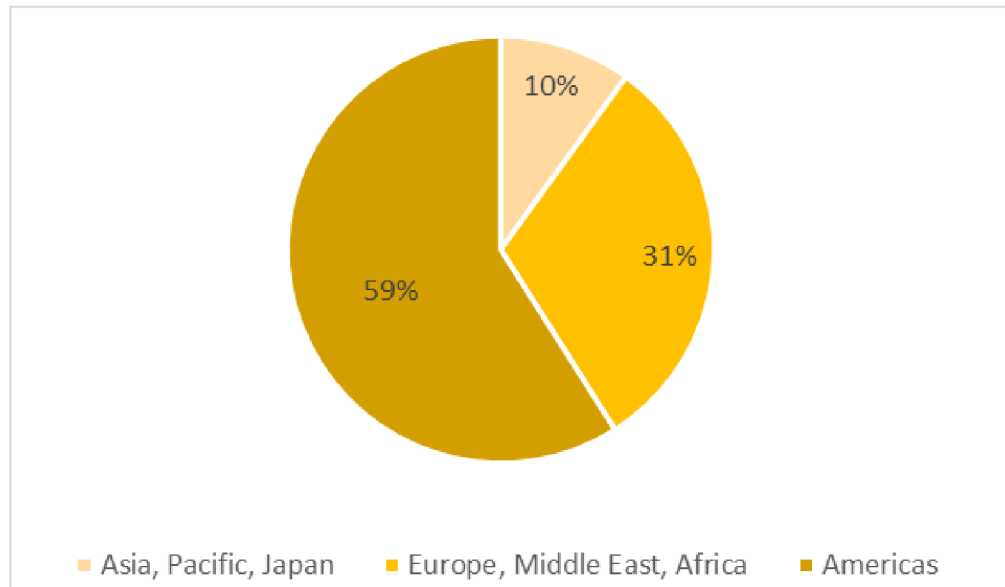


*Source: Created by the author based on Company BES's Internal Data*

The two Americas dominate the supplier distribution, constituting the largest segment at 59%, showcasing a significant presence of suppliers spanning North,

Central, and South America. Following closely is the MENA region, representing 31% of the total suppliers, signifying a comparatively smaller contributor to the overall supplier base. The smallest segment comprises suppliers from the APJ region, accounting for only 10% of the total. This visual depiction highlights the relative proportions of supplier distribution among the three major regions, offering a clear insight into the geographic dispersion of the supplier network within the dataset of 13,000 suppliers.

The below pie chart showcases the comprehensive distribution of a $7.2 billion expenditure across distinct categories of Technical Services, IT Solutions, and the other GPO Categories in the year 2022.

*Graph 14: Percentage of the total spend by Company BES in 2022*
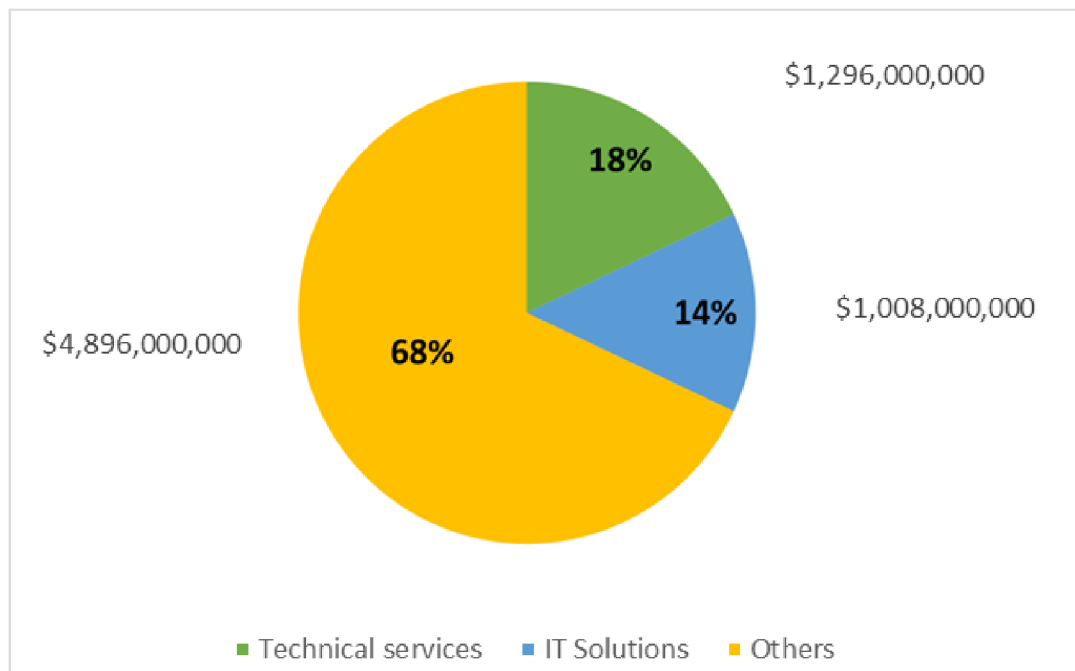


*Source: Created by the author based on Company BES's Internal Data*

The Pie chart shows that Technical Services represent an allocation at 18%, totaling $1.296 billion, highlighting a relatively large investments in specialized technical support and professional services. The IT Solutions category, comprising 14% of the total spend at $1.008 billion, again underscores a considerable commitment to technology-driven solutions in 2022 as well, encompassing expenses related to software development, infrastructure, and various IT Solutions. However, the

largest segment, constituting 68% of the expenditure at $4.896 billion, falls under the rest of the other categories.

5.3.2.1.    Technical Services Category Spend Analysis

In 2022, the allocation within Company BES's Technical Services Category demonstrated a continued strategic distribution across subcategories, connected to certain trends from the previous year while incorporating notable changes.

