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SUPPLY CHAIN AND PROCUREMENT PERFORMANCE ASSESSMENT - A CASE STUDY AT ALTICE PORTUGAL

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Relatório de Estágio apresentada à Faculdade de Ciências Sociais e Tecnologia da Universidade Europeia, para cumprimento dos requisitos necessários à obtenção do grau de Mestre em Management realizada sob a orientação científica do Doutor Carlos Eduardo Capelo Ramos Rosário, Professor da Universidade Europeia.

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Palavras-chave:
Gestão da cadeia de abastecimento, Gestão de compras, Avaliação de desempenho, Métricas de desempenho, Gestão de compras e cadeia de abastecimento, Indicadores-chave de desempenho

Resumo

A gestão da cadeia de abastecimento e compras são essenciais para as empresas manterem a competitividade e a eficiência operacional. Um aprovisionamento eficaz garante a aquisição atempada, económica e de qualidade de materiais e serviços, enquanto uma cadeia de abastecimento robusta reduz os custos, aumenta a satisfação do cliente e reduz os riscos. Esta dissertação apresenta um estudo de caso da Altice Portugal, uma empresa líder no sector das telecomunicações, para analisar a forma como o desempenho das aquisições é avaliado na prática. Ao comparar os quadros teóricos com as práticas reais da Altice, este estudo fornece informações sobre as metodologias e métricas utilizadas num contexto real para avaliar a gestão da cadeia de abastecimento e o aprovisionamento. A análise revela os pontos fortes e as áreas a melhorar nos processos de aquisição da Altice, oferecendo lições valiosas para esta área de gestão. Para além disso, este estudo de caso realça a importância de uma gestão eficaz do aprovisionamento e da cadeia de abastecimento e preenche a lacuna entre os modelos teóricos e as aplicações no mundo real.

Key-words:
Supply chain management, Procurement management, Performance assessment, Performance metrics, Procurement and supply chain management, Key performance indicators.

Abstract

Supply chain management and procurement are essential for companies to maintain competitiveness and operational efficiency. Effective procurement ensures timely, cost-effective, and quality sourcing of materials and services, while a robust supply chain reduces costs, enhances customer satisfaction, and mitigates risks. This dissertation presents a case study of Altice Portugal, a leading telecommunications company, to examine how procurement performance is assessed in practice. By comparing theoretical frameworks with Altice's actual practices, the study provides insights into the methodologies and metrics used in a real-world context to evaluate supply chain management and procurement. The analysis reveals the strengths and areas for improvement in Altice's procurement processes, offering valuable lessons for this area of management. Moreover, this case study emphasizes the importance of effective procurement and supply chain management and bridges the gap between theoretical models and real-world applications.

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List of abbreviations

SCM- Supply Chain Management

APCIS- American Production and Inventory Control Society

ERP-Enterprise Resource Planning

KPI- Key performance indicator

ROI- Return on investment

CEO-Chief Executive Officer

CFO-Chief financial officer

CHRO-Chief human resources officer

CLO-Chief legal officer

CTO-Chief technology officer

COO-Chief operating officer

CSO-Chief strategy officer

PSD- Supply chain and Purchase department

ARPU- Average revenue per user

ONT-Optical Network Terminal

CPE- Customer premises equipment

ESG-Environmental, Social, and Governance

B2B- Business to Business

B2C- Business to Costumer

PO- Purchase Order

1. Introduction

As part of the Master's Program in Management, the Universidade Europeia has given the author the opportunity to take part in a curricular internship, with the aim of acquiring knowledge and experience in the field of management and to write the Internship Report.

The focus of the report is on supply chain and procurement performance assessment. The aim of the report is to deepen the knowledge on the subject and to explore the theoretical framework of supply chain and procurement performance assessment and how it is applied in the real context of a company.

The supply chain is one of the most important business functions and plays a major role in potential profitability, as a large proportion of a company's revenue is typically spent on purchases (Heizer et al., 2023). In particular, Procurement is essential for companies as it significantly impacts cost reduction, profit improvement, and overall operational efficiency. Effective procurement management ensures optimal resource allocation, enhances the quality of goods and services, and strengthens supplier relationships, providing a competitive edge (Bals et al., 2009; Valk & Rozemeijer, 2009). It has evolved into a strategic function crucial for managing supply chain risks and fostering long-term supplier partnerships (Trent & Monczka, 2003; Weele & Rozemeijer, 2022). Additionally, procurement's role in quality management and financial performance is vital, contributing to consistent improvements and better cash flow (Estampe, 2014; Weele & Rozemeijer, 2022). In a global context, procurement enables companies to leverage international markets for cost efficiency and quality enhancement (Monczka et al., 2021).

Measuring procurement performance using indicators linked to objectives helps companies understand their current situation and improve (Estampe, 2014). Performance measurement systems reveal how procurement adds value and highlight areas for improvement to enhance supply chain efficiency and quality. Without performance measurement of the supply chain and procurement, companies cannot improve or gain a competitive advantage (Karalkova, 2015).

It’s also vital for the management team as it provides essential insights into efficiency and effectiveness, enabling data-driven decision-making (Estampe, 2014). By evaluating key performance indicators, management can identify strengths and areas for improvement, optimizing procurement strategies and operations (Chen et al., 2004; Karalkova, 2015; Weele, 2018).

But how is supply chain and procurement performance measured?

This work aims to answer that question by reviewing the literature on the topic and comparing

it to the real-world practices. With this purpose, a case study was conducted focusing on the analysis of practices related to the assessment of supply chain and procurement performance in the company where the author completed her internship.

The structure of this dissertation is divided into several distinct sections that provide a comprehensive exploration of the subject matter, starting with broad theoretical concepts and narrowing down to specific practical applications.

The first part focuses on the literature review. This section discusses supply chain management, starting with a broad overview of its principles and practices. It then narrows down to the management of the procurement function, highlighting its importance within the broader context of supply chain management. This progressive approach helps to contextualize the specific role and importance of procurement.

In the final part of the literature review, a theoretical framework based on the literature on supply chain and procurement performance evaluation is presented. This section discusses various metrics and methodologies used to assess performance, highlighting key indicators. By synthesizing evidence from a variety of sources, this part provides a sound basis for understanding how theoretical concepts are applied in assessing procurement performance.

The second part of the dissertation describes the methodology used to collect actual practices at Altice. This section explains the data collection methods, including interviews, document analysis and observations, used to gain a detailed understanding of Altice's procurement and supply chain management practices.

Finally, the work presents a case study that is divided into three sections. The first section provides an overview of Altice, including its background, core business operations, and its position within the telecommunications industry. The second section describes the internship experience, detailing the specific roles and responsibilities undertaken during the internship period, and the various projects and tasks completed.

The third section explains how performance assessment is conducted within Altice's procurement department. This involves a detailed comparison between theoretical frameworks and the company's real-world practices. By examining the alignment and discrepancies between theory and practice, this section provides valuable insights into the effectiveness and practicality of different performance assessment methodologies used by Altice. This comprehensive analysis highlights the strengths and areas for improvement in Altice’s procurement performance assessment processes, offering a nuanced understanding of how theoretical models are implemented in a practical context.

2. Literature review

2.1. Supply chain management

In the past, the management of flows was mainly focused on internal company processes. This approach, known as logistics management, viewed purchasing, production, and distribution as interconnected parts of the overall flow only within the company (Estampe, 2014). In 1986, the Council of Logistics Management (now the Council of Supply Chain Management Professionals) defined logistics management as the process of efficiently planning, implementing, and controlling the movement and storage of materials and information from the source to the customer (Council of Logistics Management, 1986). Over time, the focus shifted from individual company operations to a broader approach that considered all partners in the supply chain, including distribution points and production plants. This change marked a significant shift in supply chain management, emphasizing the need for coordination and synchronization among all partners in the chain (Estampe, 2014).

The flow of information and physical goods from both customers and suppliers to the business or conversion center (e.g. a factory, warehouse or office) is called inbound logistics. Similarly, the flow of information or goods or services from the conversion centre to the customer is called outbound logistics. Put more simply, inbound logistics is about demand and sourcing, while outbound logistics is about supply and service (Basu, 2023).

Demand and supply planning capabilities enable companies to balance inbound and outbound logistics to maximize return on assets and ensure a profitable match between supply and demand. Inbound and outbound logistics are also described as upstream and downstream processes (Basu, 2023).

Most organizations engage in hundreds, if not thousands, of activities in the process of converting inputs into outputs. These activities can be broadly categorized as either primary or support activities, which all organizations must undertake in some form (Basu, 2023).

A supply chain encompasses all entities directly or indirectly engaged in meeting customer demands and involves a constat flow of information, products and funds along different stages of the process. This network extends beyond manufacturers and suppliers to encompass transportation providers, warehouses, retailers, and even customers (Basu, 2023).Within each organization, like a manufacturer, the supply chain encompasses various functions responsible for receiving and fulfilling the customer requests. These functions include new product development, marketing, operations, distribution, finance, and customer service, among others

(Chopra, 2019; Estampe, 2014).

People in business have different ideas about what supply chains are. Each idea reflects the nature of the business and the inputs and outputs produced. Some think of supply chains as purchasing and procurement. Others think of them as warehousing, distribution and transportation. Others think of them as a source of capital and labor (Basu, 2023).

Supply chain management emerged from the need to address the coordinating activities and flows among different companies, from suppliers to end customers. Its goal is to ensure alignment and coordination among various actors in the chain, even when their ultimate objective differs (Estampe, 2014). The objective of SCM is to make the entire chain efficient, not just one element, and to create a seamless and efficient flow of goods and services across the entire value chain. This broad scope includes not only the role of procurement, but also maintaining the balance between supply and demand, optimising logistics and minimising costs through strategic supply chain planning and execution (Procurify, 2024).

In 2013, APICS Dictionary by Blackstone defined supply chain management (SCM) as the 'design, planning, execution, control and monitoring of supply chain activities with the objective of creating net value, building a competitive infrastructure, leveraging worldwide logistics, synchronizing supply with demand and measuring performance globally' (Blackstone, 2013).

Supply chain management has an expansive, end-to-end scope that encompasses the entire lifecycle of a product—from raw materials to production, from distribution to the final delivery to the consumer. SCM seeks to manage and optimize this entire process by (Procurify, 2024):

- Integrating procurement processes
- Overseeing the transformation of raw materials into final products
- Managing logistics and distribution channels
- Coordinating with suppliers, manufacturers, and retailers
- Ensuring the satisfaction of end consumers through efficient delivery

The performance of a company's supply chain can be the key to its success or failure. A highly efficient and responsive supply chain can be used as a competitive advantage, while a poorly performing supply chain can be used against you. The evolution of the supply chain continues to be driven by growing customer expectations, such as increased responsiveness to demand fluctuations, shorter lead times, near-perfect delivery reliability, perfect, error-free orders (i.e., defect-free products and documentation) (Kelly, 2020).

Building upon the experience of the holistic models for total manufacturing solutions and total operations solutions, we have now developed a model for total supply chain management comprising six building blocks (Basu, 2023):

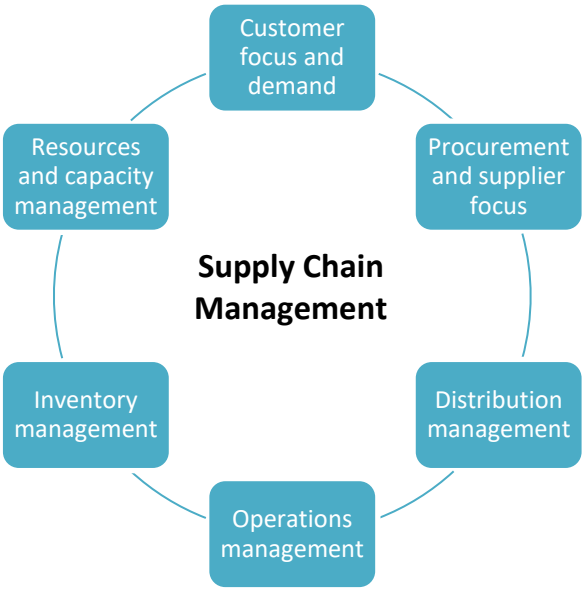

Figure 1:Supply Chain Management building blocks (source: Basu,2023)

These building blocks are integrated by three cross-functional processes:

- Sales and operations planning.
- Systems and procedures.
- Performance management

2.1.1. Building blocks

2.1.1.1. Costumer focus and demand

In all cases of a supply chain, the first step is to forecast what customer demand will be in the future. Understanding how consumers influence the supply chain is essential for companies that want to succeed in today's dynamic marketplace(Basu, 2023). Consumers are a critical figure in the supply chain. Their wants, values and opinions will influence demand as they are at both the beginning and end of the supply chain. In a supply chain, a customer can be a consumer, a wholesaler, a distributor or a retailer. Demand for a product or service is created by customers and forms the basis of all supply chain planning and decisions, with forecasting future demand being critical (Basu, 2023; Chopra & Meindl, 2016).

Future demand for products or services is obtained by analysing consumer trends, which is crucial to ensure that the products or services offered are in line with consumer preferences (Christopher, 2023). It is important to note that it is not possible to make a perfect forecast due to the many variables that affect future demand, such as past demand, product promotion and advertising, market share, economic conditions, price discounts, competition, and new product introductions (Basu, 2023; Heizer et al., 2023).

Accurate demand forecasting helps organisations to better manage inventory, reduce costs, and improve customer satisfaction (Mentzer & Moon, 2005). Effective demand forecasting requires the integration of market data, historical sales data, and predictive analytics to create more accurate forecasts (Sanders, 2014).

2.1.1.2. Resource and capacity management

A primary objective of supply chain management is to optimise supply capacity to meet demand in a timely manner. In the real world, resources are not infinite. Satisfying customers on time can be critical. Adding capacity, whether in the form of machinery and equipment, storage space, transportation, inventories of raw materials and finished goods, or personnel, is expensive. Therefore, a supply chain manager must make decisions about capacity levels and buffer them to meet fluctuations in demand, either by adjusting capacity or by producing to maintain output inventories of goods (Basu, 2023). An organisation can provide excess capacity to meet peak demand or set a capacity ceiling based on average demand, balancing the cost of holding excess inventory on the one hand and lost sales on the other (Chopra & Meindl, 2016; Christopher, 2023).

Enterprise Resource Planning (ERP) systems provide a single, up-to-date database that incorporates manufacturing, financial, and human resource applications, extended to include tracking of orders and goods received, work in progress, and delivery of finished goods. The system is accessible to all departments for the planning and execution of supply chain activities. In this way, ERP systems integrate all organisation's data and processes into a single, unified system to achieve integration (Monk & Wagner, 2008). The implementation of ERP systems can significantly improve the efficiency and accuracy of supply chain operations, leading to better decision making and improved overall performance (Jacobs & Weston, 2007).

2.1.1.3.Procurement and supplier focus

Global supply chains have created more opportunities to source products while developing and

implementing long-term supplier relationship strategies. Working with international suppliers also provides the platform to bring the latest technology to national organisations involved in the delivery of both manufacturing and service products. However, in a global context, there are more challenges in working with suppliers while building and maintaining strong partnerships. Balancing these opportunities and challenges through sourcing strategies and processes is critical (Basu, 2023; Trent & Monczka, 2003).

