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Contractor management: operational, tactical, and strategic insights into the way contractors are integrated into modern OEMs

Maria Carolina Santana Balhico

Project submitted as partial requirement for the conferral of
Master in International Management

Supervisor:
PhD Luísa Domingues, Assistant Professor,
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“A sorte protege os audazes”

Esta tese é dedicada aos meus pais.

Pelo amor e apoio incondicional,

Por acreditarem sempre em mim,

Por me darem força para seguir os meus sonhos,

Mesmo que eles me levem para longe de casa,

Obrigada

Carol

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Resumo

Durante as últimas décadas, as empresas tornaram-se cada vez mais dependentes de *Temporary Work Agencies*. Estas agências oferecem uma alternativa aos trabalhadores permanentes e permitem maior flexibilidade e custos mais baratos. Devido ao acelerado desenvolvimento da indústria, as empresas não alocaram tempo para otimizar os seus processos de modo a integrar estes trabalhadores. A falta de insights operacionais, táticos e estratégicos sobre o assunto leva a processos internos ineficientes e ao desperdício de recursos.

Seguindo uma estrutura de combinação de CSR e DSR, esta dissertação analisa os processos pelos quais uma OEM na indústria automóvel gere os seus *contractors*. Esta reflexão pretende desafiar as empresas a repensarem os seus processos de forma a promover a partilha de informação, garantindo uma melhor integração dos *contractors*.

Este estudo revelou várias ineficiências no processo de gestão de *contractors*, nomeadamente: falta de uma entidade responsável pelo processo; falta de informação sobre ofertas dos fornecedores; falta de compreensão do processo e má comunicação entre os *stakeholders* envolvidos; falta de direção estratégica no tema de *contractors*; e suporte de software inadequado. Para cada uma destas causas foram propostas contramedidas operacionais e táticas, que serviram de base para a elaboração de uma proposta de direcionamento estratégico para a empresa.

Esta dissertação apresenta um modelo que visa facilitar a partilha de conhecimento, ao fornecer uma proposta para as empresas refletirem sobre os seus processos relacionados com contractors e analisarem criticamente os constrangimentos internos, para melhor compreenderem como os abordar em iniciativas futuras.

Palavras-Chave: Gestão de Trabalhadores Temporários; Otimização de Processo; Interação entre stakeholders; Força de Trabalho Contingente; Trabalhadores Temporários de Agência

Classificação JEL: J41 (Contratos de Trabalho), J08 (Políticas Económicas de Trabalho)

Abstract

During past decades, companies have become increasingly reliant on Temporary Work Agencies. These agencies offer an alternative to permanent workers and allow for greater flexibility and cheaper costs. Due to an accelerated industry development, companies have not taken the time to optimize their internal processes to effectively integrate these workers. Lack of operational, tactical, and strategical insights into the topic lead to inefficient internal processes and wasted resources.

Following a CSR and DSR combination framework, this research analyses in detail the processes through which an OEM manages its contractors, and the intricate relationships between the stakeholders involved. This reflection aims to challenge companies into rethinking their processes to promote information sharing and knowledge capture, and modernize internal processes, assuring a smoother integration of contractors and leaner processes.

The research revealed several inefficiencies in the contractor management process, traced to the following root causes: lack of an entity responsible for the process; lack of information on supplier offers; lack of process understanding and poor communication amongst stakeholders; lack of strategical direction on the topic of contractors; and inadequate software support. For each root cause, operational and tactical countermeasures were proposed, which were the baseline to drafting a strategical direction proposal for the company.

This dissertation presents a model that aims to facilitate knowledge-sharing, by providing a proposal for companies to reflect on their contractor-related processes and to critically analyze internal constraints, to gain a better understanding of how to address them in future initiatives.

Keywords: Contractor Management; Process Optimization; Stakeholder Interaction; Contingent Workforce; Temporary Agency Workers

JEL Classification: J41 (Labor Contracts), J08 (Labor Economic Policies)

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Glossary of Acronyms and Symbols

Acronym	Meaning
BSC	Balanced Scorecard
CSR	Case Study Research
CWF/CW	Contingent Workforce
CIF	Contract Information Form
DSR	Design Science Research
IP	Indirect Purchasing
KPI	Key Performance Indicator
OEM	Original Equipment Manufacturers
P&I	People & Innovation
PO	Purchase Order
PUR	Purchasing
RCA	Root Cause Analysis
SA	Standard Agreement
SFA	Standard Framework Agreement
SSEP	Supplier Selection and Evaluation Process
TAW	Temporary Agency Workers
WO	Work Order

CHAPTER 1

1. Introduction

1.1. Problem Contextualization

Businesses worldwide are undergoing a period of highly competitive pressure (Roy et al., 2011) marked by rapid technological changes and the development of advanced technologies that act as a driver for traditional methods to be enhanced and outdated processes optimized. Consequently, OEMs are faced with many challenges when it comes to adapting their internal processes to the fast-paced technological developments of the industry (Fiorelli et al., 2019).

In a report released by the International Labor Organization, it was revealed that a growing number of industries have been increasingly relying on contingent and part-time workers, as these offer greater flexibility and less risk for employers (ILO, 2016). With the recent pandemic crisis, experts expect contingent workforce to continue to grow in both importance and number (Altman et al., 2021), allowing organizations to benefit from more flexibility (Pardi, 2017) and additional cost-savings (Cahuc & Postel-Vinay, 2002).

The contractor sourcing and management process most companies have nowadays is the result of a necessary emergency – a tremendous and fast evolution in job format that started in the early nineties and has not stopped since. Faced with the new reality of having to adapt their operations to external workers, companies are now being challenged to rethink their internal processes, inherited from the industrial era of the twentieth century, to adapt dynamically and accommodate these new temporary hires into their operations (Autio et al., 2021).

The purpose of this study is to create a reflection about the way contractors are integrated into company processes and provide insight on the organizational dynamics between the different stakeholders involved, by relying on data from the case study of “The Automotive Company” – a real-life multinational company selected as representative of OEMs. This reflection aims to direct companies into rethinking their processes to promote information sharing and knowledge capture, and modernize their internal contractor management processes, assuring a smoother integration of contingent workers and leaner processes.

1.2. Academic Relevance

A study led by the Aberdeen Group (2006) surveyed 150 organizations on their contractor management practices, ultimately identifying several process-related issues, which included the lack of a single responsible entity to manage the entire process, fragmented internal procedures, time consuming labor-intensive processes, and a poor overview over the end-to-end process. This study confirms, via Case Study Research (CSR) approach, that many of these issues can still be seen in large

automotive manufacturers today, years after the initial study was released, contributing for the validation of the initial study's findings in today's time.

Findings of this study related to contractor integration also contributed to the validation of the research led by Jansen (2017) on knowledge sharing with Contingent Workers, highlighting the need to improve the communication amongst stakeholders and better integrate contractors in company processes.

This research will additionally contribute to develop the works of Koene et. al (2014) and Armstrong et. al (2020), who presented solutions for managing talent within organizations, as well as serve as a reflection and guide for other organizations that wish to optimize their internal processes and better integrate and manage their contingent workers.

1.3. Research Questions and Objectives

This research will have the main objective of improving contractor management within large OEMs. For that purpose, the following research question was considered:

- How to optimize the contractor creation and management process in the context of an Automotive Original Equipment Manufacturer (OEM)?

This research question was materialized by the development of three constructs, built based on the CSR approach – relying on data from the case study of "The Automotive Company":

1. A map of the current contractor sourcing and management process at the different divisions of "The Automotive Company", considering all stakeholders' perspectives to design a uniformized process and understand its strengths and limitations.
2. A framework that will map, compare, and evaluate improvements and inefficiencies mentioned by different stakeholders of "The Automotive Company" and how those insights can be translated into value-adding measures for the company.
3. A Balanced Scorecard/ Strategy Map combination framework developed in the context of a stakeholder focus group, to provide the foundation for a strategy development within "The Automotive Company".

1.4. Research Approach

This research results from a collaboration between Case Study Research (CSR) and Design Science Research (DSR). Both methodologies were selected as both are relevant for different stages of this research, in distinct yet complementary ways:

CSR was relevant to map out the current internal process “as is” for contractor management at “The Automotive Company” – a real-life company selected as representative of its industry, whilst DSR assisted in the creation of three constructs: 1) a process design reflecting the current contractor management process at “The Automotive Company”; 2) a matrix framework to map the process inefficiencies and improvement suggestions according to the different stakeholders involved; and 3) a Balanced Scorecard/ Strategy map combination framework to draft a strategic direction for “The Automotive Company”

To combine both methodologies a framework developed by Costa et al. (2016) was applied. DSR was adopted as the main research paradigm to effectively connect the acquired knowledge with different multidisciplinary contexts, and ultimately create constructs that can be used as template for future research.

1.5. Structure of the Thesis

This document will be divided into 6 sections.

1. The first section is the introduction with the goal of introducing the problem, research questions, and the main objectives of this study.
2. The second section will be the Literature Review, describing the conceptual part of the research and reviewing existing literature on the topic to shape a theoretical basis for assessing the research problem and its limitations.
3. The third section will outline the Methodology design of this paper. The research methods will be defined while explanations on the selected data collection will be presented.
4. In the fourth section, a contextualization will be provided to introduce the case of “The Automotive Company”.
5. In the fifth section, the findings and results will be determined, analyzed, and tested in the context of the research question.
6. In the sixth section, the results will be discussed, along with the study’s implications and limitations. Recommendations for future research will also be provided.
7. Finally, in the last and seventh section, conclusions will be drawn.

CHAPTER 2

2. Literature Review

2.1. Temporary Workers – The "New Normal"

This subchapter explores the evolution in work trends brought upon by technological developments and subsequent shifts in business models. It also portrays the way temporary agency workers (TAWs), commonly known as "contractors" are integrated into modern workforce ecosystems.

2.1.1. A World in Digital Transformation

The world has been undergoing tremendous transformation since the start of the third industrial revolution, marked by the foundation of the internet and the creation of new ways for communicating. Digital technologies are changing the way many businesses operate, and influencing how they communicate with their audience, compete in the market, and structure themselves internally (Birkinshaw, 2018). As rightly predicted in the early eighties, a knowledge-based economy overshadowed the post-industrial age, shifting focus from manufacturing and labor to information and data (Toffler, 1981).

There have been three distinct industrial revolutions since the beginning of the 19th century. These revolutions were respectively sparked by the discoveries of mechanization, electricity, and information technology (Taşkan et al., 2020).

The first industrial revolution of the mid-18th century, commonly referred to as Industry 1.0, was a time of unprecedented innovation derived from the invention of the steam engine (Weetman, 2016). A century later, the second wave, Industry 2.0, was marked by the rise of mass production and automation, derived from the creation of the assembly line (Taşkan et al., 2020), and the third industrial revolution from the late 1900s, Industry 3.0, arose with the creation of computer networks, robotics in manufacturing and the founding of the Internet, a "game-changer" for information accessing, handling and sharing (Evan & Manion, 2002).

This ladder wave is believed to have had even greater impacts than the first one, with an underlying need for society to relearn how to interact and communicate, a need that extends to companies and organizations as well (Taşkan et al., 2020).

It has been said that we are now witnessing the fourth wave of the industrial revolution (Schwab, 2017), a paradigm that embraces emerging digital technologies such as automation, robotics, and artificial intelligence (Rojko, 2017), whilst leveraging the power of digitization and information technology (Schwab, 2017). These innovations, impacted by both technological and paradigmatic drivers, (Neumann et al., 2021) can lead to fundamental changes in organizations and their internal processes (Matt et al., 2015).

The technological developments brought upon by Industry 4.0 allow companies to improve control over their operations and leverage real-time data to enhance productivity and process enhancements, both of which can act as driving forces for continuous improvement (Perez, 2010) transforming various industrial sectors (Roblek & Meško, 2016) and reshaping industries as we know them (Bai et al., 2020). In this sense, businesses must be as dynamic as possible to these changes, in order to adapt to the uncertainty of today's markets, characterized by a very tight time-to-market and great volatility (Reeves & Deimler, 2011).