*Graph 15: Technical Services sub-category spend 2022*
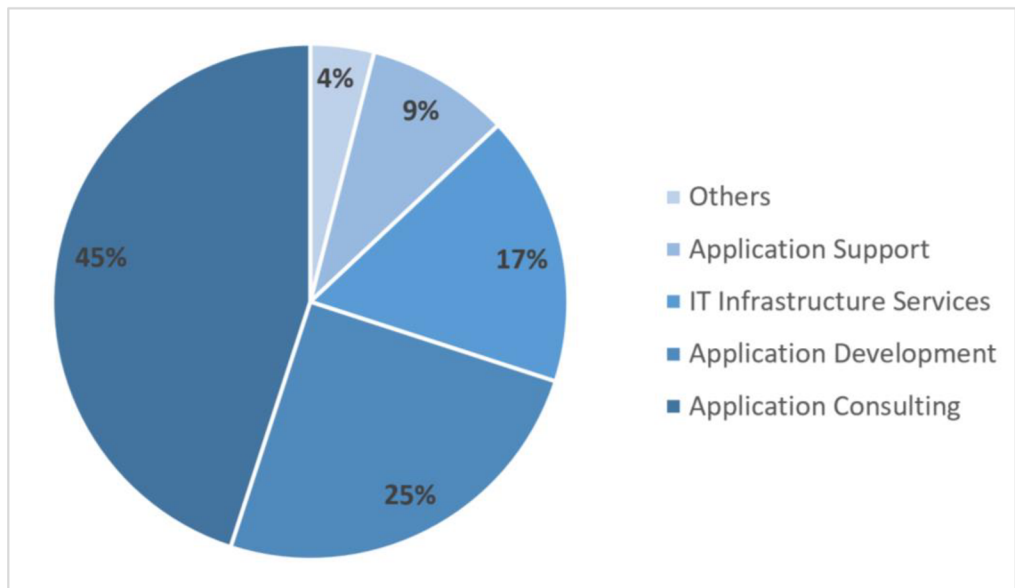


*Source: Created by the author based on Company BES's Internal Data*

Application Consulting kept its position as the highest spend subcategory from the year 2021, with an allocation of 45% of the total spend, amounting to $583,200,000. This continued investment highlights the sustained focus on seeking expert advice and specialized consultancy services within the technical domain, which is later sold to the clients and customers of company BES. However, the shift from the previous year is reflected in the method of service delivery, with 72% of the Application Consulting services now conducted remotely compared to 85% in the previous year.

*Graph 16: Type of Service Delivery for Application Consulting in 2022*
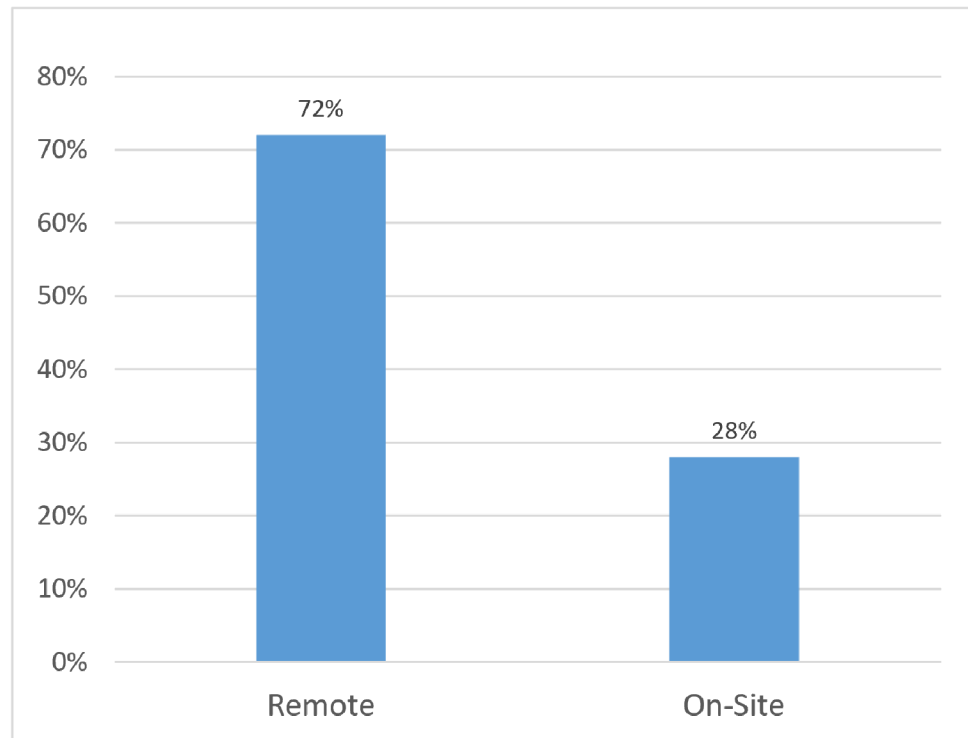


*Source: Created by the author based on Company BES's Internal Data*

This notable shift towards remote services demonstrates an ongoing adaptation to changing work dynamics beyond the pandemic. While the reduction from 85% to 72% in remote services indicates a partial return to on-site consultations, the emphasis on remote platforms suggests a strategic preference for virtual engagements.

The transition to remote services not only addresses safety concerns but also continues to positively impact sustainability goals. By conducting the majority of consulting remotely, Company BES further reduces carbon emissions associated with travel and transportation, aligning with the company's sustainability objectives by reducing resource consumption and optimizing the use of technology.

While on-site consulting remains crucial for the line of business according to Company BES, the higher costs and environmental impact associated with travel underscore the strategic importance of leveraging remote platforms. This strategic shift signifies Company BES's commitment to reducing its carbon footprint while ensuring continued service delivery and operational efficiency.

Despite the slight decrease in remote engagements, the sustained focus on leveraging remote platforms suggests a continued commitment to sustainability by optimizing resource usage and reducing environmental impact within the Application Consulting sub-category, which continues to positively impact sustainability efforts.

5.3.2.2. IT Solutions Category Spend Analysis

In 2022, the allocation of IT Solutions Category expenditure within Company BES GPO portrays a notable continuation and slight variation from the previous year's trends.