For the supply chain, sourcing external capacity and resources can include packaging materials, subassemblies, outsourced utilities and maintenance, contract or casual labor, approved supplier selection and outsourcing (Basu, 2023; Handfield, 2006). In a typical manufacturing organisation, the cost of purchased resources represents 60-90% of the cost of goods sold (COGS). Reducing purchasing costs is therefore a powerful way to improve shareholder returns. Proper procurement and supply management can create a network of suppliers capable of delivering service quality that beats the competition, while securing cost reductions over time. In a market-driven competitive world, companies are constantly seeking new suppliers and partners, including outsourcing (Basu, 2023).

The selection of suitable or preferred suppliers should include alternative and complementary attributes between suppliers and the receiving organisation. It is important to raise the standards of suppliers and learn from them by working in partnership (Basu, 2023; Ellram & Cooper, 1990).

2.1.1.4. Inventory management

The purpose of inventories is to provide a buffer against fluctuations in supply and demand. Inventories are usually found at three stages of a process, namely input inventories (e.g. raw materials and packaging materials), process inventories (e.g. semi-finished products), and output inventories (e.g. finished products) (Basu, 2023; Waters, 2003). Inventories may be allocated by design or they may accumulate as a result of poor planning and scheduling. In general, inventories are considered to have a negative impact on the business in terms of capital costs (interest paid or foregone), handling, insurance, increased risk of damage and theft, storage space, and obsolescence. On the other hand, lack of stock leads to lost production at the factory and lost sales at the end of the supply chain. Holding stock of materials and finished products can be seen as an insurance policy against the uncertainty of supply and to cope with unforeseen fluctuations (Basu, 2023; Christopher, 2023).

Inventory management is a good indicator of the effectiveness of supply chain management. It

is relatively easy to achieve higher levels of customer service by accumulating excess inventory. It will also mask short-term operational problems but is a costly and risky option in terms of cash flow. Obsolete stock, whether due to changes in technology, fashion, or food that has passed its sell-by date, has little value. It is essential to optimize stock levels. When optimizing stock levels, two types of stock are considered: cycle stock and safety stock. Cycle stock depends on costs associated with ordering, transportation, volume discounts, supplier lead times, and customer demand. Safety stock is the buffer against fluctuations in demand during the lead time and depends on forecast accuracy, supplier reliability, and customer service levels (Basu, 2023; Chopra & Meindl, 2016).

2.1.1.5. Operations management

In a supply chain, operations management is the building block that makes things happen. It is where plans are executed in factories and plants to produce goods or services for customers. Operations management is the activity of managing the resources and processes that produce goods and services. Input resources (i.e. information, materials and utilities) are transformed into desired outputs by three transforming components (i.e. people, process and technology). Together with distribution management, operations management accounts for the physical flow of the supply chain. If you have input, process and output, you have an operation.
Operations management applies to both manufacturing and service operations. In manufacturing operations, customer interaction is not essential. (Basu, 2023; Krajewski & Malhotra, 2022)

2.1.1.6. Distribution management

At the end of every e-commerce, online trading, and virtual supply chain, there is a factory, a warehouse, and a means of transport. The Internet has improved the performance of information accessibility, currency transactions, and data accuracy, but the true effectiveness of supply chains from source to customer cannot be achieved without the physical efficiency of the supply chain (Basu, 2023; Christopher, 2023). Many companies outsource distribution activities to third parties and do not have in-house expertise to manage distribution, which has a direct impact on customer service. If there is a failure in order fulfillment, whether due to quality, quantity, time, or even the attitude of the distributor, the organization, not the distributor, bears the consequences. The issue of returns or reverse logistics is a growing concern in supply chain management. In the same way that Enterprise Resource Planning is concerned with information

flow, suppliers, and inbound logistics, Distribution Management is concerned with material flow, customers, and outbound logistics (Chopra & Meindl, 2016).

The focus on outbound logistics is on balancing customer service levels with costs. The cost of distribution is not only the cost of transportation but also the cost of storage, including special requirements such as refrigeration, insurance and financing of inventory, and inventory shrinkage (deterioration, damage, theft, and obsolescence). The more stock that is held, the higher the storage costs and the greater the risk of loss (Basu, 2023; Waters, 2003).

The key components of distribution management are the distribution strategy, warehouse operations, inventory management, and transport planning (Rushton et al., 2014).

2.1.2. Cross-functional processes

2.1.2.1.Sales and operations planning

Sales and operations planning is a cross-functional management review process designed to integrate the activities of the entire supply chain. the company's operations plan (comprising sales forecast, production plan, inventory plan and shipments) is updated on a regular monthly basis by the senior management of a manufacturing organization (Basu, 2023).

2.1.2.2. Systems and procedures

Systems and procedures are essential components for integrating the building block configurations of the entire supply chain. There are three broad categories of systems and procedures:

- External regulatory and internal quality standards.
- Financial and accounting procedures.
- Information and Communication Technology.

The activities of a supply chain are affected by both national and international regulatory requirements on packaging, storage, pallets, vehicles, working hours, tariffs and many other issues. In addition, an organization maintains its own quality standards and service level agreements with suppliers and partners (Basu, 2023).

2.1.2.3.Performance management

Performance management acts as both a driver of improvement and a fact-based integrator to support planning, operations and review processes. The foundation of performance

management is rooted in the principles of quality management, supported by key performance indicators (Beamon, 1999; Gunasekaran et al., 2004).

When an organisation develops and defines its quality strategy, it is important to share a common definition of quality so that each department within the company can work towards a common goal. Product quality should include defined attributes of both numerical specifications and perceived dimensions. Process quality, whether it relates to manufacturing or service operations, should also include some defined criteria of acceptable service levels so that the conformance of the output can be validated against these criteria. Perhaps the most important determinant of how we perceive sustainable quality is the functional and holistic role we play within the organisation. It is only when an organisation begins to change its approach to a holistic culture that emphasises a single set of numbers based on transparent measurement with senior management commitment that 'organisational quality' germinates (Basu, 2023; Beamon, 1999; Gunasekaran et al., 2004).

2.2. Procurement management

The acquisition of goods and services represents a crucial factor in an organization's operations and supply chain management, as it can lead to cost reduction and significant improvements in profits, depending on how it is managed (Valk & Rozemeijer, 2009).

Thus, procurement management assumes an increasingly strategic role in today's business environment due to the substantial resources involved. This shifts the perception of the purchase department from a biased view of a bureaucratic, repetitive, and routine activity, that is merely a cost centre to a new vision of the department as a profit centre. Purchasing can yield positive outcomes and impacts across the entire organization (Silva, 2013).

The procurement department has the potential to add value to the organization by ensuring that resources are allocated appropriately, thereby enhancing the quality of purchased services and saving time and money. This involves spending wisely, consolidating efforts, avoiding fragmentation, and presenting a strong image to the supplier market (Bals et al., 2009).

Procurement management plays a strategic role in today's business operations, both in the private and public sectors, as it encompasses various departments within an organization, notably the finance department (Carvalho, 2017).

As a critical business management function, procurement function oversees the identification, sourcing, access, and management of external resources required by an organization to meet its strategic objectives (Weele & Rozemeijer, 2022). Procurement is able to manage supply chain

risks through effective negotiation of contracts, cost and price models, quality and other essential supply characteristics (Weele & Rozemeijer, 2022).

The procurement function encompasses identifying procurement requirements, choosing suppliers, negotiating prices, setting terms and conditions, issuing contracts or orders, and overseeing delivery and payment processes(Weele & Rozemeijer, 2022) Procurement should secure suitable equipment, materials, supplies, and services ensuring the appropriate quality, quantity, timing, location, price, and source (Aljian, 1984)

Its purpose lies then, in exploring supply market opportunities and executing resource strategies to achieve optimal supply outcomes for the organization, its stakeholders, and customers. Procurement utilizes both the science and art of external resource and supply management, guided by a body of knowledge interpreted by skilled negotiators (Weele & Rozemeijer, 2022)

In this definition, the procurement function encompasses several key activities(Weele & Rozemeijer, 2022):

- Evaluating whether the company should produce internally or procure externally.
- Identifying procurement needs, including specifying quality and quantity requirements for goods, services, and solutions.
- Selecting the most suitable supplier and establishing procedures for this selection process.
- Determining contract terms, negotiating with suppliers, and formalizing agreements.
- Placing orders efficiently and maintaining follow-up procedures.
- Monitoring orders to ensure timely delivery and compliance with agreed terms.
- Conducting follow-up evaluations, handling claims and disputes, updating supplier records, and assessing supplier performance.

The procurement function does not encompass materials scheduling, inventory management, incoming inspection, and quality control responsibilities. Nevertheless, for optimal efficiency, procurement operations should be closely coordinated and interconnected with these materials management activities(Weele & Rozemeijer, 2022) Also, for effective procurement the department may require assistance from other departments such as the legal department in drafting contracts with suppliers, the finance department to handle supplier payments and also design and engineering departments because they are typically responsible for preparing material specifications, which should be communicated to the procurement department.

2.2.1. Procurement Process

The process of procurement follows the next steps, first, the specification of the purchase is made. Functional and technical specifications are made clear to the negotiator following the purchase need. Then there's a selection of suppliers that are seen as potential manufacturers or suppliers of the material or service following those specifications (Basu, 2023; Weele & Rozemeijer, 2022). After presenting the specifications to the suppliers, the suppliers respond with their proposal of product/service and the best price they can offer. The negotiator will then review the offers and select the best offer considering they attend to the specifications made and select the supplier. After the selection of the supplier is made a contract agreement, which could imply the help of the juridic department, once the agreement (contract) is agreed and signed by both parts then the order is placed and the purchase follows the usual path of placing order, issuing the receipt and pay after the good or service is delivered. In procurement there's also the final step of evaluation of the supplier, which is not normally included in the simple process of a purchase. For further needs the same supplier can be contemplated if the service they provided was good for the intended purpose (Beamon, 1999; Farrington & Lysons, 2012; Weele & Rozemeijer, 2022).

	Define specification	Select supplier	Contract agreement	Ordering	Expediting	Evaluation
P&S role	• Get specification	• Assure adequate supplier selection	• Prepare contract	•Establish order routine	• Establish expediting routine	• Assess supplier
Elements	• Functional specification • Technical changes • Bring supplier knowledge to engineering	• Pre-qualification of suppliers • Request for quotation	• Contracting expertise • Negotiating expertise	• Develop order routines • Order handling	• Expediting • 'Trouble-shooting'	• Supplier evaluation • Supplier rating
Documents	• Functional specification • Norm/spec control	• Supplier selection proposal	• Contract	• Order	• Exception report • Due date listings • Invoices	• Preferred supplier list • Supplier ranking scheme

Figure 2: Purchasing process approach: managing interfaces (Weele & Rozemeijer, 2022)

The procurement process model suggests that to effectively manage purchasing operations, each phase must have clearly defined outputs. Ideally, every activity within the procurement process should be traceable and trackable. Progress to the next step should only occur after a decision has been made regarding the previous step. Therefore, it is advisable to document the outcome of each step using a 'go-no-go' document format. This practice helps to organize and formalize the procurement process. Typically, the correct procedure is outlined in the

company's procurement policies, detailed in a procurement manual or handbook, which also outlines the roles and responsibilities of the members comprising the Decision-Making Unit (Burt et al., 2010; Farrington & Lysons, 2012; Monczka et al., 2021).

2.2.1.1. The specification phase

The initial phase of procurement is based on the determination of the requirements of the products or activities and if those will be produced or performed by the company itself or if they will be contracted out (Burt et al., 2010; Weele, 2018; Weele & Rozemeijer, 2022).

Typically, procurement managers distinguish the specifications between functional specifications and technical specifications. The functional specification describes the functionality the product must have for the user, giving the suppliers the chance to apply their expertise and create standards which all suppliers' proposals will be compared to and evaluated to choose the best one (Farrington & Lysons, 2012; Monczka et al., 2021; Weele & Rozemeijer, 2022).

A technical specification describes the characteristics the product or service provided must have. Usually, they are presented in technical drawings and activities schedules that must be followed by the supplier. The technical specifications can´t be overly specific because even if the product supplied has all the technical specifications described it does not mean it will have a better functionality than another product or service. And will probably cost more because it will have all those specific specifications described. There's a possibility that another product in the market, less specific, could fulfil the same end and cost less. If we overly specify the technical aspects of the product or service we require, we will narrow down the market's offerings too much (Farrington & Lysons, 2012; Weele, 2018; Weele & Rozemeijer, 2022).

Both functional and technical specifications are integral components of the broader concept known as the purchase order specification. This document encompasses the following elements (Weele & Rozemeijer, 2022):

- Quality specifications, detailing the desired product delivery standards, the functionality of the products and its technical norms and standards.
- Logistics specifications, outlining required quantities, delivery location and timing, and physical conditions.
- Maintenance specifications, describing how the product will be serviced and maintained by the supplier, including provisions for future for example if there's a need for spare parts supply.

- Legal and environmental requirements, e ensuring compliance with health, safety, and environmental legislation for both the product and production process.
- Target budget, establishing financial constraints within which the prospective supplier's solution should fall.

Before the specification is released to the supplier the procurement needs to give its formal approval and revise the specification with the client needing the product or service to prevent mistakes along the procurement process and reduce the costs associated with technical changes if the purpose is not met. The client, internal or external, is responsible for specifying the requirements and the negotiator is responsible for to ensure that the specifications are made with supplier neutral terms in order to meet the specifications at the best conditions (Monczka et al., 2021; Weele & Rozemeijer, 2022).

2.2.1.2. Supplier selection and supplier assessment

After the specifications are clear and the procurement as the defined requirements the negotiator can start conducting the market research for a supplier. In practice, these steps are interconnected. While developing the technical specifications, is considered the practical feasibility and a estimate cost. The selection of fundamental technologies, which will be used to realize the product design, often involves considering specific suppliers. The selection process typically encompasses three steps: preliminary qualification of suppliers and establishment of a 'bidders' list'; preparation of the request for price and evaluation of received bids; and finally, selecting the supplier (Monczka et al., 2021; Nair et al., 2015; Weele, 2018)
First the suppliers are going to be approached based on a prequalification requirements based on the purchase order specification. The list of suppliers to be considered are the ones who could meet those requirements, suppliers that have an excellent past performance on fulfilling similar jobs and suppliers that have a good reputation and are known in the market for doing an excellent work fulfilling the clients needs. Large companies usually work with a pre-aproved vendor list that meet the qualities and sustainability requirements. Once the suppliers to be consulted are chosen, there are contacted and presented with the specifications request , called a request for proposal(RFP) or a request for quotation (RFQ) of the products or services need and are given a certain amount of time to respond to the request and make the best offer to meet the specifications made. After receiving the proposals from the supplier the procurement department will make a pre technical and commercial evaluation where the technical, logistical,

quality, financial and legal aspects are weighted and the prices are compared. During these step, potential risks are also considered (Carr & Pearson, 2002; Nair et al., 2015; Weele & Rozemeijer, 2022).

Procurement managers have a responsibility to ensure that the company engages with suppliers who adhere to local laws, prioritize employee welfare, and uphold fair working conditions. To achieve this, it's essential for procurement to follow a standardized set of procedures outlining supplier selection criteria and contract awarding processes (Weele & Rozemeijer, 2022).

2.2.1.3.Negotiation and contracting

After receiving the offers the procurement department will check with the internal client if their needs are full field and will ask the supplier to review their offers sending them a price target to be meet based on past purchases if that supplier as already been contracted in the past or based on the internal department budget and the procurements annual gains objectives. Suppliers will then respond and try at best to meet those financial targets (Burt et al., 2010; Monczka et al., 2021; Weele, 2018; Weele & Rozemeijer, 2022).