Transitioning into the digital reality can be challenging, as many firms fail to realize the need to compete in new ways, and others that do realize it end up failing (Perez, 2010). Additionally, the COVID-19 pandemic has introduced a new dimension into the discussion of work organization in enterprises (Carroll & Conboy, 2020), pushing companies to accelerate their digital transformation efforts at a never-before-seen rate and making it harder for companies that were already falling behind to catch up (Klein & Todesco, 2021).

Technological factors have the potential to transform not only work trends and businesses as we know them, but the overall global economy (Manyika, et al., 2013). The speed at which digital technologies are evolving is forcing firms to update their business models (Teece, 2010), with companies increasingly focusing on creating innovative ways of doing business, or in adapting their existing models to sustain competitive advantages against their competitors (McGrath, 2013).

2.1.2. New Organizational Models – The Rise of the "Gig Economy"

Business models have historically resulted from the dynamic interactions between organizational strategies, structures and environmental factors (Mintzberg, 1979) and are often used to better respond to environmental forces that impact companies' activities (Ghinea & Ghinea, 2015). Zott & Amit (2010) defined "business model" as a system of interdependent activities that explains how individual or collective actors create or capture value.

By relying on new ways of doing business, companies are able to capture value and compete in new ways, contributing also for changes in the nature of collaboration and competition within and across industries (Santini et al., 2020). Due to complex interdependencies between different actors (Adner & Kapoor, 2010), the concepts of co-creation and co-opetition – defined as a situation which uses the strategies of cooperation and competition simultaneously, rejecting the mainstream emphases on the dichotomy between both words (Nalebuff & Brandenburger, 1996) – are becoming increasingly more common (Hannah & Eisenhardt, 2018).

New business models drive companies to focus less on their physical assets and more on their intellectual ones – their know-how. In this sense, firms must adopt customer-oriented operational strategies and offer more diverse and customized products to satisfy customer needs, enhance their market competitiveness, and progress toward sustainable development. This means constantly improving technical capabilities and product/service quality, shortening manufacturing time, lowering costs, and establishing flexible production procedures to swiftly deal with the product expectations and diverse needs of consumers (Chen et al., 2020).

With the emergence of technological advancements and as a way to lower costs by focusing on core capabilities and the outsourcing of others, businesses worldwide have been increasingly relying on non-standard forms of employment, accentuating the rise of a "gig economy" – an economy defined by the replacement of full-time positions with temporary ones (Taylor et al., 2017).

In fact, *The Future of Jobs 2018* report by the World Economic Forum, focused on identifying job trends for the future of work revealed that, in 2018, 50% of Human Resource (HR) leaders predicted a significant reduction in full-time workforce. The report interviewed HR leaders in large multinational companies to assess their opinion on how new employment trends would influence their hiring decisions over the following five years. The large majority of interviewees projected significant shifts in the nature, format, and permanency of jobs. The leaders revealed that while they predicted machines would take over roles such as administrative, decision-making and information retrieval roles, companies would increasingly rely on contractors, project-based work arrangements, and remote staffing, engaging with employees in a more flexible manner (World Economic Forum, 2018).

In line with the previously mentioned report expectations, temporary employment is now becoming the norm for many companies, causing a shift in the conventional job panorama from stable full-time jobs to more casual forms of employment, such as temporary contractors, freelance workers, and self-employed staff (Guile & Lahiff, 2017).

2.1.3. The Integration of Temporary Workers in Workforce Ecosystems

The rise of non-standard forms of employment is the result of explicit decisions made by enterprises. Traditionally, temporary workers have been dominant in particular economic sectors, often subject to seasonal fluctuations, such as agriculture and tourism. Recently, however, this trend has spread to industries that were not previously associated with these arrangements, which is the outcome of a specific strategic and organizational choice made by firms (ILO, 2016).

The rationale for using flexible working policies came from the implicit assumption that more flexible labor markets would not negatively affect innovative capacity or productivity growth of companies (Lisi & Malo, 2017), but in turn contribute for a decrease in company costs (Houseman, 2001), a more efficient worker selection (Autor, 2001), and a buffer for short-term market changes (Goux et al., 2001). It has also been argued that flexible workplace practices increase firms' abilities to accumulate knowledge and allow for increased value creation and organizational flexibility (Bouncken et al., 2013).

Many firms rely on temporary workers to address specific, short-term labor needs. There is however, a small but growing number of firms that rely intensively on contracting arrangements and that have made such arrangements the backbone of their operations. While many reasons, some already mentioned in this analysis could have contributed for this, it is undeniable that technology played a determining role in firms' decisions to rely on non-standard arrangements, particularly as it facilitates standardization, making it easier to replace workers (ILO, 2016). Adaptability could be another determining factor – by engaging with a non-permanent workforce, businesses can ensure "numerical flexibility" in their labour force, to guarantee they do not employ more staff than necessary if demand falls (Lisi & Malo, 2017).

This significant transition to more temporary workforce positions goes beyond the boundaries of individual companies and enables value creation and capture at the ecosystem level (Adner, 2017). This level refers mainly to the competitive and cooperative relations between companies on a macro scale. However, to fully grasp the scope and impact of temporary workers in modern firms, it is relevant to consider another concept – the concept of workforce ecosystem.

Workforce ecosystem has been defined as a structure composed of interdependent actors, from within an organization and beyond, working to pursue both individual and collective goals (Altman et al., 2021). When analyzed in-depth, it highlights the importance of having common goals for all stakeholders, including both permanent and outsourced temporary workers.

The concept of outsourcing applied to employee context was born in the early nineties, when Prahalad & Hamel (1990) proposed a new outsourcing concept that referred to the contracting of professional manufacturers for non-core and auxiliary functions, with the purpose of reducing operating costs and concentrating resources so that firms could focus on their core advantages. Today, temporary workers contribute for many modern organization's workforce ecosystems and ensure continuous business performance (Agarwal et al., 2018). The new division of labor standard has spread across all industries and emphasizes specialization and focus, emphasizing the performance of contractors as a determining factor for firm's competitiveness.

Contractors are part of an employment relationship triangle consisting of three elements: the temporary work agency or contracting firm, the temporary agency workers (TAWs), and the client organization (Buch et al., 2010). During the last three decades the use of these triadic employment arrangements in industrial countries has boomed (Kalleberg, 2011). In that sense, it is relevant to investigate these relationships and understand the special dynamics happening between the different stakeholders.

TAWs are formally employed by the contracting company/ service provider. This service provider is often a large company which employees a lot of contractors, which are then deployed to many different companies, for different jobs, according to their expertise. It is, however, the client organization's responsibility to manage the actual work carried out. This means that despite being officially employed by the service provider, the workload and on-the-job directions come from the client company. For this company, contractors are classified as external workers (Pfeffer & Baron, 1988) since the client organization does not have full administrative control over them. This control is instead divided between various stakeholders (Davidov, 2004).

There has been a recent tendency amongst many businesses to divide their workforce between permanent "core" workers, and secondary workers – who may be either employed on temporary contracts or leased through a temporary employment agency (ILO, 2016). Because the search, recruitment and monitoring of skilled workers is costly, firms will pay high wages to motivate and retain their core workers. Since adjusting labor to fluctuations in demand is also expensive, businesses have then an incentive to split their workforce (ILO, 2016). But how can these secondary workers be effectively integrated into an organization's value chain?

In leading a heterogeneous workforce, composed of both permanent and temporary workers, managers must balance several perspectives in their leadership (Larsson, 2010), and consider demands from the TAWs, from the contracting companies, and from their internal employees (Chen & Brudney, 2009) as well as demands for organizational effectiveness (Ward et al., 2001).

This is an essential step in growing a company's competitiveness, seen as many sources indicate that the dependence on contractors is expected to grow, facilitated in large part by a rise in platforms which make it easier to engage workers for on-demand, task-specific work (Fuller, et al., 2020). To understand such dynamics, the following subchapter will provide an insight into existing rules and legislation for temporary agency workers in Europe.

2.2. Contractor Management – A Value Creation Perspective

This subchapter explores human resource management in the context of temporary agency work, as a value-contributing factor in organizations. It provides a short insight into the fields of human resources management, technological development, and procurement as these represent key functions in the support of an effective contractor management process.

2.2.1. Porter's Value Chain as a framework for Value Creation

A firm's competitive advantage depends on its ability to create more value than its competitors (Porter, 1985). As the satisfaction of modern customers is confronted by the increasingly global competition and technological changes (Chandra & Grabis, 2007), firms must develop organizational capabilities to sustain their competitive positions.

Porter's Value Chain framework (1980) is a well-known tool that helps companies and organizations understand the sources of their competitive advantages. The method distinguishes between several business activities, analyzing the impact of each individual activity on overall cost and value, to optimize the value chain (Jelassi & Enders, 2005).

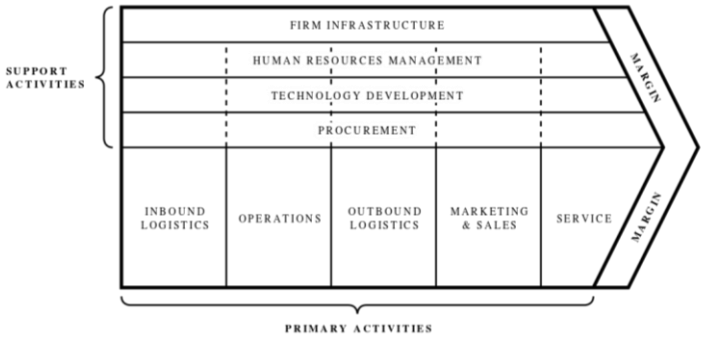


Figure 2.1: Porter's Value Chain framework (Porter, 1980)

The Value Chain is divided into two main groups: primary activities, which generate value across the supply chain; and support activities which support the primary activities and help differentiate the service. The framework aggregates businesses into strategically relevant and interconnected activities (Rejeb & Keogh, 2020) and was selected to be part of this research for its instrumental use as an analytical tool to diagnose problems, understand ecosystems and improve organizational processes.

Historically, the target of organizations was focused on improving core activities, as those were the ones that impacted product cost, directly contributing for competitiveness and growth (Daraban, 2018). Support activities were deemed as value- and resource-consuming, rather than value-creating and were often relegated to second plan, as they did not have a direct impact over product costs (Daraban, 2018). Support functions, whose costs were thought to be residual, were actually a major source of waste and inefficiency within organizations (Ribeiro, 2020), and are today seen as value-adding activities, which can have a massive impact in company performance and competitiveness.

Moreover, the interdependence between HR, technology and business strategy – all classified as support functions – in driving better organizational performance has been confirmed by several authors (Mintzberg, 1994) (Reese, 1995) and can be evidenced in the structure of the value chain. For the purpose of this research, the following support activities were described in detail, as they provide additional to understand and categorize the contractor sourcing and management process in large companies: HR Management, Technological Development, and Procurement (strategic function).

HR Management and its impact on organizational performance

Dave Ulrich (1996) defined the functions of human resources as aligning human resource and business strategy, re-engineering organization processes, listening and responding to employees, and managing transformation and change. Human resources are, in fact, a critical strategic function (Alagaraja, 2014), helping organizations to minimize costs, reduce risk (Towers, 2010), and a proven added-value to gain competitive advantages (Liu et al., 2014).

As many other business functions, Human Resource Management (HRM) activities are adjusting to new technologies and undergoing radical transformation (Fabbri & Scapolan, 2018). The entry and implementation of these new ways of operating is resulting in a continuous change that will impact every aspect of the function (Mihova & Ivanova, 2020). One of the most notorious changes has been an increased reliance on employee relations for the achievement of strategic objectives (Chapman et al., 2016) and firm performance (Deadrick & Stone, 2014). Some experts even predict that human resource managers must acquire digital skills and increase their digital dexterity to be able to evolve in their roles (Chytiri, 2019) (Fabbri & Scapolan, 2018).

Advantages of digitalization in human resource management can include real-time monitoring of employees (Bondarouk & Brewster, 2016), more transparency and greater access to past data (Abolhassan, 2017), in-depth analytics for higher performance levels (DiRomualdo et al., 2018), automation of transactional tasks (Zeoli & Billeter, 2019), and greater efficiencies during the recruitment process (Khahro et al., 2021). Besides these tools, Human Resources Information

Systems (HRIS) have also been widely mentioned as a way to improve workforce management (Kim et al., 2021) and will be addressed in the following section.