*Graph 17: IT Solutions spend per Sub-Category for the year 2022*
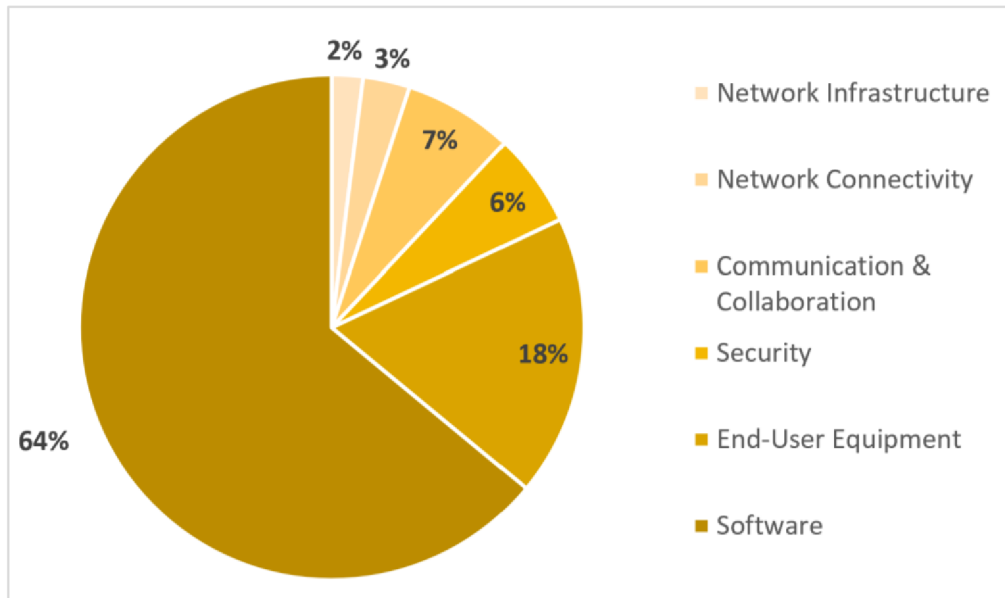


*Source: Created by the author based on Company BES's Internal Data*

Software remains the dominant segment in this year as well, capturing 64% of the total spend at $645,120,000, this is again showcasing a consistent emphasis on digital infrastructure. This sustained investment suggests an ongoing focus on digitalization by Company BES, indicating a sustained effort towards reducing paper-based processes and promoting efficiency within the company's operations.

Compared to the previous year, there's a marginal increase in the allocation towards Security, rising to 6% of the spend, equivalent to $60,480,000. This increase in investment might indicate an enhanced focus on increasing the

cybersecurity measures, potentially aligning with a growing awareness of data protection and privacy, which could indirectly contribute to sustainability efforts by safeguarding against potential breaches and mitigating risks associated with environmental impact.

In addition, the allocation to End-User Equipment experiences a slight increase, representing 18% of the spend at $181,440,000. This increased allocation suggests continued efforts to provide updated and efficient tools for employees, which as the previous year aims to supporting remote work capabilities and contributing to reduced commuting and carbon emissions, according to Company BES.

On the other hand, there's a decrease in allocations to Network Infrastructure, Network Connectivity, and Communication & Collaboration compared to the prior year. While these segments collectively represent smaller proportions of the total spend, these reductions might indicate a shift in focus or a reevaluation of specific technological priorities within the company.

Analyzing the changes from the previous year, while the emphasis on Software and End-User Equipment remains consistent, the relatively slight changes in allocations across other segments suggest potential adjustments in technological priorities or evolving strategies. From a sustainability perspective, the sustained emphasis on digitalization continues to contribute positively by reducing paper usage and promoting operational efficiency..

### 5.3.3. Year on Year Comparison

The supplier distribution in 2022 exhibits a significant dominance by the two Americas, comprising the largest segment at 59%, showcasing a substantial presence across North, Central, and South America. MENA region closely follow, representing 31% of the total suppliers, while APJ constitute the smallest segment at 10%. This depiction illustrates the relative proportions of supplier distribution across these major regions, with the aim to offering a clear overview of the geographic dispersion within the dataset of 13,000 suppliers in 2022.
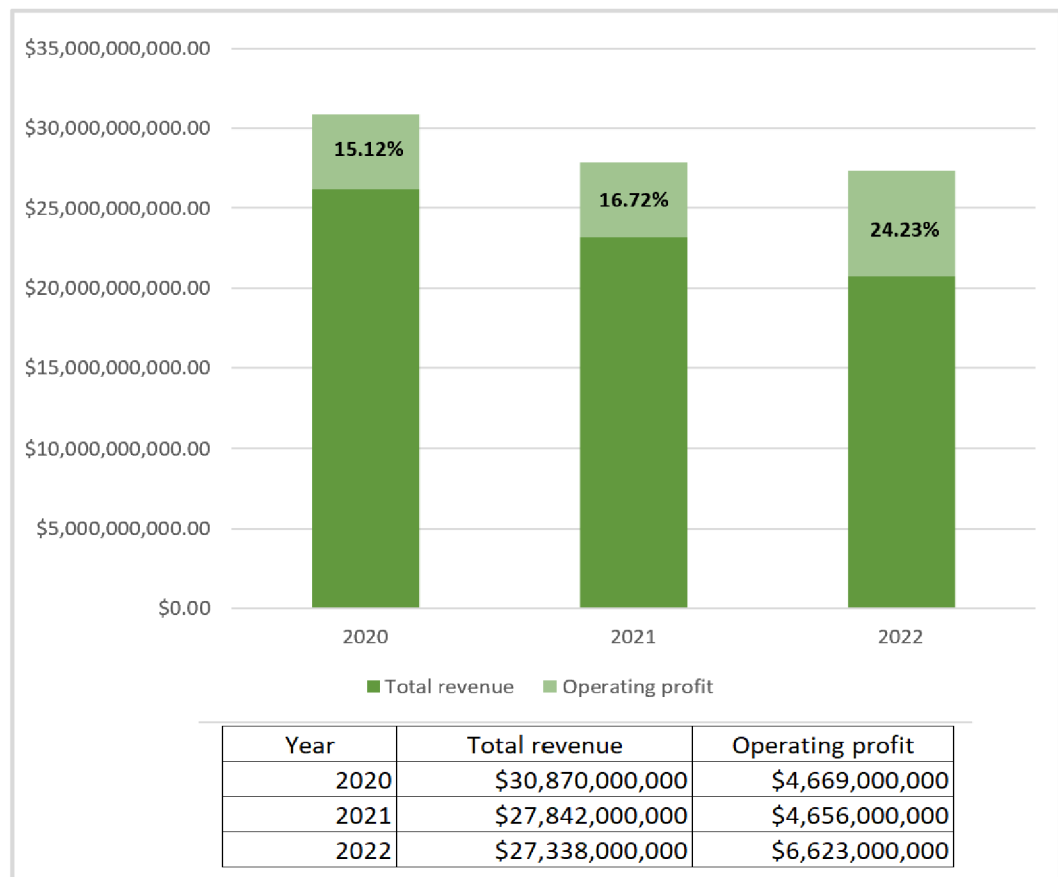
Comparing the expenditure breakdown between 2021 and 2022, both years showcased the investments in Technical Services and IT-related expenditures.