The procurement department, after analysing the final offers, will choose a supplier and a contract will be draw up with the help of the juridic department. Depending on the supplier the contract will differ on specific additional terms or conditions. Depending on procurement policy, company culture, market situation or product characteristics the contract will be worked on back and forward between the supplier and the buyers companies. This tug-of-war about terms of sale and purchase is sometimes referred to as the ‘battle of forms’ (Burt et al., 2010; Monczka et al., 2021; Weele & Rozemeijer, 2022).

2.2.1.4.The ordering process

Once the terms and conditions of the contract are agreed and recorded by both parts, the order can be placed. A purchase order is initiated electronically trough a purchase order requisition. Most modern materials planning software packages facilitate the electronic transfer of requisitions into purchase orders. Alternatively, in some cases, purchase requisitions must be manually initiated by completing purchase requisition forms. These forms, upon approval by the budget holder, are then forwarded to the procurement department (Farrington & Lysons, 2012; Trent & Monczka, 2003; Weele & Rozemeijer, 2022).

When placing an order with a supplier, providing specific information and instructions is crucial. Typically, a purchase order includes the following details: an order number, a concise

product description, unit price, quantity required, expected delivery time or date, delivery and invoicing addresses. A purchase order may consist of multiple order lines, each detailing different products to be delivered. It's essential for all this information to be accurately reflected on the delivery documents and invoices sent by the supplier to facilitate (electronic) matching processes (Burt et al., 2010; Farrington & Lysons, 2012; Weele & Rozemeijer, 2022).

2.2.1.5.The expedition process

Once the product or service is delivered, they must be checked to ensure that they meet the specified requirements depending on the technical complexity there may be more than one acceptance test. Despite having solid contracts and purchase orders in place, various issues can still arise during delivery. Suppliers may fail to meet delivery deadlines, quality issues might arise with purchased materials, or suppliers may attempt to charge more than agreed upon. Addressing these operational challenges is often likened to "firefighting" by procurement professionals. They often express frustration that such issues consume significant time and divert attention away from more strategic and tactical procurement activities (Basu, 2023; Monczka et al., 2021; Weele & Rozemeijer, 2022).

2.2.1.6.Follow-up and evaluation

It is recommended that the procurement department keeps track of the suppliers quality and delivery records of the product or service provided. Maintaining comprehensive and current records of the capabilities of each supplier is crucial. Reporting such information to both internal management and the supplier's management constitutes a significant source of added value provided by the client. This practice completes the procurement cycle, as the information gathered can be utilized in future procurement processes to compile a shortlist of potential bidders for upcoming projects and contracts. This approach enables the company to collaborate with suppliers who have demonstrated their capabilities effectively (Ellram & Cooper, 1990; Handfield, 2006; Monczka et al., 2021; Weele & Rozemeijer, 2022).

This wraps up the discussion on the procurement process model. Its primary benefit lies in its ability to delineate the critical stages of the procurement process. Six steps have been outlined, each requiring meticulous attention to detail. Failure to effectively manage any of these steps can potentially result in issues cascading into subsequent stages, leading to supplier delivery delays and disruptions in the company's operational workflows. Naturally, various iterations of

this model exist in practice, with each step often being further subdivided into more detailed sub-steps tailored to meet the specific requirements of individual companies (Monczka et al., 2021; Weele & Rozemeijer, 2022).

Core responsibilities within the procurement function encompass (1) Operational excellence, ensuring the uninterrupted availability of purchased goods and services, aligning with both short and long-term operational needs. Procurement's primary objective lies in securing a reliable supply from quality suppliers at a reasonable cost, thus maintaining operational integrity and credibility. (2) Cost Control and Reduction of costs, managing procurement-related expenditure efficiently by optimizing total cost of ownership (TCO) or achieving the best value. (3) Supply Risk Management, mitigating the company's exposure to supply market and supply chain risks, diversifying supplier base to avoid dependence on a single or few suppliers, ensuring access to reliable suppliers, and adhering to ethical guidelines to mitigate sustainability-related risks. And finally (4) Innovation and Continuous Improvement, driving product and process innovation through collaboration with suppliers. Suppliers often contribute to new products and technologies, necessitating partnerships for research and development initiatives (Weele & Rozemeijer, 2022).

Clarity regarding authorized personnel for procurement decisions, process structure, and payment terms to suppliers is crucial. These operational guidelines should be outlined in straightforward procurement procedures that are user-friendly and easily communicable.

A well-defined procurement process model serves as a valuable tool for procurement managers in organizing key tasks and responsibilities effectively. Ideally, the procurement process should be structured into sequential steps to ensure consistency and clarity both internally and externally. Procurement procedures and policies should encompass all stages of this process model, establishing a clear sequence of activities and delineating roles and responsibilities across disciplines involved in each purchase (Burt et al., 2010; Farrington & Lysons, 2012; Monczka et al., 2021; Weele & Rozemeijer, 2022).

Depending on the type of need the procurement processes may vary and became more or less complex or have a different type of path to be followed when considering the amount to be spend, the department that needs it, the type of product or service, the number of suppliers to be considered (the client can chose a single supplier as long as its justified). All those different paths must be considered and put on a procedure to be followed (Weele & Rozemeijer, 2022).

It falls upon the procurement manager to articulate the organizational structure of procurement processes and demonstrate the company's approach to significant procurement decisions, as well as the roles fulfilled by procurement professionals. Detailed procurement procedures are

documented in a procurement manual, which serves as a comprehensive guide on conducting procurement decision-making processes and managing supplier relationships. Consequently, the procurement manual forms the basis for regular internal audits and is integral to the company's governance and control framework (Weele & Rozemeijer, 2022).

These core responsibilities underscore the strategic importance of procurement in driving operational efficiency, cost effectiveness, risk mitigation, and innovation within organizations (Burt et al., 2010; Farrington & Lysons, 2012; Trent & Monczka, 2003; Weele & Rozemeijer, 2022).

2.2.2. Principles of procurement

Procurement activities must align closely with the company's mission, objectives, and strategic plan to achieve optimal performance in the long term. To ensure this alignment, procurement management principles should embody a strong business orientation, cross-functional collaboration, and a focus on improving both bottom and top-line performance (Weele & Rozemeijer, 2022).

2.2.2.1.Business Alignment

Developing a procurement strategy necessitates a comprehensive understanding of the company's overarching business policies and market dynamics. This includes identifying target markets, assessing competitive landscapes, and understanding pricing dynamics. Procurement strategies must align with the company's goals and objectives to effectively support its strategic direction (Narasimhan & Das, 2001; Trent & Monczka, 2003; Weele & Rozemeijer, 2022).

2.2.2.2. Integrated, Cross-Functional Approach

Procurement decisions should not operate in isolation but should consider their impact on various business functions such as operations, marketing, and product development. Emphasis should be placed on optimizing the total cost of ownership (TCO) and creating maximum value for procurement spend, rather than solely focusing on achieving the lowest price. This requires a holistic approach that considers factors like ongoing operational costs, maintenance requirements, and supplier reliability over time (Farrington & Lysons, 2012; Monczka et al., 2021; Weele & Rozemeijer, 2022).

2.2.2.3.Performance-Driven

Procurement should not merely act as a service function but should engage as a strategic business partner. Procurement managers should actively collaborate with internal stakeholders to understand their needs and challenges, offering innovative solutions that enhance value and reduce costs. By continuously improving the price/value ratio of goods and services, managing supplier performance, and mitigating supply chain risks, procurement contributes to the company's overall cost awareness and value proposition.

In summary, effective procurement management requires a strategic approach that integrates with the company's broader goals, engages cross-functional collaboration, and drives continuous improvement in cost, value, and risk management (Monczka et al., 2021; Weele & Rozemeijer, 2022).

2.3. Supply chain and Procurement Performance Assessment

The rapid technological advancements and intense competition are reshaping the business environment. The current market is forcing the organizations to make significant changes in order to adapt to these shifting dynamics. The success of a company is now heavily reliant on its ability to meet customer demands efficiently and streamline its operations. Furthermore, the growing trend of globalization and customer focus necessitates a logistics-focused approach within organizations (Gunasekaran et al., 2001).

SCM has emerged as a strategy that combines these factors for a more integrated and efficient operation (Gunasekaran et al., 2001). Purchasing and supply chain management are no longer viewed as merely basic operations within the companies but as value adding functions as part of the strategy for competitivity and survival on the market (Karalkova, 2015).

Procurement management is responsible for ensuring that planned results and activities are achieved within allocated financial resources and designated timeframes. This necessitates periodic evaluation of actual performance against procurement plans. Reports detailing savings, cost reductions, and supplier performance, particularly regarding delivery and quality, are typically required. These findings should be communicated to management through a standardized process, often utilizing a clear and accessible procurement dashboard, enabling comprehensive assessment of overall procurement performance (Weele & Rozemeijer, 2022).

Measuring the purchasing management performance based on a system of indicators linked to objectives and decision-making variables enables the company to understand the current situation continually and systematically and to see the path that it should follow, all the while measuring progress (Estampe, 2014). Performance measurement systems are designed to offer purchasing executives and top management insights into how procurement contributes value to the organization (Karalkova, 2015). The measurement of the performance can highlight areas that require improvement to enhance efficiency and quality of the supply chain. If a company fails to measure its performance, then it will fail to improve and gain competitive advantage (Karalkova, 2015).

In this way effective management of purchase performance metrics is essential for businesses to optimize their procurement processes and achieve strategic objectives. Purchase performance metrics provide valuable insights into various aspects of purchasing activities (Monczka et al., 2021).

Procurement effectiveness is about meeting the goals and objectives of the procurement function, such as obtaining the right materials in the right quantity, from the right supplier, at the right time, place, and price. It also includes contributing to product and process improvements to reduce overall supply chain risk (Weele & Rozemeijer, 2022).

Procurement efficiency, on the other hand, is concerned with the resources required to achieve these objectives. This involves how procurement is organized, the systems and processes in place, and the productivity of the procurement team. Efficiency also includes maintaining high-quality supplier relationships that lead to superior supplier performance, which depends on supplier satisfaction with their working relationships (Weele & Rozemeijer, 2022).

To evaluate procurement performance Van Weele and Rozemeijer (2022) suggest six dimensions:

1. Price/cost dimension:

This dimension pertains to the relationship between standard and actual prices paid for materials and services. It includes both price/cost control and price/cost reduction. Price/cost control involves the continuous monitoring and evaluation of prices and price increases charged by suppliers, with the objective of controlling and preventing excessive price hikes. This is achieved through tools such as materials budgets, price inflation reports, and variance reports. On the other hand, price/cost reduction focuses on ongoing efforts to systematically reduce costs for purchased materials and services. This includes activities like finding new suppliers, identifying substitute materials, and coordinating procurement across business units. The goal is to achieve structural cost reductions, using budgets and cost savings reports as key tools for planning and monitoring performance in this area (Farrington & Lysons, 2012; Gunasekaran et al., 2004; Monczka et al., 2021).

2. Product/quality:

Procurement’s responsibility for the quality of purchased materials and services involves two main areas. First, procurement's contribution to total quality management ensures that goods and services meet company specifications, using measures such as reject rates, approved suppliers, and supplier quality agreements to secure flawless incoming materials. Second, procurement's involvement in new product development supports product innovation, ensuring target costs and time-to-market are met. This includes tracking hours spent on innovation

projects, engineering hours by suppliers, and project lead times, as well as monitoring technical change orders and initial sampling reject rates to manage new product development effectively (Gunasekaran et al., 2004; Weele, 2018; Weele & Rozemeijer, 2022).

3. Sustainability:

Procurement today prioritizes sustainability in purchased materials and services, focusing on product, supplier, and supply chain levels. Sustainability programs aim to reduce carbon footprint, minimize waste, improve fuel efficiency, and uphold ethical, labor, and safety standards. Key performance indicators (KPIs) include supplier adherence to sustainability codes, sustainably sourced spend percentage, sustainability audit frequency, carbon emission reductions, energy and waste reductions, worker safety, and compliance with supplier codes of conduct. These metrics track progress toward environmental goals and ethical standards in procurement practices (Carter & Rogers, 2008; Ellram & Cooper, 1990; Walker & Phillips, 2009).

4. Logistics/delivery:

Another critical aspect of procurement performance involves ensuring an efficient flow of purchased materials and services through several key activities. This includes monitoring the timely handling of procurement requisitions, measured by metrics such as requisitions processed per week or per buyer, administrative lead times, orders issued, and order backlog. Implementing digital ordering systems, e-commerce solutions, and Electronic Data Interchange (EDI) can significantly enhance performance in this area. Additionally, controlling supplier delivery reliability, managing materials shortages, and optimizing Just-in-Time (JIT) deliveries are essential for maintaining a smooth incoming materials flow. Procurement may also oversee inventory levels, utilizing metrics like inventory turnover ratio, order size consistency, and pipeline inventory management to ensure efficient operations. These efforts collectively contribute to enhancing procurement efficiency and meeting organizational supply chain goals effectively (Beamon, 1999; Burt et al., 2010; Farrington & Lysons, 2012; Weele & Rozemeijer, 2022).

5. Supplier relationships

This dimension focuses on the significant external resources utilized to achieve the procurement organization's goals and objectives, primarily supplier relationships. Supplier relationships are

assessed through operational and strategic measures. Operational measures involve monitoring aspects like supplier pricing compared to targeted prices, supplier quality, invoice processing quality, supplier delivery reliability, and adherence to sustainability standards. Strategic measures focus on assessing the buying company's position relative to its suppliers, including internal customer satisfaction with specific suppliers and overall relationship quality with key suppliers. Conducting regular supplier satisfaction surveys, such as biannual assessments, helps gauge performance on criteria like timely payment, responsiveness to supplier inquiries, ease of conducting new business, and integrity in customer dealings (Carr & Pearson, 2002; Nair et al., 2015; Weele & Rozemeijer, 2022).

6. Organizational effectiveness:

This dimension encompasses critical internal resources essential for achieving procurement organization goals. It includes the procurement staff, focusing on their background, training, development, competencies, and associated costs. Procurement management involves the organizational structure, strategic management, quality of strategies, action plans, reporting procedures, management style, and communication within the department. Additionally, it covers procurement processes, tools, and templates to ensure efficient operations with clear procedures and instructions for both procurement staff and suppliers. Furthermore, procurement systems are crucial, encompassing efforts to implement or enhance digital systems supporting daily procurement activities and providing essential management information on procurement performance (Weele, 2018; Weele & Rozemeijer, 2022).

The responsible procurement leader must monitor, measure and manage his team's performance. Using procurement metrics is the most effective way to measure the team's success. Procurement KPIs are critical to evaluating and measuring the efficiency and effectiveness of the procurement process (Weele & Rozemeijer, 2022). Organizations rely on Key Performance Indicators (KPIs) as tangible metrics to assess the effectiveness of their procurement operations. These KPIs encompass various facets of supply chain and purchase processes, such as cost savings, supplier performance, inventory turnover, procurement ROI (Return on Investment), purchase organization metrics, sustainability and other procurement data.

2.3.1. Cost savings

As a performance measurement KPI, cost savings refers to the amount of money saved through purchasing activities compared to a predefined baseline or target. It encompasses reductions in the costs of goods or services, including direct costs (e.g., purchase price) and indirect costs (e.g., transportation, storage) (Monczka et al., 2021).