The knowledge on HRM is useful for the context of this research, as it predicts future HR management trends which may be considered by companies looking to optimize their HR processes.

Technological Development and the rise of HR Information Systems

Since organizational focus has shifted from working with materials to working with knowledge (Holsapple & Whinston, 1987), technology been a defining factor in facilitating workforce fluidity and helping organizations redeploy human resources, while minimizing the time and cost of displacement (Bughin, et al., 2019). In fact, the simplification of tasks brought by technology allows for the use of less skilled workers, who require less training and can be brought in at short notice. As a result, company costs are lower and there is less incentive to cultivate long-term employment relationships (ILO, 2016).

Honore (2016) defended that digitalization is necessary to optimize businesses, as it can save companies a lot of time, allowing the re-allocation of resources to more strategic activities. Advantages of digitalization in the HR field include: greater access to previously closed data sets (Abolhassan, 2017), in-depth analytics (Baranes & Palas, 2019), automation of transactional tasks (Zeoli & Billeter, 2019), and real time performance management (Kaji et al., 2019). An article by TechMagic (2021) has revealed other emerging HR technology trends: increasing reliance on temporary workers, HR tools that can be stored in the cloud, employee self-service tools, standardization tools, people analytics tools, and AI in employee management.

With the classic non-integrated information systems, companies often struggle to manage large amounts of information (Moussa & Arbi, 2020). In this sense, HRIS can help support a large number of tasks (Menant et al., 2021). It also provides the opportunity to improve organizational performance, facilitates communication between top management and employees, and produces relevant information and arranged data which represents the basis for decision-making in an organization (Sadiq et al., 2012) (Chakraborty & Abu Mansour, 2013).

The knowledge on HRIS and other HR tech developments is useful for the context of this research, as it can provide valuable insights to companies looking to automize their HR processes.

Procurement and its strategic role within organizations

The procurement function, otherwise known as Purchasing, is an essential strategic function in operating resource management, which can control up to 80% of overall business costs (Gupta, 2019). Amongst other tasks, procurement sets the foundation for the way companies select their

service suppliers (Morales et al., 2008), evaluating and benchmarking different service suppliers through the supplier selection process.

Through the procurement process, buyers are under pressure to streamline procurement activities, balance demand and supply, ensure competitiveness, and assist in deepening and building differentiation capabilities (Ross, 2015). The main objective is to reduce purchasing risk, maximize overall value for the purchasing company, and develop closeness and long-term relationships amongst buyers and suppliers (Taherdoost & Brard, 2019).

To achieve these multiple goals, many firms rely on of e-procurement software and to the introduction of technology systems in the different procurement stages – ordering, sourcing, tendering, auctioning, and negotiations (Tiwari et al., 2019).

Knowledge of the procurement function is useful for the context of this research, to understand the involvement of the Purchasing in the sourcing of temporary agency workers.

2.2.2. From Value Chains to Value Networks

In Porter's original framework (1980), the focus of the value chain was the end product, and the chain was designed around the activities required to produce it. The logic of this framework was that every company occupied a position in the chain; up-stream suppliers provided inputs before passing them downstream to the next link in the chain, until reaching the customer (Peppard & Rylander, 2006).

However, in the early 2000's surfaced the concept of value network (Van Middendorp, 2009). This new conceptual model perceived the value chain not as a sequence, but as an ecosystem where the interactions between stakeholders are bigger, as well as the interdependency. Value creation went from being a linear paradigm to becoming a network paradigm, which demands all of its intervenients to be flexible, and to coordinate and cooperate flexibly with other organizations (Van Middendorp, 2009). Adopting a network approach, organizations focus not only on the company or industry, but on the value-creating system itself, within which different economic actors – supplier, partners, allies,
and customers – work together to co-produce value (Van Middendorp, 2009).

Due to this change in paradigm, companies are today more open and able to rely on each other for their non-core functions whilst specializing on their core work (Iansiti & Levien, 2004). It is in the context of this new paradigm that the concept of hiring external temporary workers surfaces for OEMs, as for many other companies. It is also in the context of value networks that this research aims to investigate and optimize contractor management processes, considering all the previously mentioned history and ideas and also considering study results from authors performing similar studies which, will be exposed and discussed in the next section.

2.3. Developing a framework for improvement

To create a framework that will map and ultimately improve contractor management at company level, several strategic methodologies were approached with the intention of constructing a multilevel perspective to report and discuss literature and interview findings.

This subchapter looks into the future, distinguishing between the different types of decision making at company level (strategic, tactical, and operational), as well as different frameworks to assist in decision making (Strategy Map, Balanced Scorecard, PESTEL Analysis, and SWOT Analysis.

2.3.1. Strategic, tactical, and operational decision making

Strategic decision making

Strategic level insights assist with long-term decisions concerning the definition of corporate strategic goals. These decisions instantiate the long-haul company vision (Zhang, et al., 2013) and elaborate on how to create value for all stakeholders (Hallstedt et al., 2010), contributing directly to the achievement of common goals of the company.

Strategic decisions are highly unstructured, complex, inherently risky, and have great impact on the future of the organization (Goldberg, 2009). They typically require a large number of organizational resources and factual information. These decisions influence organizational direction, administration, and structure (Gamble & Thompson, 2009).

Tactical decision making

Tactical level insights aim to organize corporate resources (both material and immaterial) – e.g. cost, knowledge, human resources, relationship with stakeholders, etc. – and develop a roadmap considering the strategic goals of the organization (Zhang, et al., 2013). While strategies are usually in place for a longer period of time, tactics are normally classified as medium-term decisions (Milkaman et al., 2008).

Tactical decision making allows companies to evaluate its infrastructure and operations and adjust accordingly. To make a tactical decision, management analyzes information and determines a course of action, connecting strategical decisions with specific targets relevant for the performance and functionality of specific departments within the company (Huang et al.,2003). Dezso et al. (2012) suggest that although tactical decisions involve many people and departments, they tend to have a limited impact in case of failure, because they can be adjusted and changed relatively quickly.

Operational decision making

Operational level insights deal with the specific processes that occur within the lowest levels of the organization. The objective of contributions at this level is to support process deployment in accordance with tactics and tools chosen on the level above (Zhang, et al., 2013).

Operational decisions relate to day-to-day operations of the company. They have a short-term horizon as they are taken repetitively and do not require extensive business judgement (Grinstein, Goldman, & Harmancioglu, 2007).

Literature at this level often elaborates on both qualitative and quantitative assessment models that clarify processes and describes support tools for visualizing status and progression of those same processes (Ogaja & Wanyoike, 2015).

2.3.2. Frameworks for making strategic decisions

The three types of decision making mentioned in the previous subchapter have different impacts in organizations. A huge challenge for managers nowadays is the need to make strategic decisions with a limited amount of information and few past experiences to rely on (Planellas & Muni, 2019).

Strategic decisions have the potential to be the most rewarding, but also the most disastrous, should things go wrong. As stated by Planellas and Muni (2019) in their book Strategic Decisions, these "involve a high level of uncertainty and can rarely be reversed". For their inherently risky nature, managers often feel insecure and tend to seek help from external consultants (Planellas & Muni, 2019) when making strategic decisions. The authors have also identified that problems frequently arise when managers abuse this "crutch", as it leads to delays in strategy deployment, and also because managers know their organization better than external consultants. In the same book, the following model is proposed as a guide to making strategic decisions:

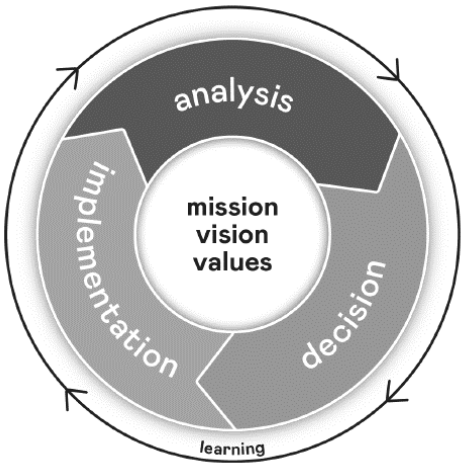


Figure 2.2: The Circle of Strategic Decisions (Planellas & Muni, 2019)

It is represented as a circle, because the authors intended for it to be a continuous learning cycle, with each strategic decision improving from past experiences, by correcting mistakes and providing new solutions. The three stages are explained below:

Stage 1: Analysis

The aim of analysis is to understand the strategic position of the organization in relations to its environment (both internal and external) and capabilities. It should be rigorous and supported by data, whilst also identify opportunities and anticipating trends (Planellas & Muni, 2019). Several strategic models can be integrated within this stage. For the purpose of this research, the following will be used: a combination of Strategy Map and Balanced Scorecard (Kaplan & Norton, 1997).

The Balanced Scorecard (BSC) is a performance management tool, which translates the business mission and strategy into objectives and initiatives, based on four perspectives: financial, customer, internal processes, learning and growth. These perspectives can then be combined into a strategic map (Kaplan & Norton, 1997). The Strategy Map shows visually how to create value in an organization. It does not contain measures, but rather objectives. By combining both tools, measures can be placed on the strategy map alongside the objectives they correspond with (Visual Paradigm Online, 2022):

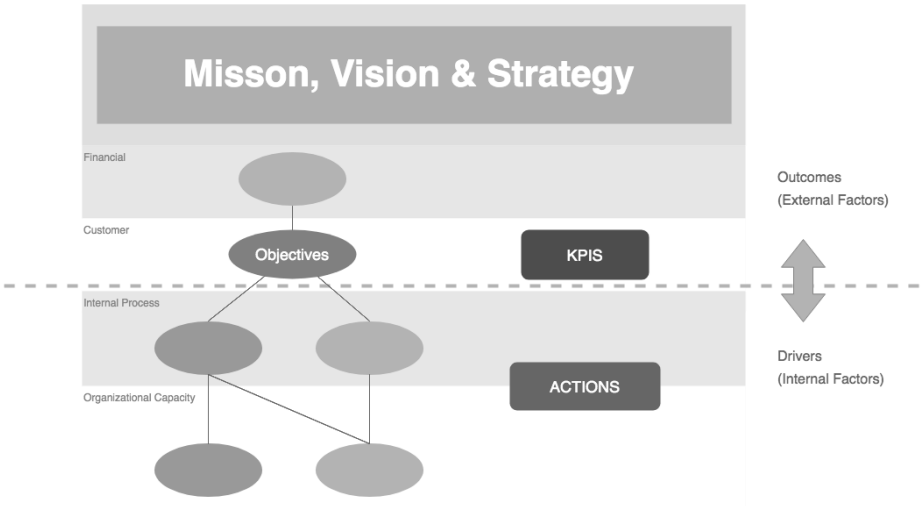


Figure 2.3: BSC/ Strategy Map combination framework (Visual Paradigm Online, 2022)

This research will result in a framework similar to the one above, which can serve as the foundation for strategic decision making within "The Automotive Company" and other OEM's which have similar processes. The framework considered has been found useful in enabling discussions within management on which objectives to prioritize in order to improve company strategy and performance, considering available conditions.

Stages 2 and 3: Decision and Implementation

To make a strategic decision, options must be generated and compared, selected, and implemented. Due to the time and dimension limitations imposed by the framework of this dissertation, it was not possible to develop this research to include stages 2 and 3 – decision and implementation.

However, these steps will be mentioned in future research and recommendations.

2.4. Exploratory Study Results

The main subject of this work is more directed towards industry than academia. As such, and as industry-related discoveries and studies are often protected under confidentiality agreements, it was challenging to find case studies that could evidence contractor management trends or other trends related to the adoption of Human Resources Information Systems. Regardless, for this analysis several works were considered, focusing especially on the difficulties, problems and recommendations encountered by fellow authors.

A recent study by Fenech (2022) aimed to understand how human resources undergrads viewed the future of the field. The investigation counted with 40 participants organized in two focus groups and revealed that new HR generations have a clear and positive perception of human resources management (HRM) in the digital era – relying more on social media, mobile and cloud technology, and HR applications or software. Overall, the perception was of a more effective, efficient, productive, and agile HRM. As potential challenges, the undergrads identified lack of organizational strategy and change management, employee resistance, and an organizational culture that has not made the digital shift (Fenech, 2022). Limitations encountered in this research were that it derived from a small sample of participants, with large focus groups which can impact the study's qualitative nature.