However, the 2022 breakdown provided a more detailed segmentation of spends, offering clearer insights into the distribution across Technical Services, IT Solutions, and other categories. Overall, the 2021 analysis demonstrates a substantial investment in Technical Services and IT Solutions within the GPO's procurement framework with less expenditure compared to the 2022 analysis.

## 5.4. Revenue

The graph below showcases Company BES's total revenue from 2020 to 2022, which represents the overall sales generated by a company from its core business activities before deducting any expenses, in comparison with the operating profit, which is a measure of a company's profitability that excludes certain expenses such as interest and taxes from the calculation.

*Graph 18: Company BES Revenues and profits from 2020 to 2022*



| Year | Total revenue | Operating profit |
|---|---|---|
| 2020 | $30,870,000,000 | $4,669,000,000 |
| 2021 | $27,842,000,000 | $4,656,000,000 |
| 2022 | $27,338,000,000 | $6,623,000,000 |

*Source: Created by the author based on Company BES's Internal Data*

The company experienced fluctuations in its total revenue as shown in graph 18. In 2020, the company recorded total revenue of $30.87 billion, which saw a noticeable

decline to $27.84 billion in 2021. However, in 2022, the total revenue remained relatively stable, maintaining a figure of $27.34 billion compared to the preceding year.

Despite the variation in revenue, the operating profit of the company did not mirror this trend. From 2020 to 2021, the operating profit exhibited a relatively steady trajectory, with a slight decrease from $4.669 billion to $4.656 billion, respectively. However, the standout performance unfolded in 2022, where the operating profit soared significantly to $6.623 billion, showcasing a substantial improvement compared to the previous years. This can be also related to Covid-19 pandemic and its impact on the global markets.

The operating profit margin as a percentage of total revenue, serves as a crucial indicator of the company's operational efficiency and profitability for this analysis. In 2020, the operating profit margin stood at 15.12%, showcasing a slight increase to 16.72% in 2021 despite the decline in revenue. However, the biggest change emerged in 2022, with the operating profit margin increasing to 24.23%. This rise signifies an enhancement in the company's ability to generate profits from its core business activities compared to the prior years.

This financial data suggests that while the company encountered a downturn in revenue from 2020 to 2021, it managed to sustain its operating profit relatively well. However, the performance in 2022 implies a improvement in operational efficiency and profitability.

The following graph showcases the Total gross profit, which is the revenue remaining after deducting the cost of goods sold (COGS) from total revenue. It reflects the profitability of a company's products or services before considering other expenses such as operating expenses, interest, and taxes.
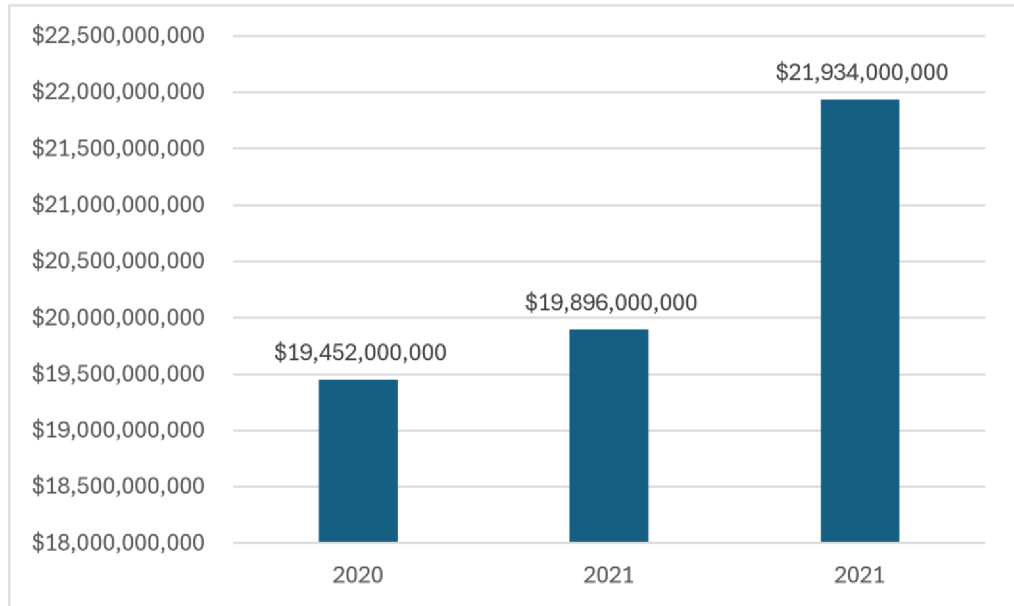
Examining the trend in total gross profit unveils a relative consistency over the years. In 2020, the company reported a total gross profit of $19.452 billion, followed by an increase to $19.896 billion in 2021. Subsequently, in 2022, there was a more noticeable increase in the total gross profit, reaching $21.934 billion. This progression signifies an overall improvement in the profitability of the company's products or services over this period.