Cost savings is a fundamental metric for evaluating the performance and contribution of the procurement function to the organization's bottom line. It directly impacts profitability, cash flow, and competitiveness (Monczka et al., 2021). By monotonizing cost savings we can identify opportunities for process improvement, supplier optimization, and value enhancement throughout the supply chain (Monczka et al., 2021). It also allows to measure procurement efficiency and effectiveness, and facilitates performance comparisons across time periods, departments, or industry benchmarks.

Cost savings can be measured in various ways, depending on the organization's goals, objectives, and procurement strategies. Common methods include (Flynn, 2015; Monczka et al., 2021; Weele, 2018):

- Actual vs. Budgeted Costs: Comparing actual expenditures with budgeted amounts to determine the extent of cost savings achieved.
- Price Reductions: Calculating the difference between the original purchase price and the negotiated or contracted price.
- Process Efficiency Gains: Assessing savings resulting from process improvements, such as reducing cycle times, eliminating non-value-added activities, or optimizing inventory levels.
- Total Cost of Ownership (TCO) Reductions: Evaluating savings achieved by considering all costs associated with acquiring, owning, and using a product or service over its entire lifecycle.

Various factors can influence the cost savings. When negotiators have effective negotiation skills they are able negotiate with suppliers lower prices, volume discounts, favorable payment terms, and value-added benefits (Monczka et al., 2021). Also strategic sourcing initiatives, such as supplier consolidation, global sourcing, and supplier development, contribute to cost savings by leveraging economies of scale and improving supplier performance (Lamming, 1993).

Measuring costs savings can be challenging because ensuring the accuracy and completeness of data related to procurement expenditures, savings calculations, and performance metrics is

difficult (Monczka et al., 2021).External Factors also have a big impact on cost savings, external market dynamics, such as fluctuating commodity prices, currency exchange rates, and regulatory changes, may impact the ability to achieve and measure cost savings accurately (Sodhi, 2014).

Continuous monitoring, analysis, and benchmarking of cost savings performance against industry standards, best practices, and organizational goals are essential for driving continuous improvement (Hugos, 2018). Establishing targets, setting performance benchmarks, and implementing corrective actions based on performance variances contribute to a sustained cost savings and procurement excellence (Monczka et al., 2021).

In conclusion, cost savings as a KPI in purchase performance is a critical measure of procurement effectiveness, efficiency, and value creation. By implementing robust measurement methodologies, fostering strategic supplier relationships, optimizing processes, and embracing continuous improvement practices, organizations can achieve significant cost savings and enhance their competitive position in the marketplace.

2.3.2. Supplier Performance

Supplier performance is a critical aspect of procurement management and measuring it effectively can significantly impact organizational success. By evaluating supplier performance organizations can gain insights into the efficiency, effectiveness, and overall value derived from their procurement activities (Carr & Pearson, 2002; Nair et al., 2015).

Supplier performance metrics often include indicators related to the quality of goods or services provided. According to Monczka et al. (2021), evaluating supplier quality is essential for ensuring that purchased items meet specified standards and contribute to overall product or service quality. Suppliers' assessment of responsiveness, communication, and collaboration capabilities are essential performance indicators (Carr & Pearson, 2002).

Timely delivery of goods or services is also crucial for maintaining operational efficiency and meeting customer demand. On-time delivery metrics help assess suppliers' reliability and performance in meeting delivery deadlines (Giunipero et al., 2006). Assessing suppliers' compliance, financial stability, and resilience helps mitigate supply chain risks. Effective risk management is critical for maintaining supply chain continuity and minimizing disruptions (Chopra, 2019).

Monitoring supplier costs is also important and essential for optimizing spending. Cost-related metrics such as pricing competitiveness and cost savings achieved through negotiations are also

vital for assessing procurement effectiveness (Burt, 2010).

Measuring supplier performance involves the systematic assessment of various metrics to evaluate how well suppliers are meeting predefined criteria and performance objectives. Supplier performance can be measured by:

-Quality Performance:

Measuring the frequency and severity of defects in received goods or services can give us an insight on quality performance of the supplier. This can be quantified by calculating the number of defects per unit or using a quality rating scale (Monczka et al., 2021). Also measuring the meeting of specifications by assessing the extent to which delivered goods or services meet predefined specifications or standards can give us a powerful insight on the quality of the supplier. Deviations from specifications indicate potential quality issues (Giunipero et al., 2006).

-Delivery Performance (supplier lead time):

On-Time Delivery is a delivery performance indicator and it's given by the calculation of the percentage of orders delivered on time compared to the total number of orders placed. The late deliveries can be tracked and analyzed to identify root causes and improvement opportunities (Giunipero et al., 2006).

Also to measure delivery performance there´s lead time variability measured by the consistency of lead times provided by suppliers. Variability in lead times can impact production scheduling and inventory management (Burt, 2010).

- Cost Performance:

Cost performance is given by the calculation of price variance and by total cost of ownership. To assess price variance, we compare the negotiated prices with actual prices paid for goods or services, this can indicate opportunities for cost savings or issues with supplier pricing consistency (Carr & Pearson, 2002; Weele, 2018) The Total Cost of Ownership (TCO) evaluates the total cost associated with procuring goods or services from a supplier, including acquisition costs, operational costs, and maintenance costs (Chopra & Meindl, 2016).

-Relationship Management:

To assess the relationship of the supplier with the organization's supplier surveys are held. They collect feedback from internal stakeholders and supplier representatives to assess communication effectiveness, responsiveness, and collaboration (Monczka et al., 2021).

Companies can also develop scorecards that evaluate suppliers based on predefined criteria such as communication, reliability, and willingness to collaborate (Giunipero et al., 2006; Monczka et al., 2021).

In summary, supplier performance serves as a crucial KPI for purchase performance, providing insights into quality, delivery, cost, relationship management, risk mitigation, and continuous improvement within the procurement function.

2.3.3. Inventory turn over

The inventory turnover ratio measures how quickly products are sold or used after acquisition. High inventory turnover is associated with efficiency in purchasing management. Studies suggest that high inventory turnover can lead to cost reduction and improvements in operational efficiency (Jacobs et al., 2011; Stevenson, 2021).

To enhance inventory turnover, strategies such as demand analysis and forecasting, sales promotion, and product mix review are recommended (Jacobs et al., 2011). Additionally, collaborating with suppliers and implementing automated inventory management systems are effective practices (Stevenson, 2021).

Inventory turnover is a crucial metric used in assessing the efficiency of a company's procurement process (Chopra & Meindl, 2016; Monczka et al., 2021; Weele & Rozemeijer, 2022). It measures the number of times inventory is sold or used within a specific period, typically a year, indicating how effectively a company manages its inventory levels. In procurement, inventory turnover serves as a performance indicator, reflecting the effectiveness of procurement strategies, inventory management practices, and supplier relationships.

A high inventory turnover rate suggests that inventory is efficiently managed, with goods quickly moving in and out of stock. Conversely, a low turnover rate may indicate excess inventory, poor purchasing decisions, or inadequate demand forecasting. For procurement departments, optimizing inventory turnover is essential for minimizing carrying costs, maximizing working capital, and ensuring timely availability of goods to meet customer demand.

Efficient procurement practices aim to reduce excess inventory, which incurs storage costs. By maintaining an optimal inventory turnover rate, procurement teams can minimize carrying costs associated with storing excess inventory, thereby improving cost efficiency (Chopra & Meindl, 2016).

High inventory turnover implies that capital invested in inventory is continually reinvested, enhancing liquidity and working capital management. This allows procurement departments to allocate resources more effectively to other strategic initiatives (Monczka et al., 2021).

Inventory turnover provides insights into supplier performance. Procurement professionals can assess supplier reliability, delivery times, and product quality based on how well suppliers support achieving target turnover rates (Weele, 2018).

Procurement teams rely on inventory turnover data to refine demand forecasting and procurement planning. By analyzing historical turnover rates alongside market trends and demand forecasts, organizations can optimize inventory levels and prevent stockouts or overstock situations (Narasimhan & Das, 2007).

High inventory turnover is often associated with lean inventory management practices, such as just-in-time (JIT) inventory systems. Procurement departments can leverage inventory turnover metrics to implement lean principles, minimizing inventory holding costs while maintaining operational efficiency (Lambert & Cooper, 2000).

By utilizing inventory turnover as a metric for procurement performance, organizations can optimize their procurement processes, enhance supply chain efficiency, and ultimately drive competitive advantage in the marketplace.

2.3.4. Procurement ROI:

Procurement ROI can be calculated using the following formula (Investopedia, 2024):

*(Net Procurement Savings/Total Procurement Cost) *100%*

Where:

Net Procurement Savings: Refers to the total cost savings achieved through procurement activities, which include negotiated discounts, reduced purchase prices, optimized supplier contracts, and process efficiencies.

Total Procurement Cost: Encompasses all costs associated with the procurement function, such as salaries of procurement staff, technology investments, supplier management costs, and any other expenses incurred in the procurement process.

Procurement ROI provides insights into the financial impact of procurement efforts on the organization's bottom line. A positive ROI indicates that procurement activities are generating value and contributing to cost reduction and profitability (Bozarth & Handfield, 2019)

By evaluating procurement ROI, organizations can make informed decisions regarding resource

allocation, supplier selection, and process optimization. It helps identify areas where investments yield the highest returns and where adjustments are needed to enhance efficiency and effectiveness (Monczka et al., 2021)

Procurement ROI serves as a valuable metric for assessing the financial impact and strategic contribution of procurement activities within organizations. By effectively measuring and managing Procurement ROI, organizations can drive cost savings, enhance supplier relationships, and improve overall performance.

2.3.5. Procurement organization metrics

Procurement performance is a critical aspect of an organization's ability to meet its goals and objectives effectively. As has been previously argued, purchasing efficiency is contingent upon the resources required to achieve the objectives set for the purchasing function. Consequently, efficiency is a function of the purchasing organisation, specifically in terms of the manner in which it is structured, the systems employed, the procedures and guidelines in place, and the composition of the purchasing staff. Each of these elements plays a vital role in ensuring that procurement activities are conducted efficiently and effectively(Weele & Rozemeijer, 2022).

So evaluating the procurement process should involve assessing key data referent to the personnel and the organization of the department, the reporting relationships and the procurement processes and systems (Weele & Rozemeijer, 2022).

The foundation of any successful procurement organization is its staff. The background, level, training and development, and competencies of procurement personnel are essential factors that influence procurement performance. Staff background, encompassing their educational qualifications and previous experience, brings diverse perspectives and expertise to the team. The hierarchical levels within the team, from junior buyers to senior managers, ensure a broad range of skills and decision-making capabilities (Weele & Rozemeijer, 2022).

Continuous professional development through targeted training programs keeps the procurement staff abreast of the latest practices, market trends, and regulatory requirements. Core competencies, such as negotiation skills, strategic thinking, and supplier relationship management, are crucial for executing procurement activities effectively. Balancing the cost of hiring and retaining skilled procurement personnel against their value to the organization is also a critical consideration(Weele & Rozemeijer, 2022).

To measure the personnel and organization is considered the total number of employees, number of procurement employees (classified according to educational level, functioning level,

years of experience), and ratio of procurement employees to total employees.

Robust reporting procedures ensure transparency and accountability by providing systems and processes for monitoring and reporting procurement activities. The management style, whether more directive or collaborative, influences team dynamics and performance. Additionally, an efficient communication structure within the procurement team and with other departments and stakeholders is vital for smooth operations and quick issue resolution.

In the digital age, the implementation and continuous improvement of procurement systems are crucial. These digital systems support procurement staff and other employees in their daily activities, such as supplier management, order processing, and inventory control. Adopting advanced e-procurement platforms, ERP systems, and specialized procurement software can significantly enhance operational efficiency, so it is important to measure those implementations to assess the performance of the procurement and supply chain departments (Weele & Rozemeijer, 2022)

Moreover, these systems generate valuable management information on procurement activities and performance. This data provides insights that enable informed decision-making and strategic planning, ensuring that the procurement function contributes effectively to the organization's success. In this scope is important to gather data to check the digital technologies that are being applied in the department (Weele & Rozemeijer, 2022).

Procurement performance is a multifaceted dimension that relies on the effective management of internal resources. By focusing on well-trained and competent staff, strategic procurement management, efficient processes, and robust digital systems, organizations can achieve their procurement objectives and drive overall success. Each element—staff, management, processes, and systems—must work in harmony to create a procurement function that is both efficient and effective, ultimately supporting the broader goals of the organization. It makes sense, therefore, to make measurements aimed at evaluating the training and the motivation of the purchase team, the purchasing management quality, the purchasing systems and procedures, and to evaluate the information system in order to check on the purchase and supply chain department performance (Weele & Rozemeijer, 2022).

2.3.6. Sustainability

In contemporary business practices, sustainability has evolved from a peripheral concern to a central focus area, especially within procurement. The recognition of the interconnectedness of economic, environmental, and social factors has led to an increasing incorporation of

sustainability metrics into procurement processes. Sustainability in procurement entails the assessment and mitigation of the environmental impact of sourcing activities.

By prioritizing suppliers that adhere to eco-friendly practices, utilize renewable resources, and minimize waste generation, organizations can significantly reduce their carbon footprint and contribute to environmental conservation (Handfield et al., 2019). Sustainable procurement strategies such as green sourcing, eco-labeling, and life cycle assessments enable companies to make informed decisions that prioritize environmental sustainability throughout the supply chain.

In addition to environmental considerations, sustainability in procurement encompasses social responsibility and ethical sourcing practices. This entails ensuring fair remuneration, safe working environments, and respect for human rights throughout the supply chain (Carter & Rogers, 2008). By partnering with suppliers who adhere to ethical labor practices and community engagement, organizations discharge their social responsibility while mitigating the risks associated with labor violations and reputational damage (Caniato et al., 2014).

The integration of sustainability metrics into procurement enhances supply chain resilience and transparency. Diversifying sources of supply, reducing dependence on single suppliers or regions, and implementing risk management strategies enable organizations to better withstand disruptions such as natural disasters, geopolitical instability, or market fluctuations (Seuring & Müller, 2008). Transparency in sourcing practices fosters trust among stakeholders and enables informed decision-making, thereby enhancing the overall resilience of the supply chain (Walker & Phillips, 2009).

However, there are significant challenges in monitoring sustainability. Global supply chains are inherently complex, characterized by diverse stakeholders, regulatory requirements, and cultural nuances. Identifying sustainable suppliers, verifying compliance, and monitoring performance throughout the supply chain is a difficult and complex process (Carter & Jennings, 2004). Organizations must navigate these complexities by leveraging technology, fostering collaboration, and establishing robust governance structures to ensure sustainability objectives are met across the procurement process.

One of the primary challenges in adopting sustainable procurement practices is balancing environmental and social objectives with cost considerations. While sustainable sourcing may entail higher upfront costs, organizations must recognize the long-term benefits and competitive advantages associated with sustainability (Carter & Jennings, 2004). The financial benefits of resource efficiency, brand enhancement, and risk mitigation outweigh the initial investment, rendering sustainability a strategic imperative rather than a financial burden.

Sustainability emerged as a critical metric in procurement, driving environmental stewardship, social responsibility, and ethical practices across supply chains.

By integrating sustainability into procurement processes, organizations can enhance competitiveness, mitigate risks, and contribute to a more equitable and sustainable future. Despite the challenges involved, the adoption of sustainable procurement practices is essential for fostering resilience, transparency, and responsible business conduct in a rapidly evolving global landscape.