A study held by Aberdeen Group and published in the HR Focus periodical (2006) surveyed 150 organizations on their contract labor practices, ultimately identifying several issues related to contractor management. The main issue, according to the research was related to the fact that management and authority over contract workers was usually split amongst various stakeholders within an organization. It was revealed that primary responsibility for managing contract workers within a firm was shared by HR (cited by 30% of respondents), procurement (22%), business unit hiring managers (18%), and finance (14%). Others who may also have an impact on contract labor management include operations (11%) and information technology (5%). The lack of a single responsible entity means that contract labor management is often vulnerable to inefficiencies, as there is no controlling entity which an overview the entire contractor management process. According to the study, such inefficiencies included:

- Fragmented internal procedures, such as increased compliance risk, significantly different rate cards for similar positions/skills, as well as “maverick buying” – a purchasing phenomenon in which services are evidently purchased outside of the purchasing function and the procurement processes intended for the purpose.
- Labor-intensive processes which require many man-hours, and can result in delays in filling positions, settling for lower worker quality or poor skills matches due to the lack of lead time, and errors in time tracking and billing.
- Poor visibility into the process of contract labor, preventing the different stakeholders involved from having a detailed understanding of the process. This leads to inconsistencies in time to fill and higher labor rates, limited visibility into spending, and duplicate billing and calculation errors. Additionally, the lack of an overview prevents the company from thinking strategically about the process and prevents optimization.

The same research revealed that organizations using contract workers would like to be able to source candidates faster, to have a stronger collaboration amongst stakeholders involved in the contractor hiring and management process, to reduce “maverick buying”, and to have more visibility over contract labor rates and overall spending compliance. Specific challenges mentioned by the companies included:

- Struggle to find suitable candidates that matched the job requirements.
- Having to process multiple one-time requisitions for contract workers.
- Lack of collaboration in coordinating the end-to-end process – consisting of sourcing the service providers, preparing documentation, interviewing different candidates, testing possibilities, hiring workers, setting schedules, onboarding, tracking the work hours for payments, offboarding, etc.
- Difficulty in verifying compliance with very complex labor, domestic and international laws.

According to the research, 20% of participants rated their organizations as having good contractor management practices, 50% rated their companies as having average industry practices, and 30% as having poor practices when it came to contractor management.

To help overcome some of their challenges, firms are now turning to contract labor management vendor solutions to drive overall process efficiencies for program management (51%), compliance and control (40%), cost reduction for contract labor rates (36%), and price (29%). Amongst these advantages, there are other abilities which organizations consider valuable, namely the ability to: provide a good match of skills to job requirements (mentioned by 55% of respondents), ensure end-to-end compliance (44%), improve price (40%), reduce contract labor rates (34%), and also to provide

compliance tracking capabilities for background checks, compliance with federal labor standards, visas, and work permit documentation, and conducting periodic or ongoing drug testing.

For future steps, the interviewees mentioned as improvements:

- Having a clearly defined procurement process and protocol for labor contracting and requisition.
- Centralizing oversight of programs into one function and increasing collaboration among other internal stakeholders.
- Defining information requirements for compliance tracking and risk management.
- Centralizing data into one place to automatically send job requisitions to preferred vendors, cut paperwork, and improve visibility of the contingent labor program.
- Adopting technology to promote better collaboration, a single system to track and pay suppliers, and improve visibility into program reporting and analysis.
- Developing or accessing domain and process expertise to manage the program.
- Leveraging the right number of agencies, as well as the best ones for their organization's contract worker needs.

Another study led by Kochan et. al (1994) about managing contingent workers' safety and health in the petrochemical industry concluded with recommendations which can be applied to contractor-related problem-solving in the following ways: when faced with a problem concerning contingent worker(s) all stakeholders involved should be provided with the data needed for root cause analysis and problem solving; innovations or "best practices" that are emerging in some of the leading firms across the industry should be taken into account; and all the stakeholders should be involved in the process for a more coordinated approach.

CHAPTER 3

3. Methodology

3.1. Research Methodology

This dissertation was the result of a collaboration between Case Study Research (CSR) and Design Science Research (DSR). CSR was relevant to map out the current internal process for contractor management at “The Automotive Company”, providing specific guidelines and recommendations on how to act in the field to assure the integrity of the collected data, whilst DSR assisted in the creation of three constructs: 1) a process design; 2) a matrix table displaying process inefficiencies and recommended improvements per process area and stakeholder function; and 3) a Balanced Scorecard/ Strategy Map combination matrix for insights on what should be ”The Automotive Company’s” strategic direction according to the stakeholders considered.

Before introducing the framework that allowed for the combination and effective integration of both research methodologies, it is relevant to introduce each methodology separately to assure a proper understanding of particular components and requirements.

3.1.1. Case Study Research

Case Study Research is a popular and prevalent form of social science research (Yin, 2014), designed to explain, explore, or describe a phenomenon of interest in its real-life context (Ellram, 1996).

For this dissertation, a descriptive CSR approach was applied. The choice of approach was linked to the purpose of the study, relying on the opinions of company professionals and experts in the process, to better understand its limitations and the needed requirements to implement a more efficient contractor management system at “The Automotive Company”.

The descriptive case study approach was relevant to gain an insight on how different divisions and stakeholders manage their part of the process (Tetnowski, 2015) and ascribe to the problems in question (Creswell, 2014).

To make the qualitative CSR approach more rigorous, several steps were taken to assure the research findings were authentic (Lincoln et al., 2011) and consistent (Merriam, 1998): a case study database was created to facilitate data storage; interview scripts were framed and altered according to the interviewees’ viewpoint; multiple sources of evidence were utilized to explore the same topic (data triangulation); and the “chain of evidence” principle (Yin, 2014) was applied to showcase evidence association between the several stages of data collection, interpretation, and reporting.

3.1.2. Design Science Research

DSR, on the other hand, is a tool utilized to create innovative constructs that aim to solve organizational problems (Hevner & Chatterjee, 2010). This study touched upon the essential aspects to be covered during the DSR process which included its requirements, grounding, constructs, field testing and evaluation (Hevner, 2007).

The DSR methodology was selected for its ability to convey facts through artifacts and was used in the context of this research to develop three constructs, based on the triangulation of different data sources – in this case, exploratory study results analysis, documentation from "The Automotive Company" on its internal processes, and transcripts elaborated from interview notes.

3.1.3. Integration of CSR framework within the DSR paradigm

Despite being very useful in creating innovative constructs, the DSR paradigm still lacked some attributes in terms of validity and reliability when it comes to CSR collaboration, namely: failure in providing clear insights on how to effectively design and perform case studies; and only pointing out case studies for the ex-post evaluation of the construct, excluding the use of this evaluation method for the ex-ante evaluation (Costa et al., 2016).

As such, both methodologies were combined using a research framework for collaborative multidisciplinary projects between DSR and CSR proposed by Costa et al. (2016). The framework in question came to prove that CSR can be used not only after the development of the construct but also for an ex-ante and ex-post evaluation, by evaluating meta-constructs that will function as an input to build the final construct, or by. (Costa et al., 2016)

For performing a good DSR project, some fundamental aspects were also considered:

1. The construction of a viable construct (Hevner et al., 2004).
2. The rigorous evaluation of this construct (Peffers et al., 2012).
3. The knowledge contribution of the DSR project (Gregor & Hevner, 2013).

Analyzing the developed research framework, it is possible to understand the importance of a rigorous design of the CSR, as well as ways of ensuring its validity and reliability. These aspects are most of the times not considered in DSR works that make the use of case studies. The use of the case study methodology contributes, not only for providing a valid input for the development of the constructs, but also for validating the DSR findings, making the framework much more reliable (Costa et al., 2016).

The framework methodology, as described in the paper by Costa et al. is represented in **Appendix 9.1.)**, and has been contextually applied to the purpose of this study in the manner described and represented below:

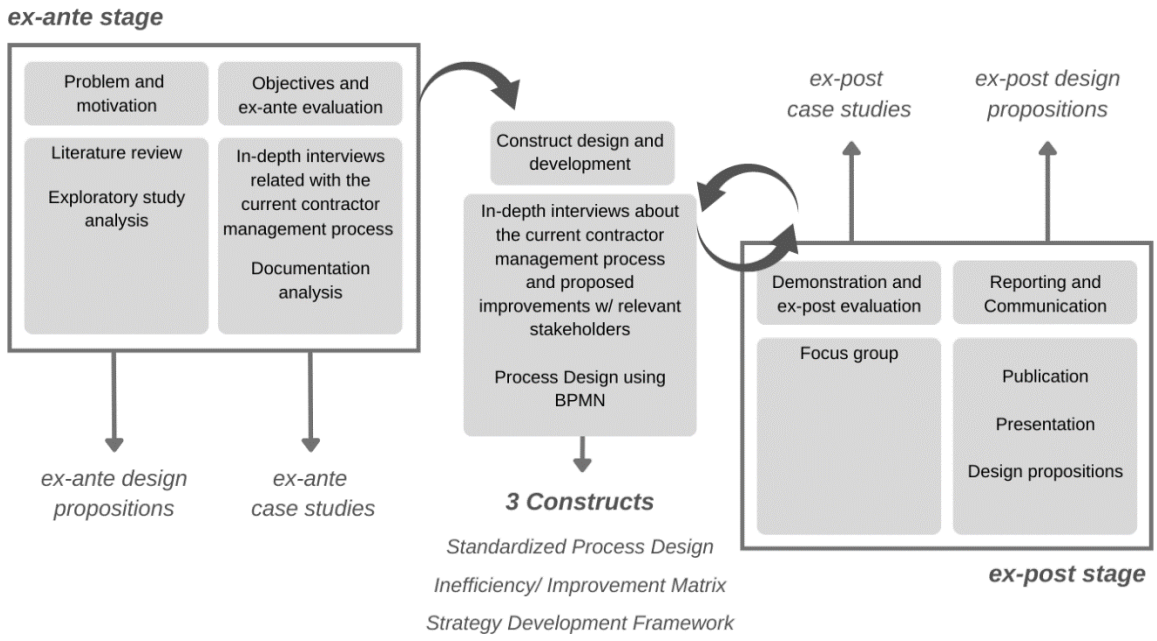


Figure 3.1: Costa et al. (2016) CSR and DSR Integration Framework applied to the context of "The Automotive Company"

Ex-ante stage: defining the problem and motivation for the study, defining the objectives of the constructs, and performing an ex-ante evaluation via interviews with company stakeholders.

3.1.3.1. **Problem and Motivation**:

For this stage, an extensive literature review was conducted to develop a theoretical/conceptual framework. The literature review was relevant to gather knowledge and understanding of the academic literature in relevant topics to the study, covering existing research, theories, and evidence to understand significant themes related to the topic, recent developments, as well as appropriate methods of research.

For this stage, an exploratory study was also conducted to determine if any similar studies had been done in the past, looking to find common touchpoints, areas of interest and to scan for potential issues or limitations. The main purpose for using this methodology was that it allowed to create a strong foundation for exploring ideas, choosing the right research design and find variables that were not being considered before and could in fact useful for the study. The exploratory study that was performed can be classified as secondary research, as it collected data from pre-published primary research. The selection of this methodology allowed for an early-stage assessment of the problem and for great flexibility as the research progressed. On the other hand, it provided mostly qualitative data, often sensitive to judgement and bias, mostly applied over small samples, the results of which cannot always be accurately generalized to a larger population.

3.1.3.2. Objectives and Ex-ante Evaluation:

To help define the objectives for the solutions to be developed, in-depth research was performed using CSR, both before and after evaluation of the constructs. Before, for data gathering via in-depth interviews, and afterwards for expert validation via a focus group. CSR made it possible to define the objectives for the solution to be developed.

This part of the research consisted in applying the CSR methodology to conduct in-depth interviews with stakeholders directly involved in the management of contractors at "The Automotive Company" – a real company selected as representative of its industry and identified this way for confidentiality purposes. The interviews were done with the purpose of mapping out internal processes for contractor management and understand diverging issues amongst the stakeholders involved, noting down common priorities for each stakeholder group, and identifying suggestions each group thought relevant to improve the process. This contributed to the sharpening of research objectives, as it provided broader insight into company needs, as well as internal processes that some stakeholders had already implemented to make the process more agile for their teams, but that were not yet being used at company level.