Comparing this trend with the analysis of total revenue and operating profit, some observations emerge showing that the total revenue experienced fluctuations over the years, including a decline from 2020 to 2021, followed by stability in 2022, the total gross profit maintained a more consistent increase. Similarly, while operating profit showcased a shift in 2022 despite stable revenue, the total gross profit also exhibited a notable increase during the same period, aligning with the improved profitability seen in the operating profit.

While total revenue can provide an overview of the company's sales performance, total gross profit showcases deeper into the efficiency of production or service delivery. The consistent and upward trend in total gross profit, especially in 2022, indicate that the company effectively managed its production costs or improved

product margins, contributing to enhanced profitability despite stable or fluctuating revenue.

## 5.4.1. GPO Revenue

The GPO's role within Company BES's revenue generation is closely linked to the performance of its revenue-contributing segments, primarily from the only profit generating Technical Services Category and particularly the Application Consulting subcategory.

*Graph 20: GPO revenue compared with their spend*
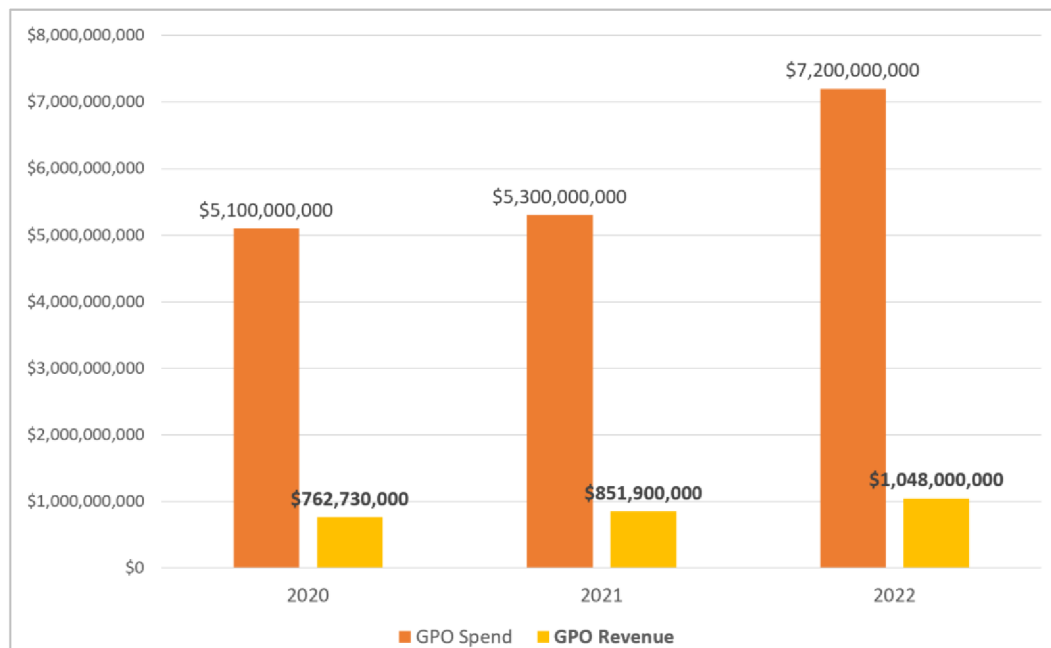


*Source: Created by the author based on Company BES's Internal Data*

In 2020, with a GPO Spend of $5.1 billion contributing to the company's total revenue of $27.34 billion, the GPO Revenue amounted to $762.73 million. In 2021, despite a slight increase in GPO Spend to $5.3 billion and a total revenue of $27.84 billion, the GPO Revenue surged to $851.9 million. Although in 2022 there was a rise in GPO Spend to $7.2 billion, the GPO Revenue experienced an increase as well, reaching $1.048 billion.

This data showcases a consistent upward trend in GPO Revenue, showcasing the growth in total revenue and indicating a strong contribution from the GPO to the overall revenue generation of Company BES, even as an organization with the

main goal to spend money over acquiring services and goods for the line of business.

Considering the GPO's spend specifically in the Technical Services Category, where Application Consulting plays a crucial revenue-generating role, the correlation becomes more evident. In 2020, the GPO's Technical Services spend amounted to a substantial portion of the overall GPO spend. Despite this, the GPO Revenue contributed notably to the company's total revenue, indicating the impact of the Application Consulting on the overall financial performance.

## 5.5. Devices and $Co^2$ emissions

Central to Company BES's organizational infrastructure is the strategic utilization of electronic devices, such as laptops, by its employees. This thesis aim analyze the environmental impact of the Company BES work environment, specifically emphasizing the costs associated with laptops in relation to the $Co^2$ footprint.