The concept of sustainability has emerged as a critical metric in the field of procurement, driving environmental stewardship, social responsibility, and ethical practices across supply chains. By integrating sustainability into procurement processes, organisations can enhance their competitiveness, mitigate risks, and contribute to a more equitable and sustainable future. Despite the challenges involved, the adoption of sustainable procurement practices is essential for fostering resilience, transparency, and responsible business conduct in a rapidly evolving global landscape.

2.3.7. Benchmarking

Performance benchmarking is a continuous approach used to set performance standards, processes, measurements, and objectives by comparing against the best competitors or industry leaders. This method, initially defined by Camp, involves measuring products, services, and practices against those of top-performing companies to set performance targets and strategies. Benchmarking is not limited to competitors; noncompetitor comparisons are often used, especially for processes common across industries like supply chain management (Monczka et al., 2021).

There are three main types of benchmarking: strategic, operational, and support-activity. Strategic benchmarking compares market strategies, operational benchmarking focuses on functional activities, and support-activity benchmarking evaluates the cost-effectiveness of internal support functions against external providers (Monczka et al., 2021).

The benefits of benchmarking include identifying best practices, encouraging change, providing market intelligence, and fostering professional contacts. Successful benchmarking requires it to be integrated into the firm’s processes, supported by executive management, and based on detailed data collection (Monczka et al., 2021).

The benchmarking process consists of five phases: planning (identifying what to benchmark and data sources), analysis (understanding why the benchmarked company is better),

integration (communicating findings and setting goals), action (translating findings into plans), and maturity (achieving continuous performance improvement). This formal process ensures that performance targets are externally focused, helping organizations maintain competitive practices and achieve continuous improvement (Monczka et al., 2021).

3. Methodology

The purpose of this research was to compare the theoretical frameworks of best practices in procurement and supply chain management performance assessment with the actual practices implemented at Altice company to assess the performance of the procurement and supply chain department. This chapter outlines the research design, data collection methods, and data analysis techniques.

3.1. Research Approach

The research design consists of the plan of action to obtain and analyse data in order to achieve the essential objectives of the study, which usually consists of answering the research questions (Dezin & Lincoln, 2018). According to Saunders et al. (2020), some of the approaches applied in management research can be: experiment, survey, archival and document research, case study, ethnography, action research and emergent theory.

In order to achieve the objective of this research, a case study approach was adopted. The research conducted adopts a qualitative case study design, well-suited for an in-depth exploration of contemporary phenomena within their real-life contexts (Yin, 2009). This approach enables a comprehensive examination of Altice's procurement and supply chain management practices, providing detailed insights into how these practices align with or diverge from theoretical models. According to Stake (1995), case studies are particularly effective for exploring complex organizational processes and understanding the nuances of real-world implementation. By leveraging multiple data sources, this method allows for an in-depth investigation of Altice's performance assessment processes, offering rich, contextual insights.

3.2. Data Acquisition and Analysis

The case study was conducted according to a previously developed theoretical framework, which was acquired through online databases and through reviewing of books and articles, but also by google scholar and other scientific research websites. To narrow the search down, a few keywords were used during this process, the most used were: Purchasing performance assessment, Performance measurement in purchasing, Key Performance Indicators in Purchase, Supply Chain performance, Supply Chain Performance Assessment and Performance

measurement of Supply chains. The theory chapter is based on the interpretation of the literature analysed.

The study and data collection were conducted during the author's internship in the Procurement and Supply chain department of Altice Portugal. To ensure a robust and comprehensive understanding of Altice's procurement and supply chain management practices, multiple data collection methods were employed, including interviews, document analysis, and observations. Semi-structured interviews were conducted with key personnel in the procurement and supply chain departments at Altice. These interviews aimed to gather detailed information about the company's performance assessment methods, tools, and metrics.

The interviews were held with a semi-structured technique. The questions were focused on the area that were to be investigated, but were open, so discussion could occur and both topics and information that in other scenarios could have been neglected were able to prevail. According to Bell et al. (2022) the semi structured interview allows the subject to elaborate on questions while the interviewer can ask unprepared question and hence gain more information within the topic.

Qualitative interviews were carried out in order to establish an understanding of how the department’s performance was assessed and understand the metrics used. Interviews were carried out with all purchasing managers to understand the processes performed and how their work affected the KPIs.

Internal documents, such as performance reports, procurement policies, and strategic plans, were reviewed to gain insights into the formalized processes and metrics used by Altice. Document analysis provided additional context and helped corroborate the information obtained from interviews (Bowen, 2009).

Direct observations of procurement and supply chain management activities were conducted to understand the practical implementation of performance assessment processes. Observations focused on the use of software tools, data management practices, and interdepartmental interactions. This method provided a real-time understanding of the operational context and practical challenges (Creswell & Poth, 2017).

Finaly the identified practices at Altice were compared with the theoretical framework on the practices found in the literature review. This comparative analysis highlighted areas of alignment and divergence, providing insights into the practical challenges and adaptations made by Altice (Eisenhardt, 1989).

4. Case Study

4.1. General description of the company

Altice Portugal S.A. (formerly Portugal Telecom or PT) headquarters and main operations is based in Lisbon, Portugal, having other offices, operations centers and research centers spread across the country (Altice Portugal, 2024c).

Altice Portugal is the largest telecommunications service provider in Portugal. The company operates across various segments of the telecommunications industry, including fixed-line, mobile, multimedia, data, and business solutions (Altice Portugal, 2024b).

Altice Portugal is a wholly owned subsidiary of Altice Group, a multinational cable and telecommunications company with a presence in France, Israel, Belgium and Luxembourg, Portugal, the French West Indies and the Indian Ocean Area, and the Dominican Republic (the "Overseas Territories") (Altice Portugal, 2024b).

Altice Portugal's origins can be traced back to the establishment of Portugal Telecom (PT) in 1994, which itself was a result of the merging and restructuring of several earlier telecommunications entities in Portugal. Portugal Telecom played a dominant role in the Portuguese telecom market for decades. In 2015, the French telecommunications group Altice acquired PT, integrating it into its extensive portfolio of telecom operations across Europe and other regions. This acquisition marked the rebranding of Portugal Telecom to Altice Portugal in 2017 (Altice Portugal, 2024b).

In the Portuguese market, Altice Portugal is a client-oriented company, with a focus on innovation and execution in order to meet the needs of the digital consumer. Altice Portugal is structured by customer segments, with the objective of fostering collaboration between functions and platforms in order to guarantee the optimal customer experience. Altice Portugal's objective is to generate long-term value for all customer segments (Altice Portugal, 2024a).

Altice Portugal holds a significant share of the Portuguese telecom market, competing primarily with NOS and Vodafone Portugal. The company's extensive infrastructure, particularly its fiber optic network, positions it as a leader in the provision of high-speed internet services. Additionally, Altice Portugal's investments in 5G technology are expected to further enhance its market position and drive innovation in the telecom sector (Altice Portugal, 2024b).

4.1.1. Strategic goals

Altice Portugal purpose is developing technology to connect people and to provide people education, health care, culture and entertainment. Altice goals is to be lead in the digital and technologic transformation trough innovation.
The companies' values focus on leadership, innovation, collaboration and creativity.
The strategic goals focus on offering a quality service, innovate and do things differently, bet on talented people, developing the brand as a unity of the different segments and develop a sustainable company.
Altice´s objective is to generate long-term value for all customer segments assuring its profitability.

4.1.2. Services

Altice Portugal offers a variety of telecommunications services like (Altice Portugal, 2024a):

1. **Fixed and Mobile Telephony**: The company provides comprehensive telephony services for both residential and business customers. Their mobile services operate under the MEO brand, which is one of the leading mobile operators in Portugal.
2. **Broadband Internet**: Altice Portugal is a major provider of high-speed internet services, including fiber optic broadband. The company has invested significantly in expanding its fiber network across the country, aiming to enhance connectivity and internet speeds.
3. **Television Services**: MEO, the television brand of Altice Portugal, offers a wide range of TV channels and on-demand content. The service includes features like interactive TV, HD channels, and a variety of subscription packages to cater to different customer preferences.
4. **Business Solutions**: Altice Portugal provides a suite of solutions for businesses, including cloud services, data centers, cybersecurity, and IoT (Internet of Things) applications. These services are designed to support digital transformation and enhance operational efficiency for businesses of all sizes.

Altice Portugal group operates several well know communication brands like MEO, MEO

Empresas, Sapo and Moche (Altice Portugal, 2024a).

MEO is the flagship brand of Altice Portugal, offering a comprehensive suite of services including mobile and fixed telephony, broadband internet, and television services. Established in 2007, MEO has become a leading brand in the Portuguese telecom market.
MEO is one of the top mobile operators in Portugal, providing extensive coverage and a variety of mobile plans tailored to both individual and business customers. The brand is known for its innovative offerings, including 4G and 5G services. The company also offers high-speed internet services through its extensive fiber optic network. This includes various packages that cater to different needs, from basic internet access to ultra-fast gigabit connections (Altice Portugal, 2024a).

MEO's television service includes a wide range of channels, on-demand content, and interactive features. The platform supports high-definition (HD) and 4K content, and offers various subscription packages to meet diverse viewing preferences. The service includes functionalities like cloud DVR, catch-up TV, and a user-friendly interface.
The brand also sponsors many well know events across Portugal and associates itself to the one of the biggest event spaces in Portugal, MEO Arena (Altice Portugal, 2024a).

MEO Empresas is the brand dedicated to business customers, providing a range of solutions designed to support companies of all sizes in their digital transformation efforts. It offers robust connectivity options including fixed and mobile broadband, dedicated internet access, and VPN services, provides cloud computing solutions, data storage, and data center services, enabling businesses to leverage scalable and secure IT infrastructure.
MEO Empresas also develops Internet of Things (IoT) applications and smart solutions to help businesses optimize operations and innovate in their respective fields and offers comprehensive cybersecurity solutions to protect businesses from digital threats and ensure data integrity (Altice Portugal, 2024a).

SAPO is Altice Portugal's digital media brand, offering a range of online services and content. One of the leading internet portals in Portugal, providing news, entertainment, sports, and lifestyle content, aggregating information from various sources and offering a comprehensive news service. SAPO also provides email services and cloud storage solutions, catering to both personal and business users (Altice Portugal, 2024a).

MOCHE is a youth-oriented mobile brand under Altice Portugal, targeting younger consumers with affordable and flexible mobile plans. The plans are designed to meet the needs and preferences of younger users.

The brand often engages with its target audience through events, sponsorships, and social media campaigns, fostering a strong community around the MOCHE brand.

Altice Portugal is also constituted by several companies like Altice Foundation, Altice Labs, and Health Care Altice and the newly founded MEO Energy, connecting the business to the energy market and providing the costumer a sustainable energy option (Altice Portugal, 2024a).

4.1.3. Company organization

The telecommunications industry in which Altice Portugal operates is characterized by high levels of dynamism and competition. Technological advances and shifts in consumer preferences require constant adaptation and innovation to ensure continued success. To effectively address these challenges, Altice Portugal has established a robust organizational structure that ensures efficient decision-making, clear communication, and the effective execution of its strategic objectives.

The command chain at Altice Portugal is designed to ensure seamless coordination across various functions and departments and is organized as it follows (Altice Portugal, 2024b):

Figure 3 Altice´s chain of command

The company has over 30 departments under the command of the pertinent Chief Executive Officer depending on the departments functions and role on the company. Understanding the

organizational structure of the command chain at Altice Portugal is essential for understanding how the company operates and achieves its strategic goals. By delineating clear roles and responsibilities, ensuring effective communication, and continuously improving its processes, Altice Portugal positions itself as a leader in the telecommunications industry, capable of delivering exceptional value to its customers and stakeholders.

4.2. The Supply chain and Purchase Department

The supply chain and purchase department is under the command of the Chief Financial Officer (CFO) Gonçalo Camolino along with the other financial management and control related departments. The supply chain and purchase department is under the responsibility of Bruno Santos as he is the director of the department. The department is organized by 5 teams as it follows (Altice Portugal, 2024b):

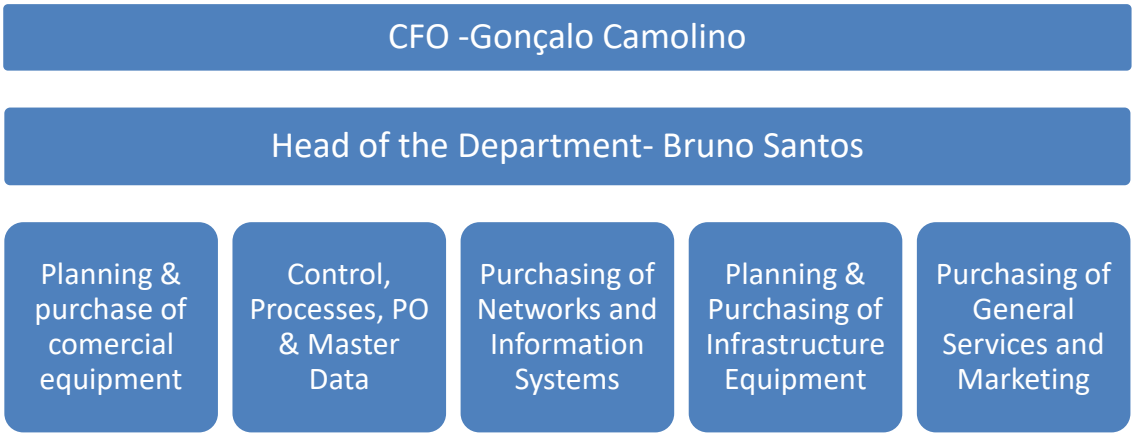

Figure 4 Supply Chain and Procurement department

Each sector is then responsible and specialized in the purchase of specific materials, equipment or services needed to maintain the operations of the company.

As previously described, the Supply Chain and Purchasing Department (SPD) is divided into five distinct areas. Four of them tackle and negotiate different purchase requests depending on the category sector and one is responsible for support activities and ordering processes.

The descriptions of the different areas presented in the following sections are supported by specific internal documents (as quoted) and information gathered from interviews with various supply chain and procurement managers.

4.2.1. Planning & purchase of commercial equipment

The Planning and purchase of commercial equipment team is responsible for planning and negotiating the stocks of equipment and material from mobile phones, fixed-line phones, tablets, and PCs, taking into account the needs of the business units, business strategy, and stock coverage objectives (Altice Portugal, 2024b).

This area is divided in two sectors:

Figure 5 Planning & Purchase of commercial equipment organization chart.

The supply management is responsible for the evaluating and managing the budget and purchase of mobile phones, fixed-line phones, tablets, and PCs according to the new market trends and developments. They are responsible for the procurement of equipment requested by the company's business areas and conduct negotiation processes in strict compliance with applicable general legal principles, the current regulations within the Altice Group, and the Procurement Manual (Altice Portugal, 2024b).

Defining the strategy portfolio development and maintenance, including strategic balance between suppliers, the evolution of technical features of devices, and the potential for ARPU generation across various platforms is also an essential role of this area, optimizing equipment acquisition efforts according to the value of target customers, and considering inputs from business units.

The other sector is the purchase planning, responsible for preparing the purchase and delivery plans, ensure the EDI (electronic data interchange) process with suppliers, develop business and activity KPIs and control the invoicing and supplier credits (Altice Portugal, 2024b).