Construct design stage: design and develop the constructs.

3.1.3.3. Construct Design and Development:

This stage followed the design cycle of the DSR paradigm, taking place in parallel with CSR, to iterate between design and evaluation of the constructs. Following the design stage of the DSR paradigm, three constructs were created, developed by analyzing different literature, but having as foundation the same in-depth interviews with process experts:

1) A process design made after detailed and comprehensive understanding of the current contractor management process at "The Automotive Company", and aimed at describing that same process as is currently being practiced in the firm, via BPMN. This allowed for a comprehensive overview over which steps stakeholders classify as most essential, which ones have little compliance, and any potential improvements.
2) An inefficiency matrix to map out the weak points of the process and recommended improvements and countermeasures. By relying on the feedback of "The Automotive Company" employees, this matrix will provide an in-dept mapping of process and company issues, as well as a clear overview of which improvements should be prioritized in the process – either by how easily and cost-effectively they can be implemented, or by its incidence and major impact in company processes and stakeholder tasks.

3) A strategy development framework drafted after the two other constructs, during a focus group with key stakeholders and aiming to provide the foundation for a company strategy, using a framework combination of balanced scorecard and strategy map. Details on the focus group will be described in subchapter 3.2.2.).

Ex-post stage: demonstrate the construct and perform an ex-post evaluation; report and communicate the results.

3.1.3.4. Demonstration and Ex-post Evaluation

For this stage, CSR and a focus group were used. The procedures to perform this new CSR were the same applied in the ex-ante evaluation, regarding data sources, data analysis and validity insurance. During the focus group, participants were shown the results of the interviews and constructs 1) and 2), with modifications being made according to the feedback obtained. This allowed to strengthen the validation of the construct, as well as the generalization of the findings.

3.1.3.5. Reporting and Communication

The scientific and practical contributions of the study were then reported. The results included the final theoretical/conceptual process framework, inefficiency matrix and subsequent findings, as well as the final design propositions (ex-post design propositions).

Recommendations for further studies and investigation were provided, along with a set of recommendations on how to improve the process on "The Automotive Company", an approach methodology which can later be adapted to other companies in similar situations.

3.2. Data Collection

Data collection was performed considering several sources – exploratory study results analysis, documentation from "The Automotive Company" on its internal processes, transcripts elaborated from interview notes, and focus group insights – for the purpose of data triangulation and validation. Exploratory study results analysis were already mentioned in previous chapters, company documentation will be presented in chapter 4) Case Study Contextualization, and interview and focus group methodology will be addressed in this subchapter.

3.2.1. Interview Data Collection

For this study, the data was collected through qualitative semi-structured interviews, selected as they provide a considerable amount of information collection both in quality and quantity.

Semi-structured interviews were used to keep the conversation as flexible and open as possible and allow room for the interviewees to extend on topics of interest. Additionally, this method allowed to redefine the flow of the interview depending on each specific situation while providing the chance to ask supplementary questions throughout the interview, depending on the direction of the conversation or the stakeholder type in question.

3.2.1.1. Interview Candidate Selection

Prior to the interviews and the development of this study, a Non-Disclosure Agreement was signed between a representative of ISCTE Business School and a representative of "The Automotive Company". The participants were fully informed of the purpose of the study as well as of the confidentiality of the information provided and their anonymity.

Two criteria were considered to select the interviewees:

1) Being an employee of "The Automotive Company".

2) Being/ having been directly involved in the contractor management process or having a proven background in the activities inherent to that same process at "The Automotive Company".

In total, twenty-one specialists from "The Automotive Company" were interviewed (one of them twice), representing the following stakeholder groups:

- Thirteen Hiring Managers from different areas
- Four members from Indirect Purchasing
- Two Senior Administrators from People & Innovation
- One Vendor Management Specialist
- One EA and Tech Standards Senior Specialist
- One Data Analytics and HR Solution Manager

These members were selected as they allowed for an accurate representation of the main stakeholder groups involved and a deep understanding of organizational needs and process weaknesses and limitations, covering all internal areas of interest in the process.

3.2.1.2. Ethical Considerations

The interviewees were approached via Microsoft Teams chat (internal to "The Automotive Company" employees) and the ones who agreed to participate in the study received a Microsoft Teams invitation for an hour-long video interview.

The interview questions were not shared beforehand, to keep the answers authentic and spontaneous and the participants were asked to respond freely at all times. Interruptions were

avoided during the interviews and special attention was taken to not let preconceptions or personal considerations interfere in the viewpoint and opinion of the employees.

The wording of the questions was impartial and leading questions were avoided. The interviewees were additionally informed that the session would not be recorded, as to incentivize genuine responses.

3.2.1.3. Interview Protocol and Guiding Questions

Following the technique explained by Hunter (2012), an interview protocol for the qualitative data collection was created. The protocol was based on the exploration of the presented research questions, which were preconceived and altered to an open-ended question format. The purpose was to give the interviewees a space to reflect on the current processes of "The Automotive Company" for managing contractors, whilst also providing some guidance in regard to content.

The questions were divided into three main categories: profiling questions, general questions, and stakeholder-specific questions. The selection of guiding questions can be consulted in **Appendix 9.2.)**. The order was sometimes changed, depending on the flow and direction of the conversation.

3.2.1.4. Interview record notation

During the interviews via Microsoft Teams, notes were handwritten, and the interviews were transcribed and reviewed immediately after, as a way to keep the integrity of the data and assure the anonymity of the participants. The notes were then polished and rearranged into first person testimonies, to reflect the same order and format and make it easier for the reader to comprehend.

3.2.1.5. Interview Data Analysis Process

The data analysis process of the interviews started with the revision of the interview records and subsequent process drafting and adjustment. Secondly, hard copies of the transcripts were printed out for analysis and familiarization with the text. After revising the interview set several times, relevant passages were highlighted. Indirect Purchasing Buyer's excerpts were highlighted in yellow; Hiring Manager's excerpts were highlighted in pink; and other Specialists' excerpts were highlighted in green.

Besides the color coding, a number/letter code was attributed to each participant and attached to the corresponding excerpts to allow for stakeholder insights and referral to the original script. The number indicated the interview number in chronological order, and the letter indicated the position they occupy at "The Automotive Company": "P" for Indirect Purchasing, "M" for Hiring Managers, and "S" for other Specialists. The coding translation is represented in **Appendix 9.3.)**.

Afterwards, the highlighted excerpts were cut into post-its and glued to a whiteboard. Descriptive labels were drafted, and excerpts were divided according to relevant categories. As the different categories related with each other, some groups collapsed or expanded to accommodate new findings and common insights into the process. After having a clear mapping of the connections between different categories, a matrix was developed in Microsoft Excel.

3.2.1.6. Interview Thematic Analysis

A thematic analysis allowed for the distinction of themes within the data, making it easier to analyze. This was necessary to explore similarities and relationships between different pieces of data, and to make general assumptions on which inefficiencies and improvements are more valued per stakeholder group, and which notions and opinions are common amongst different stakeholder groups. Thematic analysis also provided freedom and autonomy for the investigator (Braun & Clarke, 2006). In this research, the first themes/ categories were based mostly on trending interview topics, while taking into consideration the optimization purpose of the thesis. The categories were revised through the data collection process, and any different emergent themes were added to the data analysis process (Saldana, 2015).

In this case, there were five criteria which allowed to analyze the process into different categories and provide additional insights: stakeholder type, process stage, comment type (inefficiency or improvement tip), a short description and a detailed one.

3.2.1.7. BPMN as a tool for Process Design

During the interview data analysis, an exploitative approach was applied: key statements were collected, and a framework was sought to explain them (Bamberger, 2018). The framework selected to identify all experiences related to contractor handling by the participants in this case was process mapping, done using Business Process Model and Notation (BPMN).

BPMN is a standard tool used to map business processes in a graphical notation and give organizations the ability to communicate these procedures in a standard manner (Braun & Esswein, 2014). As a graphic toll, BPMN facilitated the understanding of the collaborations and interactions between stakeholders, by providing an overview of the process, as well as a deep understanding of internal needs and business circumstances (Object Management Group, 2022).

After the process designs were concluded, descriptions were provided to some of the processes, to facilitate the interpretation of real events at “The Automotive Company”.

3.2.2. Focus Group Data Collection

The results of the Interview Data Collection were compiled into tables, graphs and process designs, which can be consulted in chapter 5) Research and Findings. These results were then presented to relevant "Automotive Company" stakeholders during a focus groups performed via Microsoft Teams meeting, with the purpose of drafting a strategic direction for managing contractors within the company, considering company priorities, and technical, budgetary, and asset-related limitations.

3.2.2.1. Focus Group Candidate Selection

The focus group was performed with five members from three different stakeholder groups at "The Automotive Company":

- Two members from Indirect Purchasing
- Two members from People and Innovation
- One Data Analytics and HR Solution Manager

These members were selected for the prominent role they represent in the process – contacting directly with suppliers and/or hiring managers – and awareness of current process inefficiencies.

3.2.2.2. Ethical Considerations

The members present in the focus group were shown the tables and processes represented in chapter 5) of this dissertation, and they were informed that the session would not be recorded, as to incentivize genuine responses.

The data was not shared beforehand, to keep reactions authentic and spontaneous. Special attention was taken to not let preconceptions or personal considerations interfere in the presentation of the questionnaire results.

3.2.2.3. Focus Group Data Analysis process and record notation

During the focus group, small notes were handwritten to reflect thoughts on the proposed measures and their practical applicability to "The Automotive Company" – some ideas were discarded for legal reasons or impracticability, whilst others were welcomed and considered for future improvements.

During the focus group, a pre-drafted Strategy Map/ Balanced Scorecard framework was also proposed by the author considering drivers and expected outcomes, organizational capabilities, internal processes and desired financial KPIs. During the course of the focus group, ideas were juxtaposed, and the framework was adjusted, allowing for each participant to pitch in with new ideas and have their validity verified by other participants on the spot.

CHAPTER 4

4. Case Study Contextualization

This chapter will provide a short contextualization into “The Automotive Company” case study, a real company selected as representative of Automotive OEMs for the purpose of this research. The following topics will be approached: an insight into contractor trends in the automotive sector, company policies related to contingent workforce, contractor statistics within the company, and an overview of company processes related to temporary agency workers.

4.1. Automotive Industry Trends

The automotive industry is a significant contributor to the global economy and to growth and development worldwide (Masoumi et al., 2019). It is also central to the EU economy, generating a turnover that represents around 7% of the EU’s GDP – around 936 billion € – in 2020 (European Commission, 2021).

In a report released by the International Labor Organization, it was revealed that the automotive industry is amongst the many that have been increasingly relying on contingent and part-time workers, as these offer greater flexibility and less risk for employers (ILO, 2016). It has, in fact, been proven that this increase in the use of temporary workers is not only due to the flexibility benefits (Pardi, 2017) and cost savings (Cahuc & Postel-Vinay, 2002), but also very much related to the adoption of lean manufacturing methods.

4.2. “The Automotive Company” Case Study

To understand the contractor management process, interactions and limitations in current OEMs, this research relied on real data from the European headquarters of a large multinational automotive manufacturer – selected as representative of its industry – and referred to in this research as “The Automotive Company” for confidentiality purposes.

As many other original equipment manufacturers, “The Automotive Company” calls upon the services of other companies, referred to as service providers, in a wide range of areas such as Engineering, IT Support, Consulting, Audit, etc... In providing these services, these suppliers dispatch people to work for “The Automotive Company”, often for an extended period of time.

Such an activity is strictly regulated. European, national and company laws define the conditions under which services can be rendered and impose heavy sanctions if such conditions are not met. The objective of these strict rules is to avoid fiscal fraud and ensure that all employees benefit from the same employment conditions.

4.2.1. Company Policy on TAWs

The policies on contingent workforce at “The Automotive Company” apply to all individuals or service providers who provide a service to the company but have no employment contract with it and are not employed through an interim agency.