The graph below provides information on the carbon dioxide ($Co^2$) emissions associated with the manufacturing of various electronic devices, measured in kilograms (kg). The devices listed include different models of MacBook Pro and MacBook Air, ThinkPad laptops, HP ZBook Studio and Dell monitors, which are reported to be used by Company BES.
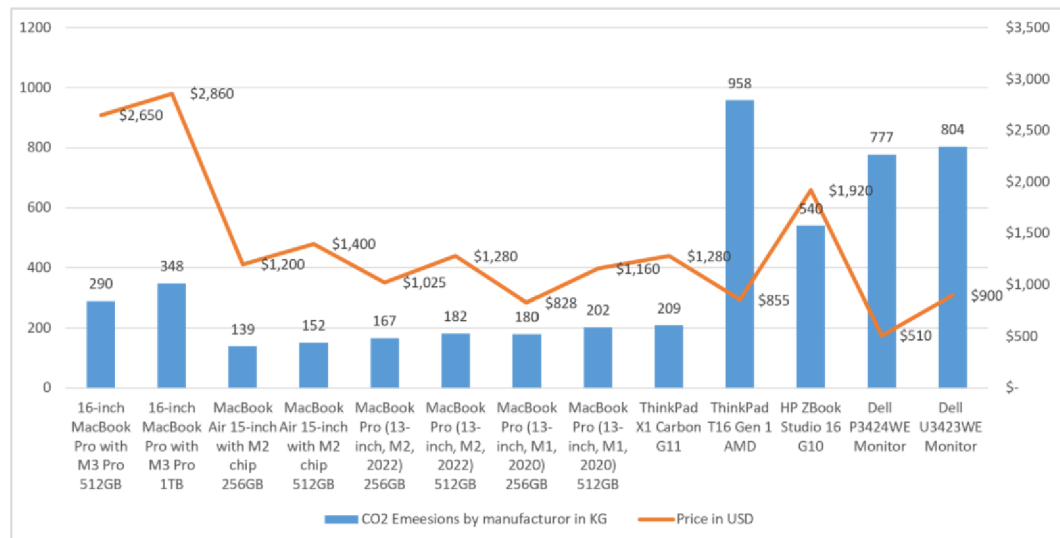
*Graph 21: $Co^2$ emissions by manufacturer in kg.*
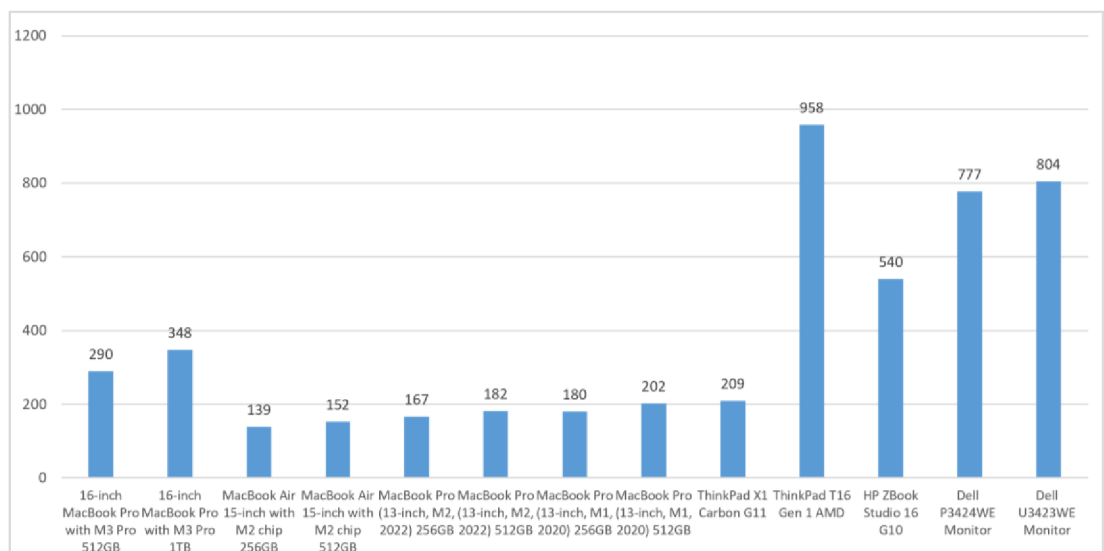


*Source: Created by the author based on Company BES's Internal Data*

Among the showcased devices are MacBook Pro and MacBook Air models with varying storage capacities and processor configurations, revealing differences in their environmental impact. The 16-inch MacBook Pro with M3 Pro 1TB exhibits a slightly higher $CO_2$ footprint than its 512GB counterpart. Similarly, MacBook Air 15-inch models featuring M2 chips reflect varied emissions, with the 512GB version having a slightly elevated impact. The MacBook Pro series, spanning both M2 (2022) and M1 (2020) chipsets, also illustrates differences in emissions concerning storage capacities. As well, the ThinkPad X1 Carbon G11 and HP ZBook Studio 16 G10 contribute distinct levels of $CO_2$ emissions standing at 210kg and 540kg. The Dell P3424WE and Dell U3423WE monitors demonstrate varying environmental impacts, emphasizing the importance of considering emissions in display technologies as well. This detailed analysis of $CO_2$ emissions for each device type provides valuable insights into the environmental considerations associated with their production, emphasizing the need for sustainability in the electronics industry for Company BES.

*Graph 22: $CO_2$ emissions per laptop in comparison with the market price.*



*Source: Created by the author based on Company BES's Internal Data*

This comprehensive analysis showcases the carbon dioxide ($CO_2$) emissions with the market prices of various electronic devices, shedding light on potential correlations between environmental impact and cost. According to Graph 22, the MacBook Pro and MacBook Air models reveal a consistent pattern where higher storage capacities contribute to increased $CO_2$ emissions and higher prices,

underscoring the nature of technological specifications, environmental sustainability, and economic considerations. The ThinkPad X1 Carbon G11 positions itself within a competitive range, maintaining a balance between emissions and cost. In contrast, the ThinkPad T16 Gen 1 AMD exhibits significantly higher $Co^2$ emissions at a lower price, suggesting a nuanced trade-off between environmental impact and affordability. The HP ZBook Studio 16 G10, with relatively high emissions, aligns with a higher price point, emphasizing the potential influence of sustainability on device pricing by the manufacturer. The Dell monitors, reflecting varying $Co^2$ emissions, demonstrate a correlation between environmental impact and display technology pricing as well.

According to Company BES Technical Services category, the standard life of a Microsoft operating system laptop at the company is 3 years only. As using such devices for longer than 3 years has proven financially inefficient according to Company BES. While on other hand, Apple MacBook's have a standard of 4 years of internal usage in the company.

In conclusion and according to the data from Company BES sustainability division shown above, the most Cost-Effective and Low Emissions device is the MacBook Air 15-inch with M2 chip 256GB standing out as a cost-effective and the optimal option with relatively low $Co^2$ emissions (standing at 139 KG) compared to other laptops, with a price of $1,200, it offers a balance between affordability and a more environmentally friendly manufacturing footprint.