4.2.2. Purchasing of Networks and Information Systems

This area is responsible for negotiating the purchase of all material and software used to install the Altice's network. It´s divided in two sectors, the networks and the information systems (Altice Portugal, 2024b):

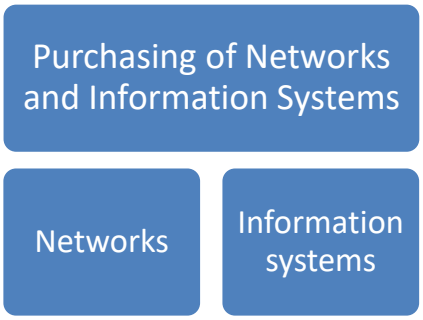

Figure 6 Purchasing of Networks and Information Systems organization chart

The networks sector is responsible for ensuring the negotiation and purchases of goods and services related to the telecommunications network.

The scope of the Telecommunications Network Negotiation and Purchase area includes all acquisitions of goods and services relating to voice switching and next generation networks, fixed and mobile access network, fixed and mobile core, data networks, transmission systems, applications and service platforms, business customer solutions relating to telecommunications networks, tv and multimedia distribution, submarine cables and Satellite.

The information system sector is responsible for ensuring the negotiation and purchases of goods and services related to the information systems, mainly software to connect the network system. The scope includes all purchases of goods and services relating to micro informatics, mainframes, distributed systems, servers and its maintenance, system software, application software, management and security software, information systems services and resources, IT Consulting services, business customer solutions relating to information systems and turn key solutions (Altice Portugal, 2024b).

4.2.3. Planning & Purchasing of Infrastructure Equipment

The Planning and Purchasing of Infrastructure Equipment is responsible for managing the customer materials and equipment procurement processes (scheduling, delivery, monitoring, checking invoices) and the materials used in the construction of the infrastructure of the telecommunications network (Altice Portugal, 2024b).

This area is divided in two sectors, the client equipment and the infrastructure material.

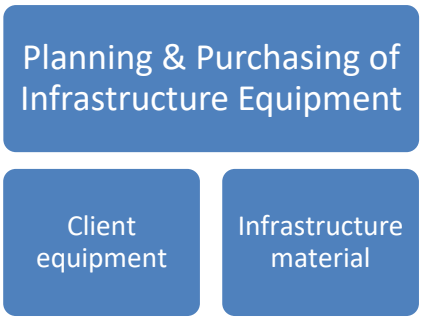

Figure 7 Planning and Purchasing of Infrastructure Equipment organization chart

The client equipment area is responsible for defining policies and strategies for planning, negotiating, and supplying customer equipment, planning the supply of customer materials and equipment, interacting with the various elements of the supply chain, namely technical, commercial areas, Service Providers (SP) and Partner(s) in order to ensure its correct functioning.

Also, this area is responsible for coordinating needs with reuse activities, in order to minimize purchases and avoid unused stocks, collaborating in managing the life cycle of customer equipment, ensuring obsolescence management and ensuring the equipment registration and serialization process.

The equipment and Infrastructure negotiation and purchase area covers all purchases of goods and services relating to B2C CPE's (home gateways, fiber gateways, set top boxes, commands, power supplies, Wi-Fi Equipment, Extenders, among others), B2B CPE's (routers, switches, landlines, switchboards, video conferencing, Wifi solutions and equipment, headsets, among others),Infrastructure equipment, home automation and tele security solutions, electronic and passive components for production of equipment for sale and prototypes and various accessories for B2C and B2B offers (Altice Portugal, 2024b).

The scope of the Equipment and Infrastructure Negotiation and Purchase area includes all purchases of goods and services relating to Altice Network Infrastructure Materials and

Equipment, including Fiber, copper and coaxial cables, copper and fiber cable accessories, wooden and concrete posts, rims with caps, tubes, transmission and switching splitters, satellite antennas and accessories, cables and accessories for customer homes, public posts, network access cards (SIM Cards and eSIM's), Electronic and passive components for production of equipment for sale and prototypes (Altice Portugal, 2024b).

This area defines policies and strategies for planning, negotiating, and supplying infrastructure materials interacting with the various elements of the supply chain, namely technical, commercial areas, Service Providers (SP) and Partner(s) in order to guarantee its correct functioning (Altice Portugal, 2024b).

4.2.4. Purchasing of General Services and Marketing

The Purchasing of General Services and Marketing is the area responsible for the negotiation of outsourced services and material related to the marketing strategy of the company (Altice Portugal, 2024b).

This area is divided in two sectors, the marketing and general services area and the specialized services area:

Figure 8 Purchasing of General Services and Marketing organization chart

The Marketing and general services area is responsible for negotiating and purchasing services and marketing-related means.

The procurement scope of the marketing and general services area includes goods and services related to Outsourcing, including business process outsourcing and data analysts, call center operation and temporary work services, training, certifications and translations, own stores, printing and finishing, credit and collection, logistics and transport services, advertising media, advertising and production of multimedia and audiovisual content, market research, sponsorships, events, fairs, stands and field marketing (merchandising materials),

decorations/renovations, catering and promoters, transversal services, including legal, tax services, legal certification of accounts, audits, consultancy, personal protective equipment and tools, waste management and store technicians uniforms (Altice Portugal, 2024b).

The specialized services area is responsible for the procurement of specialized services and goods related to civil construction and maintenance works in stores and heritage, Furniture for stores and buildings, labor and services related to network installation and maintenance, energy, generators, batteries, ups and solar panels, surveillance services, intrusion and fire detection systems, cleaning services, travel, agencies and hospitality, automotive fleet and fuels, parking and car washing and health products and services to support employees (Altice Portugal, 2024b).

4.2.5. Control, Processes, PO & Master Data

The Control, Processes, PO & Master Data area is divided into two sectors: the Contracts, Processes and Control sector, and the Orders and Master Data sector (Altice Portugal, 2024b):

Figure 9 Processes, control and orders organization chart

The Contracts, processes and control area is responsible for promoting the implementation of projects within the scope of designing processes and information systems, with the aim of improving the organizational efficiency and developing and promote the Altice Portugal Purchasing Manual, ensuring its continuous updating and improvement and the correct characterization of purchasing processes in terms of type of purchase and method of calculating business gains.

This area is responsible for preparing the weekly and monthly performance indicators for monitoring and controlling Altice Portugal's purchasing plan, activity and objectives.

It also supports the development and implementation of the Integrated Quality, Environment and Safety System, ensures the signing of contracts relating to the supply of goods and provision

of services and the management of the Altice Portugal Suppliers Club.

The Orders and master data area is responsible for promoting and implementing good practices and standard rules at Altice Portugal for managing logistics master data, as well as ensuring its maintenance. Promote the adoption of self-service tools and processes in the purchasing area across Altice Portugal user areas, ensuring the management of product and service catalogs (including graphic materials) and the distribution of purchased materials to users, ensuring iterations with the requesting areas to confirm receipt of goods or services and check and release invoices for payment to suppliers (Altice Portugal, 2024b).

This area is the responsible for the ordering and maintenance of orders for core and non-core products and services, ensuring purchase compliance with current procedures and ensuring iterations with the requesting areas to confirm receipt of goods or services, coordinating the checking and unblocking of invoices for payment to suppliers.

4.3. Internship description

In September of 2023 the Author began her internship at Altice Portugal joining the internship program DARWIN. The program DARWIN is an internship program designed by the company to foster young professionals who are concluding or just finished their masters. The goal of the program is reviving the company by attracting young adults and their new ways of thinking, giving the company a new perspective, and presenting alternatives and improvements in the company's processes while at the same time train the young adults in the business world and give them experience in the work world.

Throughout the internship, various challenges are presented along with tools and training necessary to develop business projects and a professional career.

The various candidates that pass the selection phase are interviewed along with the mentors of the different areas of the company to choose which area they are best suited to.

The author's internship took shape after the interview, in the area of Control, Processes, PO & Master Data in the purchasing department under the mentoring of Margarida Lazaro (head of the contracts, processes and control area). It was part of the internship program to develop the migration of the software used in the procurement process, giving suggestions for improving both processes, operation flows and visuals, making the pages more user friendly and intuitive and to help improve and update the software. This process involves making the documentation with detail requirements for the new software based on the old software in terms of page layouts and functions and test the new software for bugs and make sure flows of processes of the

requests and the procurement approvals is correct and pass through the correct phases of approval according to the competence's delegation.

It is also part of the Author's role to help produce some of the department performance reports for the management and the department director.

By extracting the data loaded in the procurement software and organizing it using excel it's possible to produce different reports to check on the department's performance. After compiling the most important data about the departments' performance this data is presented in the department's general dashboard where the department staff can easily visualize the fulfillment of the department's goals set in the beginning of the year based on previous goals achieved and the markets forecast along the year (socioeconomic factors, political factors, environmental factors, etc.).

Besides the dashboard the author was also responsible for making the contracts report used to see at what stage specific contracts are and how many are being revised and the bank guaranties report, since some purchases require bank guaranties from the supplier. These reports serve to keep a record of all the documentation of the purchase, since they are mandatory in some cases, these reports remind the staff of which processes are missing documentation, so they do not fall behind and get forgotten.

The author is also responsible for the annual and semestral sustainability reports which contain the weight of paper used, meaning all paper products and materials purchased and used by the department.

The role of the author in the department also covers support activities to the negotiators helping them with the use of the software, helping to fix and detect software bugs, and updating suppliers' data on the internal software to make the correct exportation of the purchase conditions to the SAP software, which is the software used to place and make the purchase orders.

4.4. The procurement process

Similar to what was described as being the process of the purchase department in the literature review, this department has a strategic focus on cost reduction and cost control of the company. The function starts when the request is made by one of the other departments of the company following its needs. For this, the department uses software developed by the company to submit and see through the process, beginning with the request to the the ordering and fulfilling of it. This software is prepared to receive the orders and log in all information needed through the process, it also directs the request through its various phases of approval depending on the amount to be spend and if it follows through the financial plan of department in question. As detailed in the literature review, the specification phase is crucial for determining whether the requirements for products or activities will be produced internally or contracted out. At Altice, this phase involves distinguishing between functional specifications, which define the functionality needed by the user, and technical specifications, which describe the product's characteristics in technical drawings and schedules.

After the approval of the request, depending on the department that originated the request, the software will be forwarded to the corresponding negotiation team (mentioned above) depending on the service or good category.

After the request has been made and approved, according to its characteristics, by the proper chain of command described in the Purchasing Manual, the request is now ready for the SPD to tackle (Altice Portugal, 2024g).

The person responsible for each negotiation team will then allocate the requests to the negotiator that he sees fit to deal with the request.

After receiving the request, the negotiator will begin the procurement process. Before releasing the specifications to suppliers, the procurement team at Altice ensures formal approval and revises them with the internal client to prevent mistakes and reduce costs associated with technical changes to get it ready for the market research (Altice Portugal, 2024g). This aligns with the literature's emphasis on the importance of formal approval and close collaboration with the client to ensure accuracy and cost-effectiveness.

In line with literature review on the procurement process, once the specifications are clear, Altice's procurement team conducts market research for potential suppliers.

Most of the suppliers are suggested by the client, based on similar previous purchases or on research made by the internal client of the product or services he aims but this selection is also reviewed by the negotiator, and he will add or remove the suppliers he sees fit based on his

expertise.

After the selection of suppliers to consult the negotiator will approach the suppliers with the product requirements and question if they can fulfill the specifications and what´s the best price they can offer for that (Altice Portugal, 2024g).

After receiving all the technical and commercial proposals from suppliers of the products/services the suppliers have to offer, and the pricings from all of them, the negotiator will ask the client area to analyze the technical proposals in order to classify which suppliers are technically capable. Then, to these suppliers, the negotiator will set a target pricing based on previous purchases (in case that supplier has already supplied something similar) or, in case there's no similar purchase history, based on the different proposals made from the different suppliers and ask the suppliers to review their offers and try to reach that target. This process involves a lot of expertise and tact since the negotiator will try to lower the price and achieve gains, but if he tries to lower the price too much, he could ruin the deal and lose the supplier's relationship.

The suppliers will then respond with a final pricing/specification proposal based on the target price proposed by the negotiator, some suppliers will not lower the prices, but some even go below the target established, representing more gains.

The negotiator will then review all the proposals and choose accordingly. Even if a supplier offers the lowest price, the chosen one will have to be the most suited and match the specifications made (Altice Portugal, 2024g). Also, even if the price of the product or service itself is the lowest there's other factors to consider like the quality, the transportation, the payment conditions, the storage, the supplier's evaluation, etc. All those factors must be weighed in on the choosing of the supplier which reflects the multi-faceted assessment process described in the literature.

The supplier selection and the value to be allocated for the purchase to fulfill the request will follow through a series of approvals, from the director of the area of negotiation to the director of the purchase and supply chain department. In the cases of very big purchases the request must pass through the chief officers' approvals in accordance with the competence's delegation (Altice Portugal, 2024d).

All the approvals and steps of the process will be recorded by the internal software used in the company to make the procurement process this software allows to keep all the information from the request to the end of the negotiation and final order.

The process described is illustrated by Figure 10.

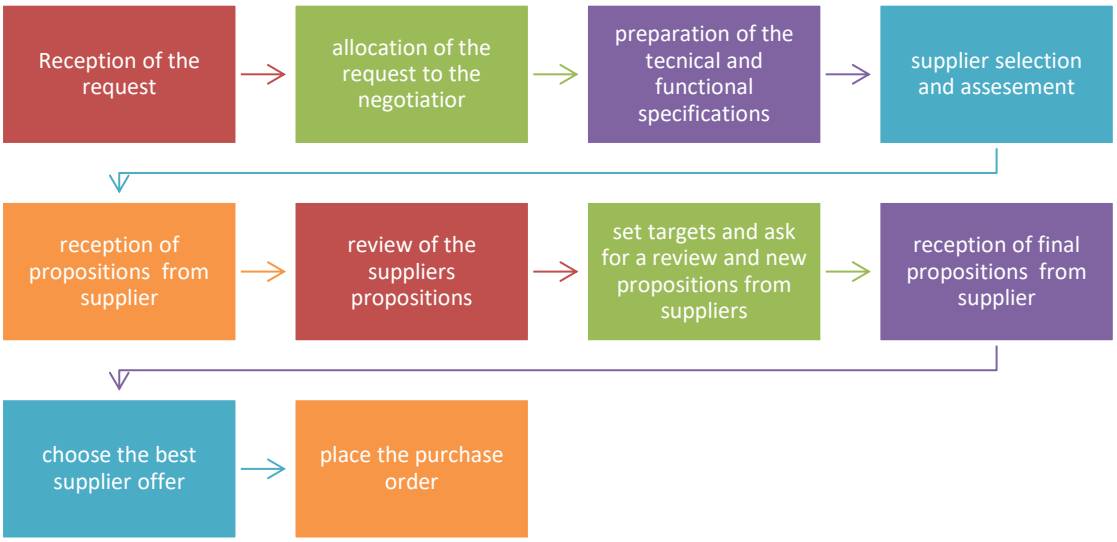

Figure 10 Procurement process scheme at Altice´s

Altice's procurement process effectively incorporates the theoretical steps and best practices detailed in the literature review by Basu (2023) and Van Weele and Rozemeijer (2022), when describing the procurement process and it´s phases, ensuring a structured and comprehensive approach from specification to contracting.

4.5. Metrics used to assess department performance

As discussed by Monczka et al. (2021) and Van Weele and Rozemeijer (2022) in chapter 2.3. of the literature review, the role of measuring the performance of the purchase function is of highly importance to look for improvement opportunities and to locate weak spots in order to take corrective measures and better the efficiency and efficacy of the department.