They can be either contractors or suppliers and are distinguished by the following parameters:

- Suppliers: the service provided is paid based on total package/project (deliverable)
- Contractors: the service provided is paid based on daily/hourly rate (time & material)

To assist in the management of contractors, “The Automotive Company” has in place a contract management policy, which sets out the framework for negotiating and signing contracts within the firm. The contract management flow requires extra measures for contractors. For engaging with Contingent Workforce, strict rules are in place:

1. The services must always be covered by a written agreement before the start of operations.
2. The written agreement must specifically describe the service tasks and deliverables. Contingent workforce must only be used for specific expertise, which are not available within “The Automotive Company”.
3. “The Automotive Company” employees, interims or interns cannot be converted into contingent workforce, unless there is a minimum of one year between the two positions and the services provided by the employee/contractor are not similar.
4. Contingent workforce cannot be permanent. Contractors can deliver services only for a specific project and/or a limited period of time. In principle, the same contingent workers shall not provide services to “The Automotive Company” for more than two years in the same job position. For this reason, specific duration and time limits must always be included in the employment agreement.
5. There cannot be an individual selection of contingent workforce. The selection of the individual is the sole responsibility of the service provider. “The Automotive Company” should merely specify in the agreement the competencies, skills and expertise that are required from the contingent workforce if these are determining factors for the service delivery. If the service provider proposes only unsuitable candidates, “The Automotive Company” has the right to refuse.

After the start of the contract, there are also some rules “The Automotive Company” must follow for when collaborating with contingent workforce and service providers. These rules are explicit in **Appendix 9.4.)**.

4.2.2. Contingent Workforce Statistics

"The Automotive Company" is composed by twenty different functions, seventeen of which are using subcontracted services. In May 2022 there was roughly 2620 contractors at the service of "The Automotive Company", 61% of which were working for the IT&D division. The following graph contains information on the number of contractors that were deployed per function in May 2022:

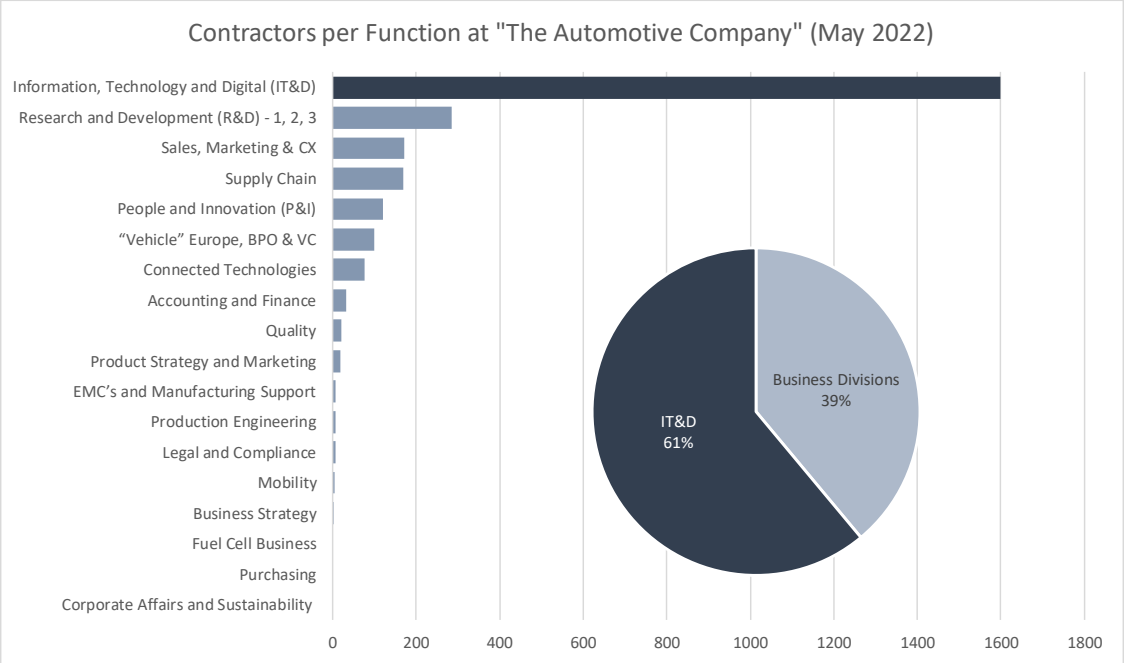


Figure 4.1.: Contractors per Function at "The Automotive Company" (May 2022)

As can be inferred from the graph above, IT&D holds the largest number of contractors within "The Automotive Company". Due to the standard nature of the tasks performed, the high number of workers and the inherent complexity that comes with managing each contract, IT&D has developed its own methods for managing contractors. As such, when mapping the Contractor Management Process at "The Automotive Company", this research will focus on the process applicable to all other functions, referred to as the "Business Divisions".

4.2.3. Supplier Selection and Evaluation Policy (SSEP)

To understand the Contractor Management Process at "The Automotive Company", it is essential to also understand how the suppliers – companies which employ the contractors – are selected.

The Supplier Selection and Evaluation Policy (SSEP) is an internal policy of "The Automotive Company" which defines a standard process for Supplier Selection and continuous Performance Evaluation. The aim is to support the Business Divisions of "The Automotive Company", as well as IT&D, to carry out their own Purchasing activities while ensuring optimum quality-cost ratio and

promoting process standardization and compliance within the company. The SSEP comprises six steps: Business Clarification, Sourcing Strategy Setting, Candidate Suppliers Selection, Request for Quotation (RFQ), Quotation Analysis and Negotiation, and Supplier Selection Authorization (SSA).

4.2.4. Contractor- related Processes and Requirements

When dealing with a new contractor, the following documents must be submitted by the supplier: a signed resource request form (E3 form), and a Work Order archived by each function and properly signed including service description and cost, or a CIF (Contract Information Form) agreement, which must be prepared and signed by the function and the legal department.

All documents are then sent to a designated mailbox within “The Automotive Company”.

It is also important to consider that the suppliers are paid by each division's own Budget. The fee for each contractor is negotiated by the line manager in charge of the hiring, within the framework of the Service Agreement or Work Order.

4.2.5. Stakeholder Types

There were six different types of stakeholders involved in the interview process, whose roles are described in the paragraph below:

1) Hiring Managers: responsible for identifying contractor needs for their teams, managing the budget necessary to follow through with those hires. They are in charge of contacting the supplier companies, preparing the job requirements, shortlisting candidates based on their CVs and holding interviews (interviews are for Business Division only, not applicable to IT&D). After selection, they contact Indirect Purchasing to confirm the contractor rate and after it’s been discussed, they gather all necessary documents and send them to the contractor mailbox, managed by P&I; 2) Indirect Purchasing: responsible for negotiating the rates of each contractor with the corresponding suppliers and keeping track of yearly negotiations with the preferred suppliers which have standard rate cards and are negotiated once a year; 3) Vendor Management Specialist: similar role to the hiring managers, but for IT&D; 4) P&I Administrators: Responsible for checking the documents sent by the hiring managers in the contractor mailbox, checking and sending them back for correction if necessary. Afterwards, they manually input the information into PeopleSoft – the main Human Resource management software at “The Automotive Company”, 5) EA & Tech Standards Specialist: responsible for a software which downstreams the contractor information from PeopleSoft to other systems, to allow contractor access; and 6) Data Analytics and HR Solutions: responsible for optimizing the process flow and currently looking into different alternatives to eradicate the manual data input by P&I.

CHAPTER 5

5. Research and Findings

In this chapter, the findings from the interviews were laid out using different frameworks. The goal was to answer the research question inherent to this work: “How to optimize the contractor sourcing process in an Automotive Original Equipment Manufacturer (OEM)?”, considering perspectives from the different stakeholders and relating them to obtain an overview on process weaknesses and potential improvements.

5.1. Findings

This subchapter aims to design the current process for sourcing and managing temporary agency workers at “The Automotive Company”, as well as to design a new process, considering comments and suggestions from the different stakeholders involved in the process and with the assistance of several strategic frameworks.

5.1.1. Current Process Mapping

The current contractor management process at “The Automotive Company” is very extensive and complex. For this reason, the process will be divided into:

- Subprocesses, not applicable to all cases and which require specific conditions to be met.
- Process stages, common to all Business Division contractors.

Some complex subprocesses will be presented using BPMN and a short description, whilst other will be simply described. General process stages will always be presented in BPMN. The different general stages and subprocesses are described by order of events below:

5.1.1.1. Subprocess “Fiscal Year Planning”

Chronologically, the first subprocess is “Fiscal Year Planning”, involving two key stakeholders: the hiring managers of “The Automotive Company” which will present their projects for the upcoming fiscal year (from April to March), and members from the international headquarters of “The Automotive Company” which “own” the budget and will approve the resources that can be allocated for each project, depending on existing budget, and business needs and priorities.

Since there is a cap on the number of permanent members that can be hired, the only way for “The Automotive Company” to keep up with an increasing number of projects is by working with contractors. As such, during the last quarter of the calendar year (October, November, December) hiring managers and “budget owners” start their discussions, which should be concluded by end-February, one month before the new fiscal year starts.

5.1.1.2. Process stage “Contractor Selection”

In case we are dealing with a contractor that is new to “The Automotive Company”, the first step after the budget is approved is for the hiring manager to reach out to supplier companies and send them the job description, timings, conditions, along with the requirements they are looking for in a contractor. The preference of “The Automotive Company”, and especially the Purchasing division – in charge of negotiating the rates – is that the managers reach out to the preferred suppliers, which have pre-agreed rate cards. However, that is not always what happens.

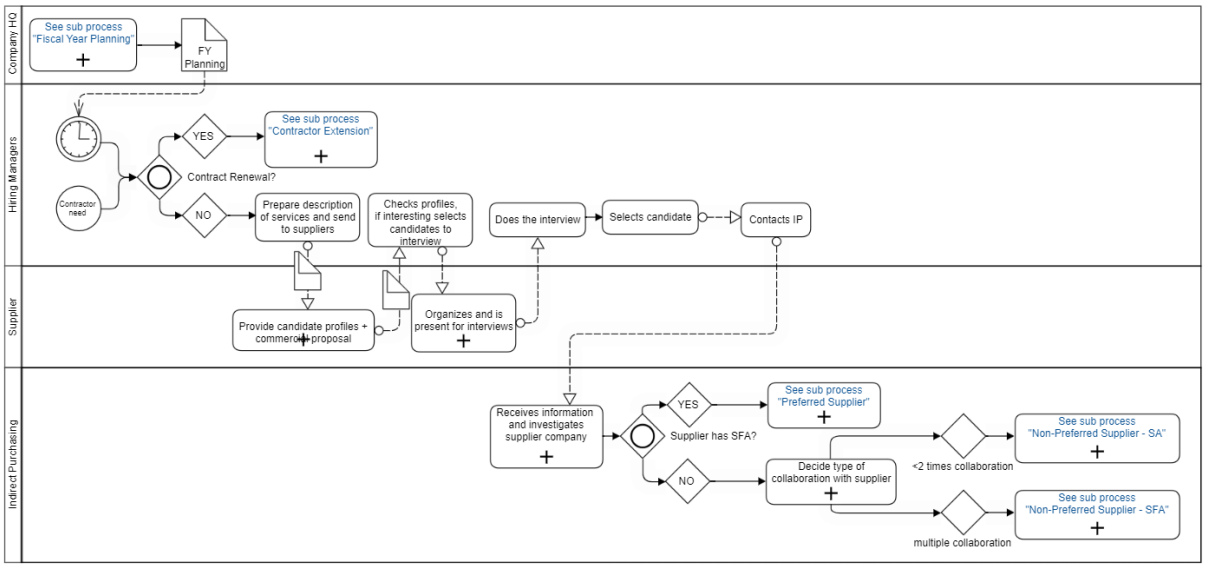


Figure 5.1.: "Contractor Selection" Process Stage (designed using BPMN, 2022)

This figure is represented in larger scale in **Appendix 9.5.)**.

5.1.1.3. Subprocess “Preferred Supplier”

In case the hiring managers select a contractor employed by a preferred supplier, rate confirmation by Indirect Purchasing is in most cases fairly simple. This is because IP already has an SFA and an agreed rate card with these suppliers, meaning in most cases only a rate confirmation is required. After rates are confirmed by Indirect Purchasing, it is the job of the hiring managers to collect the required legal documents.