## 5.5.1. $Co^2$ per dollar spend ratio

The CO2 per dollar spend metric is a calculation aimed at assessing the environmental efficiency of a device in relation to its cost. This metric is determined by dividing the $Co^2$ emissions (in kilograms) by the price of the device (in US dollars). The resulting value represents the amount of carbon dioxide emitted per dollar spent on the device. Lower values indicate greater environmental efficiency, as less $Co^2$ is emitted for each dollar spent.
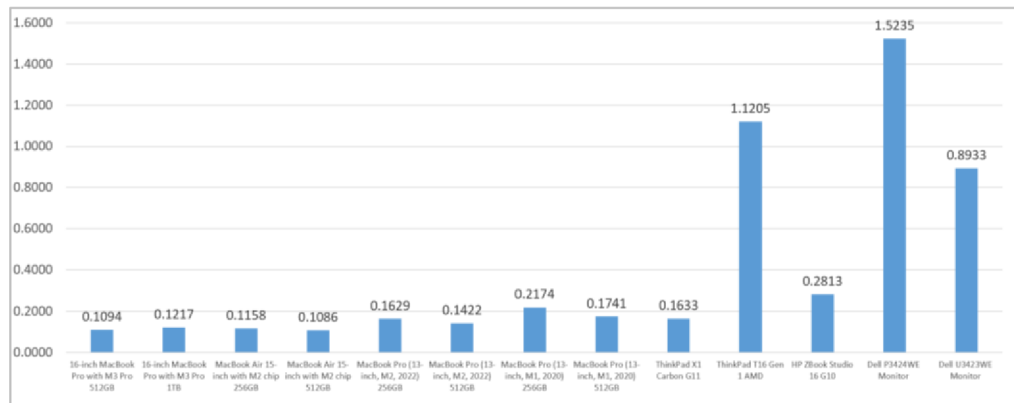
Analyzing the given data and considering the Triple Bottom Line methodology, devices with lower $Co^2$ per dollar spend ratios are considered more cost-effective and environmentally friendly. The MacBook Air 15-inch with M2 chip 512GB has the lowest $Co^2$ per dollar spend ratio among the devices listed, with a value of 0.1086.

## 5.5.2. Optimal Device

As shown above, the MacBook 15-inch with M2 chip 512GB has the lowest $Co^2$ per dollar spend ratio among the devices listed, with higher life span in terms of internal usage, reaching up to 4 years on average. On the other hand, an in-accordance Company BES Global Procurement Organization's strategy, the usage of one main supplier for such a big volume of is considered not strategic. As the company has over 400 thousand employees globally, diversifying the number of suppliers is considered a strategic key aspect. Another challenge comes from the perspective that the Apple devices operation system is the Mac OS, which according to Company BES, doesn't operate well with all of the Company's Softwares that are used internally. Additionally, Company BES relies heavily on Microsoft Office products in their daily operations and communications. Therefore, and in conclusion, diversifying the purchases of laptops for internal usage between the MacBook 15-inch with M2 chip 512GB and The Lenovo ThinkPad X1carbon G11 appears to be the most optimal solution

# 6. Discussion and Conclusion

As Company BES stands as a global leader in enterprise software solutions with a rich history dating back to the 1970s, a critical component of Company BES's success lies in its sustainability goals and strategies. A big part of that is within its Global Procurement Organization (GPO), strategically positioned to optimize procurement processes and manage supplier relationships for the company's line of business worldwide. Operating with a mission to reduce costs, enhance efficiency, and ensure supply chain reliability, Company BES'S GPO main focus is on strategic sourcing, procurement operations, supplier relationship management, and procurement technology utilization.

The company's claims to its commitment to sustainability is showcased in its integrated solutions for procurement processes. With a focus on environmental, social, and economic impacts, Company BES implements a sustainable supply chain strategy. The results of this Diploma thesis showcase that GPO plays a pivotal role in transitioning into a purpose-driven entity through the Procurement with Purpose (PwP) strategy, emphasizing diversity, social inclusion, and responsible resource utilization.

The results also shows that a cornerstone of the ethical practices within the supplier network is the Company BES Supplier Code of Conduct (SCoC). Integrated into standard contracts and mandatory for supplier registration, the SCoC sets comprehensive standards for labor, human rights, environment, and diversity and inclusion. This demonstrate the company's commitment to aligning with evolving global ethical standards, ensuring enforceability and reinforcing the significance of ethical considerations in supplier relationships.

Company BES's dedication to environmental responsibility is further demonstrated by its comprehensive solutions enabling businesses to monitor and manage their carbon footprint across the entire supply chain. This approach aligns with the company's commitment to supporting environmentally conscious practices within supply chain operations.

The results also showed that Company's commitment to sustainability in procurement extends to data analytics for sustainable decision-making, utilizing third-party

Softwares, such as Integrity Next, which aids in assessing, monitoring, and improving social and environmental compliance within supply chains, aligning with the company's focus on ethical and sustainable practices. As the integration of this platform resulted in a $200,000 expenditure by the Global Procurement Organization (GPO) in 2021, specifically targeting supplier assessment for greenhouse gas emissions. This concludes that the investments made in such tools are only for the internal usage and decision-making processes, meaning that there is no direct return on investment for the company.

While Company BES is still mainly investing in supplier assessments, other competitive companies are much more advanced in their procurement strategies in regards to sustainability. IBM is Company BES's largest competitor in the global market, which is more advanced in regards to their procurement with sustainability. IBM already plans to reduce its greenhouse gas emissions 65% by 2025 against base year 2010, this plan is already in progress and continuously taking action. In addition, they plan to procure 75% of the electricity it consumes worldwide from renewable sources by 2025, and 90% by 2030 (ARMONK, N.Y., Feb. 16, 2021).