In Altice Portugal the area responsible to process and report the indicators values to the management in the department is the Control, Processes, PO & Master Data area.

Most of the reports are produced monthly, but there are weekly, trimestral and annual reports that reflect the activity of the department and help the management make decisions and oversee the department and its performance.

The reports that better reflect the departments performance are the goals report that monthly reflects the fulfillment of the objectives set for the year ,the negotiations report that reflects the procurement processes, the support area report that reflects the support activities made in the

purchase department like the placement of the purchasing orders, the invoice processing, the supplier club management and the reports delivery and the dashboards which reflect all these reports in a more visual and resumed way (Altice Portugal, 2024f, 2024h, 2024e).

The figure 11 contains the indicators which make it possible to measure quantities, time, service, and cost in the department (Altice Portugal, 2024e):

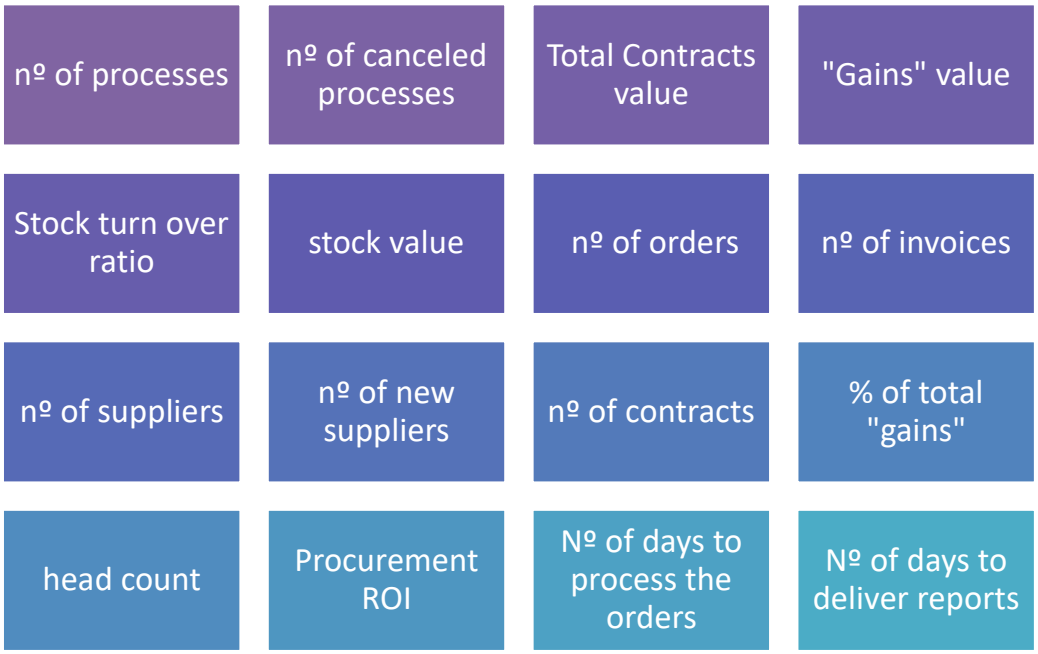

Figure 11: Indicators used in the department

4.5.1. Cost savings metrics

Cost savings is one of the most important indicators of the department since reflects one of the main goals of the procurement and the importance of passing through the process of negotiation. This metric tells us the importance of purchasing in a strategic way, saving the company from high operational expenditures, and contributing to the success of the company.

As outlined in the literature review, cost savings as a performance measurement KPI refers to the money saved through purchasing activities compared to a predefined baseline or target. This encompasses reductions in direct costs, such as purchase prices, and indirect costs, such as transportation and storage (Monczka et al., 2021).

One of the department's goals, since this is metric greatly reflects the departments performance, is achieving the ideal cost savings value determined by the management in the beginning of the year. This goal value´s is set based on the previous year's results, meaning the department as to overachieve last year's results and keep improving its operations each year to increase cost savings.

In Altice´s Portugal this metric is calculated by comparing the initial value of the lowest first proposal from the suppliers with the negotiated final proposal value. This practice aligns with the literature's description of measuring cost savings through price reductions, process efficiency gains, and total cost of ownership reductions (Chopra & Meindl, 2016).

As discussed in the literature review this indicator reflects the efficiency and effectiveness of the procurement process, facilitates performance comparisons across time periods and helps evaluate the negotiator's skills and performance. The negotiators must be able to discuss and get the best price and conditions from the suppliers. This metric is reported as an overall value for the department but also for each negotiation area and individually for each the negotiator. The management can easily identify which area or negotiator is struggling to achieve more "Gains" (the term used in the department for the cost savings through negotiations). Once identified the struggling area or negotiator the management can investigate and assess the reasons for weaker results and act in conformity to improve the performance. In the case of the negotiator's gains, it could mean they need new training or an improvement of their negotiation skills.

This metric can also be influenced by other factors like the need for a change in the procurement process to became more effective since external factor such as as rising market prices can narrow down the cost savings. The literature also highlights that effective negotiation skills, strategic sourcing initiatives, and supplier relationship management are critical for achieving cost savings (Lamming, 1993; Monczka et al., 2021).

Another metric reported referring to the cost savings is the monthly variance of cost savings of the actual vs. the past year, enabling the management to see the monthly values for cost saving. It is common for businesses to experience fluctuations in performance over time. By comparing the same months from one year to the next, managers can account for seasonal patterns and better understand performance without the distortion caused by these regular fluctuations.

It is also reported monthly the year to date (YTD) variance of cost savings of the actual vs. the past year. Comparative analysis of data over time allows for the identification of long-term trends. This can reveal whether the business is growing, stable, or declining over time, which in turn allows for the formulation of more informed strategic decisions.

4.5.2. Supplier Performance metrics

Although the supplier's performance assessment is not made by the procurement department, this is an important metric for the procurement process.

By measuring the supplier's performance negotiators can identify which suppliers to develop long-term relationships with, which ones to phase out, and where to seek new partnerships. Regular performance assessment helps identify reliable suppliers who consistently meet delivery schedules and order quantities. This reliability ensures smooth operations and helps in avoiding delays. This aligns with the literature's emphasis on the importance of evaluating supplier quality, responsiveness, communication, and collaboration capabilities (Carr & Pearson, 2002; Monczka et al., 2021).

Also measuring suppliers' performance can highlight potential risks associated with suppliers, such as financial instability, non-compliance with regulations, or ethical issues. Addressing these risks proactively can also prevent supply disruptions and safeguard the company's reputation.

The final suppliers performance score is given by calculating various aspects in terms of quality, delivery, cost and relationship (Chopra, 2019; Giunipero et al., 2006).

For assessing quality its measured the defect rate, returns, compliance with specifications. The on-time delivery rate, lead time, and adherence to delivery schedules are used to assess delivery performance. Pricing accuracy, cost reduction initiatives, and the total cost of ownership are used to assess cost management. Factors such as responsiveness, communication effectiveness, and support services provided are used to determine service quality. The supplier's ability to provide innovative solutions and their continuous improvement efforts are used to assess innovation. Finally, compliance and sustainability are evaluated based on adherence to regulatory standards, ethical practices, and sustainability initiatives.

This assessment is a join work with the different areas that request and to which the products or services are provided. After receiving the goods or services they are inquired to evaluate the suppliers as well.

All this complied gives a final score used in future procurement process. The score must be considered once the negotiator is choosing the suppliers to consult to respond to new similar requests. A low score may lead to a supplier being excluded from consideration, while a high score increases the likelihood of future engagements, reflecting the importance of continuous performance monitoring as highlighted by the literature

This score is updated each time the supplier is hired and provides a service or product. This way the company keeps record of all experiences with the supplier and continues to do so keeping the information updated and relevant for the procurement process.

Given the current demands of the different stakeholders, the events that have taken place in the last year at Altice Portugal, and future legal and regulatory requirements, Altice Portugal has sought to strengthen its supplier analysis and evaluation processes. In 2023, the Know Your Supplier ('KYS') questionnaire was implemented, an important due diligence mechanism that seeks to validate the compliance of commercial relations with the principles of ethical, professional and responsible business conduct established in the respective Code of Conduct.

4.5.3. Inventory Turn over

In a similar manner to cost savings, inventory turnover represents a crucial indicator of the department's performance. At the outset of the year, management established this as a primary objective, basing it on an ideal turnover ratio calculated based on previous data such as fluctuations in demand in the previous year or supplier reliability.

Of course, this ideal value is based on forecast of demand and contemplates safety stocks.

This value is reported monthly to check on the department's performance as well, this metric reflects more the supply chain management aspect of the department than the procurement aspect that is better reflected by the cost savings metric.

The inventory turnover is calculated by dividing the cost of goods sold by the average inventory and then by dividing 12 by the inventory turnover ratio. This value will represent how many times a company's inventory is sold and replaced over a year.

In the case of Altice's, this inventory turnover ratio given in months as to been between two values, an inferior and a superior limit value. Of course, the higher the turnover ratio ratio the better the management, meaning that the company is selling its inventory quickly and effectively, which is often a sign of good demand for its products. However, if this stock is sold to quickly then it could mean the company will not be able to replace the stock again in time, so ideally there´s a safety stock, that's what the lower value stands for. It is imperative that there is sufficient lead time for the restocking of products to prevent the risk of not having stock to meet demand, which could result in the loss of clients.

Conversely, if the value is below a certain threshold, this is indicative of overstocking, obsolescence, or weak sales, which collectively indicates inefficiencies in managing inventory. Therefore, there must be a balance in the turnover rate, with fluctuations in this value indicating

the need for management to take action and make adjustments to balance the value again.

In addition to the monthly turnover value, there is also a year-on-year comparison reported value to the management. This enables an understanding of year-on-year performance, which in turn facilitates the optimization of resource allocation. For instance, if sales exhibit a consistent increase in specific months, inventory and staffing can be adjusted to align with the heightened demand.

If there´s a consistent fluctuation in certain months the management can understand the seasonal factors that are causing those disruptions and take preventive measures in the future. Also, by comparing the previous year to the current the management can see if the measures and decisions made, whether the improvement of forecasting or changes in the processes caused an improvement or a decline in the stocks management.

The literature emphasizes that the inventory turnover ratio measures how quickly products are sold or used after acquisition. High inventory turnover is linked to efficiency in purchasing management, leading to cost reduction and operational efficiency improvements (Jacobs & Weston, 2007; Stevenson, 2021).

Inventory turnover is a key metric in assessing procurement efficiency (Chopra & Meindl, 2016; Monczka et al., 2021; Weele & Rozemeijer, 2022). It reflects the effectiveness of procurement strategies, inventory management practices, and supplier relationships. A high turnover rate indicates efficient inventory management, while a low rate suggests excess inventory, poor purchasing decisions, or inadequate demand forecasting. Optimizing inventory turnover minimizes carrying costs, maximizes working capital, and ensures timely availability of goods to meet customer demand.

By maintaining an optimal turnover rate, procurement teams can minimize carrying costs and improve cost efficiency (Chopra & Meindl, 2016). High inventory turnover enhances liquidity and working capital management, allowing procurement departments to allocate resources more effectively to other strategic initiatives (Monczka et al., 2021).

By leveraging inventory turnover as a performance metric, organizations can optimize procurement processes, enhance supply chain efficiency, and drive competitive advantage in the marketplace. Continuous monitoring and adjustment help ensure effective stock management, aligning with the broader goal of procurement excellence.

4.5.4. Procurement ROI

This metric is a reflection of the benefits of having a procurement department. It demonstrates

the efficiency of the department and the importance of strategic purchasing. In essence, this metric illustrates that the end justifies the means.

This metric is calculated as shown in the literature review by dividing the cost savings by the procurement costs. The higher the value, the more efficient the department.

A high return on investment (ROI) in procurement indicates that the procurement processes are efficient and effective. This implies that the company is obtaining a satisfactory return on its investment, reducing waste, and optimizing its operational processes, which collectively enhance the overall efficiency of the business. ROI represents a pivotal metric for the assessment of the performance of the procurement function. It enables management to assess the success of procurement initiatives, evaluate the efficiency of procurement processes, and identify areas requiring improvement.

An understanding of the return on different procurement activities can highlight potential risks and ensure that the company's procurement strategy is resilient and effective.

The monitoring of procurement ROI serves to enhance accountability and transparency within the procurement function. It ensures that procurement activities are aligned with the company's financial goals and that there is clear visibility into the impact of procurement decisions on the bottom line.

In line with literature review Procurement ROI provides insights into the financial impact of procurement efforts on the organization's bottom line. A positive ROI indicates that procurement activities are generating value and contributing to cost reduction and profitability (Bozarth & Handfield, 2019). By evaluating procurement ROI, organizations can make informed decisions regarding resource allocation, supplier selection, and process optimization. This helps identify areas where investments yield the highest returns and where adjustments are needed to enhance efficiency and effectiveness (Monczka et al., 2021).

4.5.5. Procurement organization metrics

There are various indicators of the performance of the procurement organization.

Firstly, as referenced in the bibliographic review by Van Weele and Rozemeijer (2022), in chapter 2.3.5., there´s the staff. The level of training and satisfaction of the staff is very important for the success of the department and is a great indicator of the performance of the department.

The department has an HR collaborator entitled to keep track of the department staff by regularly gathering and analyzing feedback through surveys, performance reviews, one-on-one

meetings, and other methods, management identifies areas for improvement and implement strategies to enhance the overall employee experience.

Also its reported monthly the departments head count and compared to last years values in order to keep track of the number of staff in the department.

In order to maintain operational excellence, the Contracts, Processes and Control area is responsible for producing monthly reports for the department. In addition, the area is evaluated in terms of its performance. The timeliness of report delivery and the number of contracts handled each month are considered in the assessment of the area's performance. Additionally, this area is tasked with the management of the supplier club, a strategy implemented by Altice with the objective of controlling the company's suppliers. All suppliers must register with the club in order to be able to supply the group, as membership of this club requires adherence to the applicable legal requirements, policies and good practices. Furthermore, the effectiveness of this management is evaluated on a monthly basis, with the number of suppliers managed on the platform serving as a key indicator. This area plays a pivotal role in facilitating supplier registration and providing ongoing support throughout the enrolment process.

The literature review supports this highlighting that procurement performance hinges on various factors and that efficient procurement depends significantly on well-trained and motivated staff. According to Weele and Rozemeijer (2022), the background, training, and development of procurement personnel are crucial for achieving procurement objectives. Continuous professional development ensures that staff are equipped with the necessary skills in negotiation, strategic thinking, and supplier relationship management, essential for effective procurement operations.

In Altice’s procurement process, there are already instances of the implementation of robots who perform automated processes. The success rate of the operations made by these robots is reported on a monthly basis to the management. It is also of great importance for the department to continue implementing automated processes in tasks that do not contribute to the improvement of the department’s performance. This allows the staff to focus on tasks that bring value to the organisation. A useful indicator of operational efficiency is the number of operational processes and automated and digital resources in the department.

The adoption of digital systems and automation plays a pivotal role in enhancing procurement efficiency. Advanced e-procurement platforms, ERP systems, and specialized procurement software streamline processes such as supplier management, order processing, and inventory control. These technologies not only improve operational efficiency but also enable

procurement teams to focus on value-adding activities rather than routine tasks. Weele and Rozemeijer (2022) emphasize the importance of measuring the implementation of these digital tools to assess performance and drive continuous improvement in procurement and supply chain management.