If a contractor comes from abroad for the sole purpose of working at “The Automotive Company”, they need to present a Limosa Certificate and an A1 form. If the contractor comes from outside the European Economic Area, a work permit also needs to be presented. Besides these, there are other documents which are common to all Business Division contractors:

- E3 Form: internal document required by P&I to register external workers on “The Automotive Company” internal systems. Must be signed by the General Manager and Vice President of the division.

- Work Order: if there is an SFA in place, managers can hire contractors for short terms projects by signing a Work Order. This document contains start and end date of the contractor, description of services, agreed rate, and number of working days. It will be the basis for the payment of services and is also necessary to guarantee legal compliance when the contractor is on the premises of “The Automotive Company”. Must be signed by the General Manager of the division and by a representative of the supplier.

After all signatures are collected, the documents are sent to P&I.

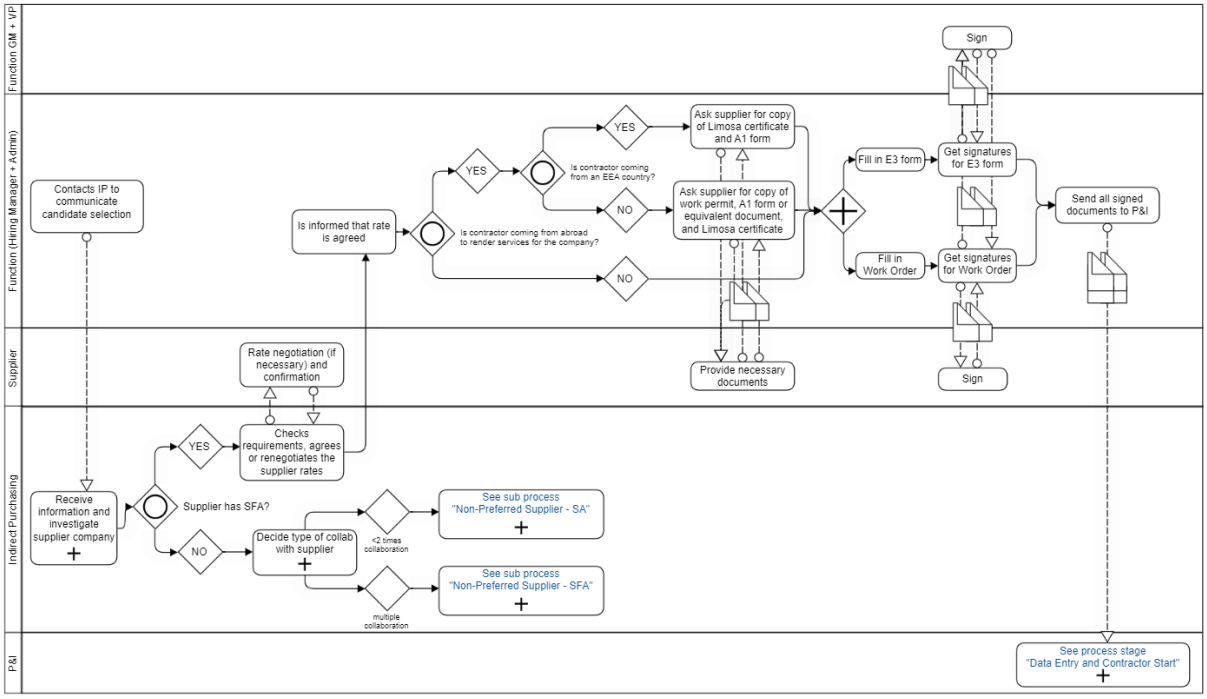


Figure 5.2.: "Preferred Supplier" Subprocess (designed using BPMN, 2022)

The figure above is represented in larger scale in **Appendix 9.6.)**.

5.1.1.4. Subprocess “Non-Preferred Supplier - SA” – short collaboration

In case the hiring managers select a contractor employed by a non-preferred supplier, with which the “Automotive Company” does not intend to collaborate for other agreements, the hiring basis is a Service Agreement.

To prepare the Service Agreement, the hiring manager must fill in a contract overview form and send it to Legal, to prepare a draft agreement. After alignment between Legal, the hiring manager and the supplier, the manager will submit a CIF form in ServiceNow which will be approved by Legal. Once approved, the manager must print out two copies of the Service Agreement and the CIF and get them signed by the corresponding management level of “The Automotive Company” and by a supplier representative. After that the Service Agreement is filed and the standard documents are signed and sent to P&I to be reviewed and input into PeopleSoft.

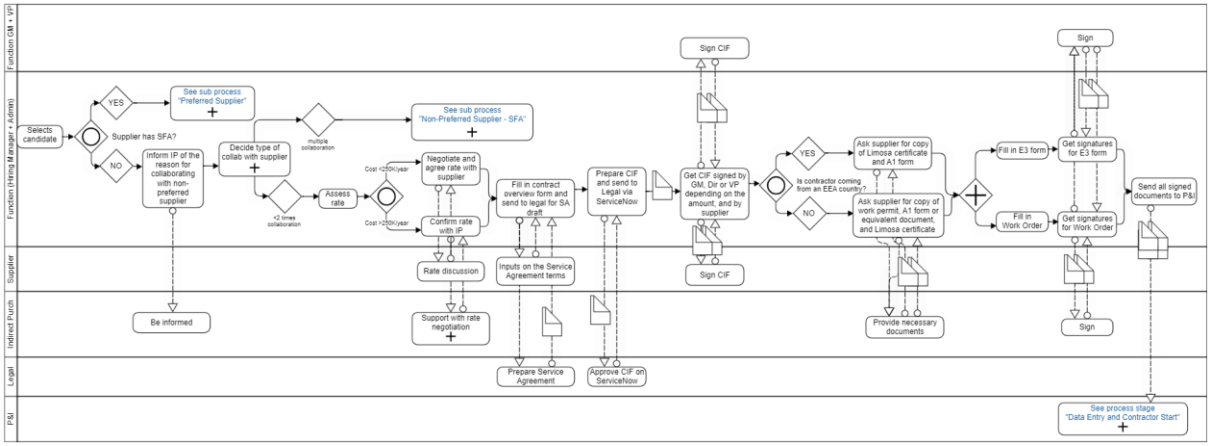


Figure 5.3.: "Non-Preferred Supplier SA" Subprocess (designed using BPMN, 2022)

The figure above is represented in larger scale in **Appendix 9.7)**.

5.1.1.5. Subprocess “Non-Preferred Supplier - SFA” – multiple collaborations

The process for non-preferred suppliers who will do multiple collaborations with “The Automotive Company” is very similar to the previous one, with the main exception that instead of having a temporary Service Agreement in place, these suppliers will have a Service Framework Agreement, which has an unlimited duration.

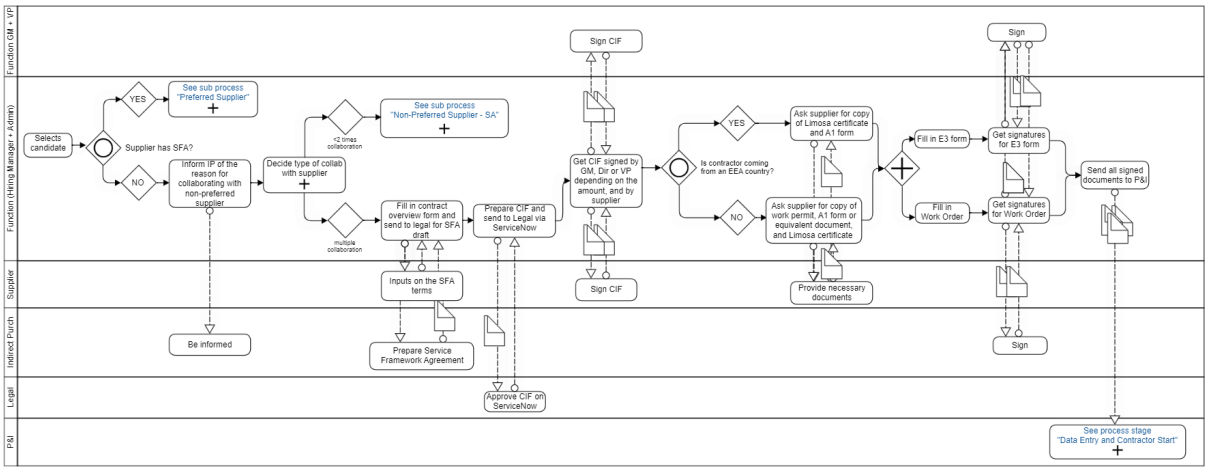


Figure 5.4.: "Non-Preferred Supplier SFA" Subprocess (designed using BPMN, 2022)

The figure above is represented in larger scale in **Appendix 9.8)**.

5.1.1.6. Process Stage “Data Entry and Contractor Start”

After IP receives the documents from the function (either hiring manager or administrator), IP administrators will check for mistakes or missing information and if necessary, clarify with the function. After all documents are gathered, P&I will manually input the data into PeopleSoft, a

process which takes around twenty minutes to conclude. From PeopleSoft, the contractor's information is cascaded down to other systems and accesses are prepared.

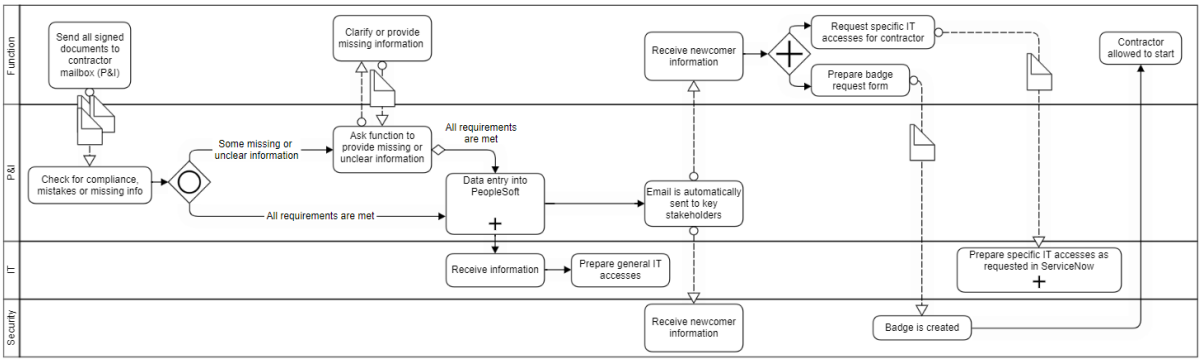


Figure 5.5.: "Data Entry and Contractor Start" Process Stage (designed using BPMN, 2022)

The figure above is represented in larger scale in **Appendix 9.9)**.

5.1.1.7. "Contractor Extension" Subprocess

For Business Division contractors, there is a maximum legal period to render services to "The Automotive Company". If the contractor's Work Order has a validity of only one year and the function would like to keep the contractor for another project, it is possible to do so if it is within the legal timeframe. The process is described below:

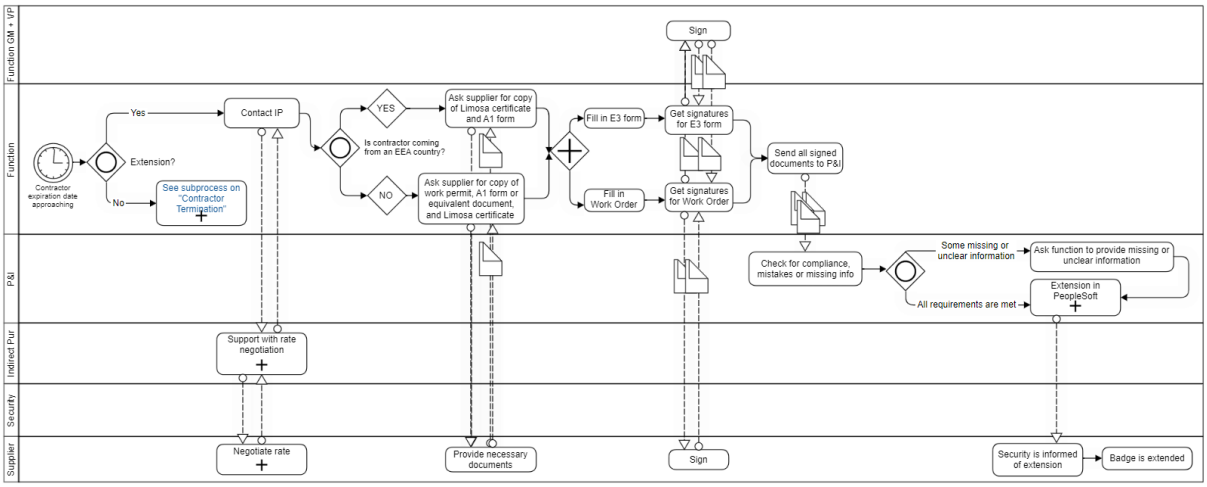


Figure 5.6.: "Contractor Extension" Subprocess (designed using BPMN, 2022)

The figure above is represented in larger scale in **Appendix 9.10)**.