On the other hand, Company BES's detailed analysis of greenhouse gas emissions per supplier provides a comprehensive overview of the environmental impact within the company's procurement network. The results show that the top 100 suppliers collectively account for 55% of the total expenditure in 2021, while the 45% of the emissions are generated by 1500 other suppliers, emphasizing the importance of Company BES's need in addressing emissions across the entire supplier spectrum. Also, the results shows that Microsoft emerges as the leading contributor, responsible for approximately 10.03% of total emissions, but then relatively low emissions per 1 US dollar spent standing at 0.16 kg of $Co^2$. It is important to take into consideration that Microsoft's carbon emissions were up 21.5 percent in the 12 months through June 2021 (Eavis P., March 2022). But according to Microsoft's sustainability reports in 2022, the company has already reduced its co2 emissions by 22% in 2022 in comparison with he previous year (Microsoft Environmental Sustainability Report, 2022). When this is also compared to the median of emissions-to-dollar ratio, which is at $0.33, this showcases the diverse range of values within the data and proves further that Microsoft is standing as a low $Co^2$ contributor in comparison to the large

volume and scale of services and products it provides to Company BES. The examination of emissions in relation to spending unveils that Microsoft, even as the highest emitter in total, aligns its financial expenditure with its environmental footprint, showcasing a proportional correlation, indicating potential opportunities for improving sustainability practices and cost-efficiency within Company BES's procurement landscape.

In addition, the supplier assessment and the contract management play a crucial part of the Company's sustainability commitment in the internal level. The detailed analysis of contract management introduces the integration of digital solutions, particularly the use of DocuSign. This platform offers efficiencies in cost, environmental impact, and security, as evidenced by reduced administrative overhead, environmental conservation through reduced paper usage, with every 8 thousand sheets of paper replaced results in saving 1 tree. The financial comparison between DocuSign and traditional paper contracts demonstrates the platform's strategic business advantage at a higher cost, promoting both environmental and operational efficiency.

While the spend and cost analysis of Company BES over the four-year period provides a comprehensive view of the organization's financial landscape and strategic shifts within its procurement activities. The trends in GPO Spend, Total Costs, and the proportion of GPO Spend to Total Spend underscore rapid changes in spending dynamics, indicative of a strategic changes towards leveraging Global Procurement Organizations (GPOs) for procurement activities. This shift suggests an effort to optimize procurement strategies, emphasizing a unified approach to cost control and resource utilization, which is consistent with the company's claimed sustainability strategy.

According to the results in section 5.3.1, in the year 2021 the GPO managed a substantial expenditure of $23.186 billion, with $5.3 billion specifically directed by the GPO, constituting approximately 22.9% of the overall costs. The regional distribution of suppliers highlights significant variations, with Europe, the Middle East, and Africa dominating the network. The detailed analysis of GPO spends by category in 2021 provides additional insights into the company's strategic investments, particularly in Technical Services and IT Solutions. The allocation of

funds in these categories indicates a deliberate focus on specialized technical support and technology-driven solutions. Such targeted investments align with sustainability goals, as seen in the breakdown of the Technical Services Category spend, where a shift to remote consulting within the Application Consulting sub-category not only addressed pandemic-related restrictions but also showcased a commitment to sustainability. By reducing carbon emissions associated with travel and optimizing resource consumption, Company BES demonstrated a proactive approach to environmental impact mitigation, in comparison with IBM, its biggest competitor in the global market who has restricted its remote activities by implementing a so called "back to office strategy" (Calburn T., October 2022).

Similarly, the IT Solutions Category spend analysis in 2021 reveals a strategic distribution of expenditure across various subcategories, with a primary emphasis on Software. This allocation aligns with sustainability goals by promoting digitalization and reducing physical resource usage. Investments in End-User Equipment, Security, Communication & Collaboration, and Network Infrastructure further contribute to operational resilience and align with broader sustainability initiatives.

In 2022, Company BES's GPO spend exhibited significant shifts, marked by a reduced supplier count of 13,000. The Americas dominated with 59% of suppliers, followed by Europe, the Middle East, and Africa at 31%, while Asia, the Pacific region, and Japan constituted 10%. The $7.2 billion expenditure was distributed across Technical Services (18%), IT Solutions (14%), and Others (68%). Noteworthy trends included sustained investments in Application Consulting and Software, with a strategic shift towards remote services. The IT Solutions category indicated a nuanced change in allocations, emphasizing digitalization and cybersecurity. Comparing 2021 and 2022, the latter provided a more detailed segmentation, offering clearer insights into spending priorities, strategic adjustments, and the ongoing commitment to sustainability within Company BES's evolving procurement strategies. While the analysis of Company BES's laptop usage and associated $Co^2$ emissions provides critical insights into the intersection of technology, sustainability, and cost considerations. The detailed examination of various electronic devices reveals nuanced differences in $Co^2$ footprints, emphasizing the need for environmental awareness in the electronics industry. The MacBook Air 15-inch with M2 chip 512GB

emerges as a cost-effective and environmentally friendly option, boasting the lowest $CO^2$ per dollar spend ratio. However, considering Company BES's strategic procurement approach and operational needs, diversifying laptop purchases between the MacBook 15-inch with M2 chip 512GB and the Lenovo ThinkPad X1 Carbon G11 appears to be the most optimal choice. This approach aligns with the company's global procurement strategy, ensuring strategic supplier diversity and addressing compatibility challenges related to software and operational systems.

In conclusion of this comprehensive analysis, it illuminates the intricate dynamics of sustainability considerations within Company BES's procurement practices. It underscores the imperative for a holistic approach that encompasses emissions across the entire supplier network, optimizing spending to achieve substantial reductions and foster a more sustainable and eco-friendly procurement ecosystem. While investing to leverage advanced data analytics through platforms like Integrity Next and Ditch-Board does not bring a direct or measurable return on investment, but it provides the company with the capabilities to monitor supplier compliance and assesses environmental impacts. This can be a crucial part of decision making when for example the company needs to buy personal laptops for its 400 thousand employees globally. The findings from the spend and cost analysis also offer valuable insights into the evolving procurement strategies of Company BES, showcasing a delicate balance between operational efficiency, strategic investments, and sustainability considerations. The intentional reliance on GPOs, strategic supplier engagements, and sustainable practices reflects the organization's commitment to responsible and forward-thinking business practices, providing a comprehensive understanding of the dynamics shaping sustainable procurement within the company.

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# 8. List of Tables, Figures and Graphs

## 8.1. Tables

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