4.5.6. Sustainability metrics

Sustainability is a topic that is becoming increasingly relevant. Responsible supply chain management is a concern for any organisation that wants to long-term sustainability and the elimination or minimisation of operational and reputational risks. Furthermore, responsible management of the supply chain management makes it possible to fulfil a expectation that the best environmental best environmental, social and economic economic and governance practices are implemented, particularly climate change, human rights and the fight against and prevention of corruption, not only in its own operations, but throughout the value chain (Altice Portugal, 2024i).

To this end, Altice has adopted a series of measures to ensure the natural flow of supplies necessary for the continuity of its operations (Altice Portugal, 2024i):
-Diversification of suppliers in terms of location, references, portfolio, etc;
-Diversification of the means of transport used in the logistics process;
-Preference for local suppliers;
-Contractual time horizon with a long-term forecast;
-Increased safety stock;
-Constant monitoring of deliveries.

Altice measures the percentage of local suppliers percentage as a KPI for sustainability and counts the number of suppliers to check for diversification.
ESG requirements are incorporated into the contracts with the primary suppliers, and a set of more critical criteria, previously defined by the evaluation areas, is taken into account. As previously mentioned, Altice Portugal evaluates its performance in relation to these. This evaluation is conducted by representatives from the departments or areas responsible for contract management, with the majority of evaluations conducted on an annual basis (Altice Portugal, 2024i).
The relative importance of the different criteria is determined according to the type of

acquisition and the history of previous evaluations. The weightings of the sub-criteria are determined by the evaluators. The result is presented on a scale between 1 (Satisfies Very Little) and 4 (Satisfies Very Well).

In the event that a supplier achieves a rating of less than 3, non-compliance is duly recorded, and improvement actions are duly requested (Altice Portugal, 2024i).

In addition to the referred criteria, suppliers are also subject to audits in the areas of environmental management and occupational health and safety when providing services to Altice Portugal.

As a measure of sustainability as well, the department accounts for the weight of paper bought and used by the purchase department in trimestral and annual reports.

Altice Portugal's proactive sustainability measures in supply chain management are aligned with best practices outlined in the literature review. By integrating ESG criteria into supplier contracts, conducting rigorous evaluations, and tracking environmental impacts, Altice not only mitigates risks but also strengthens its commitment to sustainable development and responsible corporate citizenship (Carter & Rogers, 2008; Heizer et al., 2023; Walker & Phillips, 2009). This holistic approach underscores Altice's efforts to foster a sustainable business ecosystem while maintaining operational excellence and ethical integrity across its supply chain operations.

4.5.7. Other metrics used in the supply chain and procurement department

In order to assess the performance and evaluation of employees in terms of the procurement process, the number of cases is counted on a monthly basis. This figure is then compared to the previous year on a monthly basis. Furthermore, the number of cases is counted year to date, and a year-to-date comparison of the number of cases of the previous year is also made. This allows the manager to clearly see the performance of the employees and the number of cases they are able to handle. As the professional becomes more experienced in the area and is able to handle cases more quickly, we can expect to see an evolution and stabilization in these figures. A decline in performance may be indicative of a decline in the employee's level of satisfaction, a need for training, or external factors such as the seasonality of the number of requests, which in turn affects the number of processes. In such cases, it is beneficial to examine comparative figures with the previous year to ascertain whether this fluctuation is normal. It is evident that a multitude of factors influence the number of processes. However, when there are significant fluctuations in comparison to the previous year, it becomes imperative to identify the underlying

cause in order to implement a solution (Altice Portugal, 2024f).
It is also necessary to manage the number of cases per negotiator, as this can be an indicator for management. Should the number of cases increase significantly, this may indicate an excessive workload. It is therefore important for management to ascertain whether this is merely a temporary peak, taking into account the typical seasonal fluctuations, or whether additional personnel will be required to cope with the increased workload, while maintaining an appropriate balance between employees (Altice Portugal, 2024f).

To keep up with the Orders and Master Data area performance it's taken in account the number of orders issued, the number of invoices issued, the average of days to process the orders. Since the orders must be exported to another platform called SAP by the staff members of the department is also important to monitor its performance as well. Like the number of processes, the number of orders and invoices can give us insights on the department's performance and its capability, especially the average of days to process the orders, a more effective and efficient ordering process will take less time (Altice Portugal, 2024h). The average days for processing orders should remain stable and not be the cause for delays in delivering.

4.6. Results and discussion

In today's competitive business environment, accurately measuring the performance of procurement functions is critical. Effective performance evaluation not only highlights areas for improvement, but also identifies weaknesses that require corrective action. This approach ultimately strengthens the efficiency and effectiveness of the procurement function. Recognising this imperative, Altice Portugal has implemented a robust system of metrics overseen by the Contracts, Processes and Control department.
The department produces various reports at different intervals - monthly, weekly, quarterly and annually - to reflect the comprehensive scope of procurement activities. These reports enable management to make informed decisions and effectively monitor the department's performance. They include key metrics such as cost savings, supplier performance ratings, inventory turns, procurement ROI, employee training and sustainability initiatives, providing a holistic view of operational effectiveness.
The measures and metrics implemented at Altice Portugal are carefully adapted to the company's unique needs and operational context. While they are informed by best practices and literature, they are tailored to address specific challenges and objectives within the organization.

For instance, the cost savings metric not only focuses on price reductions but also considers the dynamic market conditions and the strategic importance of supplier negotiations specific to Altice. Similarly, supplier performance assessments are customized to reflect the critical quality and delivery requirements crucial to Altice's operational continuity. This tailored approach ensures that the metrics are not just theoretical benchmarks but practical tools that drive meaningful improvements and strategic alignment within the company's procurement processes.

The importance of cost savings as a critical indicator of procurement success cannot be overstated. At Altice Portugal, securing final proposals below initial offers through strategic negotiations exemplifies the department's role in financial stewardship and operational efficiency, aligning with established procurement best practices (Monczka et al., 2021). This metric highlights the significance of purchasing strategically to manage costs effectively amid market fluctuations.

Equally pivotal are the supplier performance metrics, which ensure operational continuity and mitigate risks within Altice Portugal's supply chain. Evaluating suppliers based on criteria such as quality, delivery reliability, and sustainability practices (Carr & Pearson, 2002; Monczka et al., 2021) enables the company to foster strategic partnerships and avoid supply disruptions. The implementation of the Know Your Supplier (KYS) questionnaire reinforces ethical standards and regulatory compliance, underscoring the company's dedication to responsible business conduct.

Inventory turnover is another essential indicator of supply chain efficiency, reflecting Altice Portugal's ability to balance inventory levels to meet fluctuating demand effectively (Stevenson, 2021). Regular monitoring and year-on-year comparisons help optimize resource allocation, minimizing stockouts and enhancing operational agility. This metric underscores the importance of efficient inventory management in supporting overall business performance.

The analysis of procurement ROI offers critical insights into the financial impact of procurement activities, guiding strategic investments and operational improvements (Bozarth & Handfield, 2019). By focusing on maximizing ROI, Altice Portugal demonstrates the department's contribution to cost efficiencies and broader business objectives through effective procurement strategies. This metric is essential for assessing the value generated by procurement initiatives.

Staff training and digital transformation are highlighted through procurement organization metrics. Investing in employee development and leveraging automation technologies enhances operational efficiency, allowing staff to focus on value-added activities. The integration of

advanced e-procurement platforms and digital tools streamlines processes, improving departmental effectiveness and aligning procurement strategies with overall business goals (Weele & Rozemeijer, 2022).

Sustainability metrics form a crucial part of Altice Portugal's procurement strategy, integrating environmental, social, and governance (ESG) criteria into supplier. This approach not only mitigates environmental risks but also strengthens supplier relationships and supports sustainable business practices. By adhering to global standards and conducting regular audits, Altice Portugal demonstrates its commitment to ethical sourcing and long-term value creation across its supply chain operations (Giunipero et al., 2006).

As we can see, the measures implemented at Altice Portugal align closely with the insights derived from the literature review. For instance, the emphasis on cost savings, supplier performance, and inventory turnover echoes the foundational principles outlined by procurement experts (Chopra & Meindl, 2016; Monczka et al., 2021). Moreover, the focus on staff development and digital transformation mirrors best practices suggested by leading researchers (Weele & Rozemeijer, 2022). By adhering to these evidence-based strategies, Altice Portugal not only ensures operational excellence but also fosters a resilient, sustainable, and strategically aligned procurement function. This alignment with academic and industry standards highlights the robustness and forward-thinking nature of Altice Portugal's procurement practices.

4.7. Opportunities for improvement

The software tool currently in use is notable for its capacity to retrieve all the information required to assess performance. This software is truly remarkable since it logs all the necessary data, tracks the entire process, and links each request with its corresponding process and order number.

But, although the data obtained from the software is readily accessible, it still requires processing and compilation into reports. The generation of reports by a robotic process would result in a reduction of the time spent on performance assessment by approximately three-quarters. The generation of automated reports would not only save time but also allow the support team to focus on implementing other improvements. It is evident that further investment in automated processes beyond the scope of this software is necessary.

While the current software tool significantly enhances the efficiency and effectiveness of

performance measurement in the procurement department, further investment in automation could streamline the process even more. By reducing the manual effort required for report generation, the procurement department can achieve greater levels of efficiency and productivity, which will ultimately contribute to the company's overall success. Also the utilization of real-time data monitoring through dashboards that provide up-to-the-minute data on key performance indicators (KPIs) can also offer deeper insights into the performance of procurement and supply chains.

Further improvement of the performance assessment of the procurement and supply chain department involves the adoption of new technologies, the refinement of processes, and the enhancement of the strategic use of data. (Weele & Rozemeijer, 2022)

Another key improvement would be the utilization of advanced analytics and big data. By employing predictive analytics, the company could use historical data to predict future trends, such as demand forecasting, supplier performance, and risk management.

Also, the integration of AI and machine learning could facilitate the optimization of procurement decisions, supplier selection, and contract management. These technologies can streamline workflows and reduce the likelihood of human error.

Another future metric to adopt would be benchmarking. Benchmarking could also be helpful for evaluating purchase performance by providing a framework to compare procurement processes against industry standards and best practices. It involves setting key performance indicators, collecting relevant data, and conducting comparative analysis to identify performance gaps. By learning from industry leaders and adopting best practices, organizations can improve procurement efficiency, reduce costs, and enhance supplier relationships. This ongoing process of measurement, comparison, and improvement ensures that procurement strategies align with business objectives and drive continuous improvement, leading to better overall performance (Bogan & English, 1994).

5. Conclusions

It’s evident that the supply chain and procurement is a critical component of the company's overall operations. Efficient supply chain management ensures the smooth flow of goods and services, from suppliers to customers, while effective procurement practices help organizations acquire the necessary resources at the right price and quality. Together, they play a pivotal role in maintaining operational efficiency, reducing costs, and driving competitive advantage.

Furthermore, well-functioning procurement enhances the company's ability to manage supplier relationships, ensure quality control, and maintain compliance with regulatory requirements. These capabilities are essential for mitigating risks and avoiding disruptions in the supply chain, which can have significant operational and financial impacts.

Measuring the performance of supply chain and procurement activities is essential for several reasons. First, it provides a clear understanding of how well these functions are performing against predefined goals and benchmarks. This enables organizations to identify areas of improvement, optimize processes, and enhance overall efficiency. Metrics such as cost savings, supplier performance, inventory turnover, and procurement ROI offer insights into various aspects of the supply chain, facilitating informed decision-making and strategic planning. Furthermore, performance measurement helps in tracking progress over time, ensuring continuous improvement and alignment with the organization's objectives.

In order to investigate how the performance of supply chain and procurement is measured in a real-world context, a case study was conducted at Altice Portugal. Case studies are invaluable for exploring complex topics such as procurement performance assessment because they offer real-world insights and practical examples.

By examining the specific practices and outcomes of Altice Portugal, it was possible to gain a deeper understanding of how theoretical concepts related to supply chain and procurement performance measurement are applied in practice. This approach provided important insights into the tangible benefits and challenges associated with Altice's practices for analysing performance measurement in its supply chain and procurement department.

Altice Portugal's approach to incorporating various performance metrics, such as cost savings, supplier performance, inventory turnover, procurement ROI, and sustainability, demonstrates how these metrics can be tailored to address unique operational challenges and objectives. By integrating best practices from the literature with company-specific adaptations, Altice ensures that its supply chain and procurement processes are not only efficient but also aligned with its strategic goals.

With the implemented performance assessment tools and techniques, the company can monitor and evaluate the effectiveness of its procurement strategies, making data-driven decisions that enhance efficiency and cost-effectiveness.

In terms of further development and improvement, the current software tool used for performance assessment in procurement is notable for its comprehensive data logging and tracking capabilities, linking each request to its corresponding process and order number, however, despite easy access to this data, it still requires manual processing and report

compilation. Automating the reports generation could cut the time spent on performance assessment by approximately three-quarters, freeing the support team to focus on other improvements. Further investment in automation, such as real-time data monitoring and automatic dashboards generation for key performance indicators (KPIs), advanced analytics, predictive analytics, AI, and machine learning, could greatly enhance efficiency and productivity. Additionally, benchmarking against industry standards would help identify performance gaps and drive continuous improvement, ensuring procurement strategies align with business objectives (Weele & Rozemeijer, 2022; Bogan & English, 1994).

By providing a concrete example of a successful performance assessment, this case study highlights the critical role of the procurement department performance assessment in driving overall business success and offers valuable lessons for other organizations aiming to achieve similar outcomes.

5.1. Limitations

According to Saunders et al. (2020) limitations of research refer to aspects that may negatively affect the extent to which its findings and conclusions can be validated and ultimately considered generalizable, namely data sources and procedures for obtaining and processing data.

There were some significant limitations in terms of data sources and processing, mainly related to the confidentiality of Altice's internal data and documents. Due to the sensitive and strategic nature of the information used in procurement and supply chain management processes, it was not possible to present actual values or detailed documents. This restriction limited the depth of quantitative analyses and the ability to illustrate concrete examples of the methods and results discussed.

Despite this limitation alternative procedures were used such as qualitative interviews and general descriptions of Altice's processes to ensure that the key aspects of performance assessment were addressed in a comprehensive and useful manner. However, the absence of specific data impacts the ability to perform a more detailed analysis.

Additionally, confidentiality also prevented the disclosure of certain internal practices and documents that could provide a more sustainable background for the information presented and a more complete view of Altice's operations.

5.2. Further research

For further development of the topic, conducting comparative case studies of procurement performance assessment across different industries would be valuable. This approach can highlight industry-specific challenges and best practices. Each industry, such as healthcare, manufacturing, and technology, has unique procurement needs and constraints. Comparing these industries can uncover effective strategies and risk management techniques that are transferable across sectors.

Additionally, it would be interesting to explore how procurement performance metrics evolve with technological advancements like AI, blockchain, and IoT. These technologies have the potential to revolutionize procurement by enhancing demand forecasting, increasing transparency, and providing real-time data. As such technologies are integrated, traditional metrics may be supplemented or replaced by new ones reflecting the benefits of these innovations.

Researching how performance metrics change over time with technology adoption would offer insights into the stages of technology integration, the challenges faced, and the benefits realized in different industries. This would not only enhance academic knowledge but also provide practical guidance for procurement professionals aiming to improve their performance assessment frameworks in a digital era.

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