5.1.1.8. Process Stage "Contractor Termination"

If the legal timeframe to keep a contractor has passed, or if the Work Order is coming to an end and the function does not wish to renew it, the termination process below is put into action:

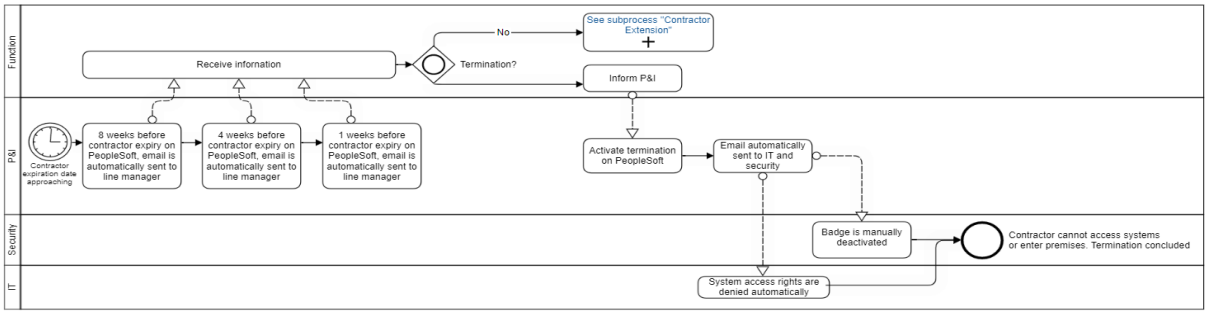


Figure 5.7.: "Contractor Termination" Process Stage (designed using BPMN, 2022)

The figure above is represented in larger scale in **Appendix 9.11)**.

5.1.2. Statistical Overview of Interview Results

After mapping out the current contractor creation, extension, and termination processes at "The Automotive Company" using the descriptive component of the interviews, a statistical analysis was held on the inefficiencies and improvements recommended. The purpose of this analysis was to understand the strengths and weaknesses of each process stage, and the way the different process steps impact the stakeholders involved.

A first analysis was conducted, categorized by stakeholder type, which can be seen below:

5.1.2.1. Hiring Managers (Function)

In total, thirteen hiring managers were interviewed, resulting in the below inefficiency mapping:

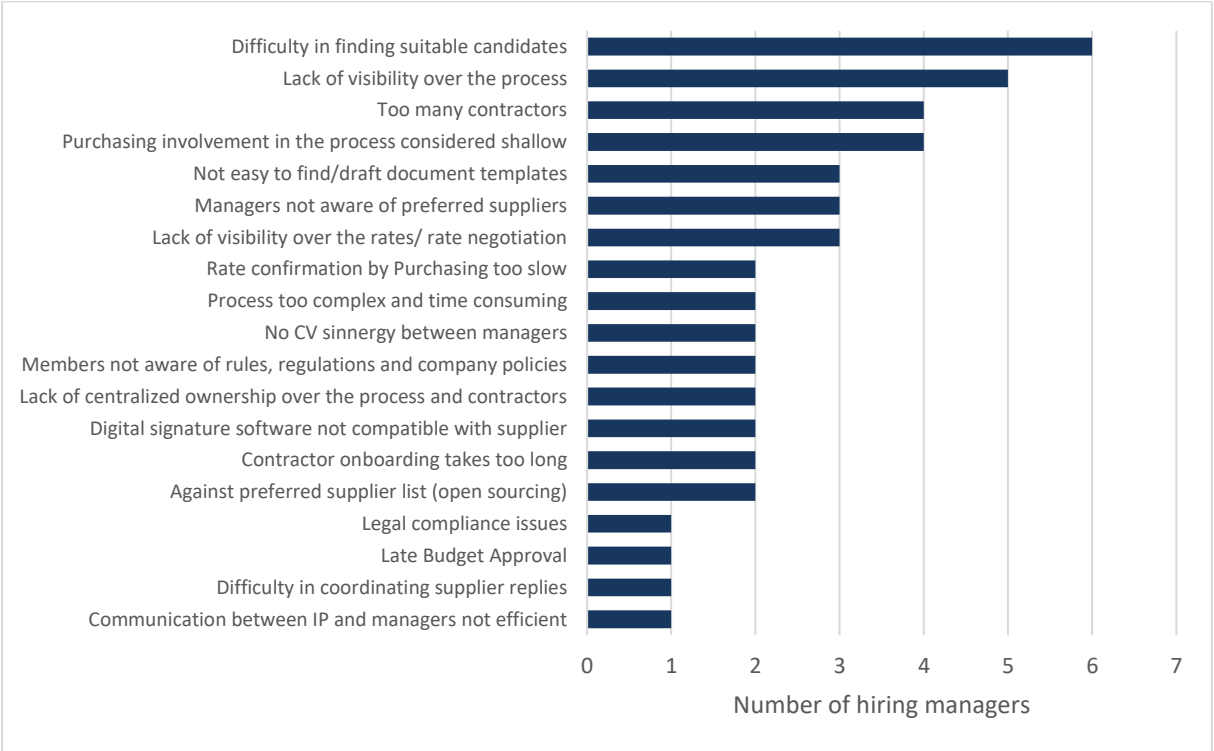


Figure 5.8.: Hiring Manager Inefficiency Mapping

The detailed comments are reflected by process stage in the table below:

Budget Approval	– Sometimes budget is only approved after the Work Order, meaning managers must hire contractors without knowing 100% that there will be budget for it.
Company Philosophy	– "The Automotive Company" should hire less contractors and more permanent members. The workload on some of the teams has only ever increased. Some positions require contractors to be trained and developed for a long time which is a waste of company resources if when they must leave after two years.
Contractor Selection	– Managers would like to have more information on the preferred suppliers: who they are, where to find them, expertise, strengths, and weaknesses, etc. – Some managers do not agree with a preferred supplier list, as it reduces the range of experts available, when looking for specific expertise. – Other managers prefer working with only one supplier for practicality: replacements are more manageable; communications are more efficient and there is a possibility of delegating a team leader to manage all contractors. – When analyzing CVs from different suppliers, it becomes hard to coordinate replies, as different companies have different timings. – Suppliers need more guidelines in terms of invoicing rules, as they are sometimes reaching out to hiring managers to ask how to invoice the company. – If no alternative is found, managers are forced to use non-preferred suppliers. – Have open sourcings, a lot of time is lost if supplier can't find suitable candidate. – Suppliers submit inadequate CVs, supplier performance unstable (profiles received depend on the contact person). Better pre-selection from supplier side. – Difficult to find suitable candidates with specific profiles and managers often have to compromise in some requirements. If no ideal candidate is found, managers must work with less experienced contractors (difficult to work with, not efficient, time spent training them). – Having interviews and reviewing CVs can be very time consuming.
Rate Negotiation	– Some managers find the Purchasing involvement in the process shallow, as in their perspective it is merely related to providing rate confirmation. Some have recommended they would prefer to check the rate themselves inside a matrix prepared by IP, or have P&I confirm the rates after documents are submitted. – Managers would like a quicker confirmation of the rates (sometimes when IP contact is on holiday, rate confirmation is on hold; other times the rates are not in line with the agreed rate card and require an extra round of negotiation). – If a non-preferred supplier is selected, process will take longer as there is no agreed rate card. – Managers would like to have a clearer overview of the rates negotiated and would like to be informed of ongoing cost negotiations. – Managers are not aware of IP processes and do not see the added value of the division.
Contractor Start and Termination	– It can take a long time for the contractor to get access to IT equipment and internal systems.
Legal Compliance	– Managers are uncompliant when doing interviews with the candidates. – Managers would like to get clearer rules and regulations. Often identify grey areas in legal compliance, despite they already had a training on the topic.
Documented Process	– Process for hiring managers is not documented and is currently passed via "word of mouth" from manager to manager.
Process Visibility	– Managers lack visibility over the entire process. – Purchasing is only involved late in the process; they have no visibility ahead of time. Some managers fail to inform them they would like to work with a non-preferred supplier and only mention it when it's time to negotiate the rates.
Process Complexity	– Process too bureaucratic and requires a lot of time from the hiring managers – When possible, use of group Work Orders is recommended: do not need to be constantly renewed (only once a year); if a contractor leaves, the paperwork does not need to be re-done, as it is based on number of contractors, not

	names, and can be easily replaced by the supplier
Document Collection	– Incompatibility between supplier's and "The Automotive Company" digital signature software, when signing documents such as the E3 and Work Orders. – Not easy to find SFA templates. – Would like more guidelines on building a Work Order, or a standard template. – Microsoft Word is not a good system to build WO (formatting not easy).
Recommendations	– Powertrain division has made a manual for contractor handling and creation, which can be shared with other divisions. – Some managers mentioned that IP should create a centralized information catalogue with the preferred suppliers contacts and expertise. – Share CVs amongst hiring managers. There might be a talented contractor finishing a contract and as managers don't have visibility, the company loses them. – Use PowerApps for contractor overview (allow to monitor contract deadlines, supplier companies, and note down which contractors will be renewed). – Would like to receive supplier profiles automatically or otherwise have access to a streamlined database of contractors. – There should be a centralized ownership over the contractor process (decentralized information pointed as a general problem in the company).

Table 5.9.: Detailed Inefficiency Mapping of Hiring Manager at "The Automotive Company"

5.1.2.2. Indirect Purchasing

Four indirect purchasing members were interviewed, resulting in the below inefficiency mapping:

Figure 5.10.: Indirect Purchasing Inefficiency Mapping

The detailed comments are reflected by process stage in the table below:

Budget Approval	– Budget approval should be done before starting to work on projects.
Contractor Selection	– Purchasing communications with the hiring managers are often inefficient. – Lack of communication between IP and managers. Sometimes the managers complain about not receiving valuable CVs for suppliers, and when Purchasing tries to support and requests more information, the managers stop replying. – Some Purchasing members are not aligned with the strategy of having a preferred supplier list, as it cannot be considered sourcing, whilst others believe it creates competitions within the best suppliers and allows for standard agreements and better long-term partnerships and negotiations. – In the case of IT&D, the Vendor Management Specialist just receives a supplier list without details from OCIO (Cost Control Unit for IT&D). Purchasing would like to have an overview of expertise, geographical location, resource capacity,

	seniority, etc. – Difficulty in identifying job position: different suppliers call the same positions different names, so Purchasing does not know if they are comparing the same categories. A recommendation was that Purchasing sends out a list with clear definitions of each job position during the RFQ.
Rate Negotiation	– Purchasing involvement is seen as a formality by other members and even some Purchasing members. – Some hiring managers do not bother to go through Purchasing approval if the sourcing is within their budget. – Checking the rates can be very time consuming when you have many contractors (IT&D). – There should be more marketing related to the Purchasing function - Business Divisions should be more aware of the added value of Purchasing.
Legal Compliance	– Sometimes managers hire one contractor together and share the budget. In doing this, they download CVs and share them via email, which is a very uncompliant practice towards the GDPR. – Some managers not aware of company policies.
Process Visibility	– IP does not have visibility over new contractors, so there is no way of preparing the negotiation. – Purchasing process is not included in contractor management process. – Purchasing not involved in the beginning of sourcings.
Process Complexity	– Approval process for the RFQ can be very time consuming and requires a lot of approvals, making operations less agile. – Purchasing members see the interaction with the suppliers and the drafting of the SSA as administrative work with a lot of bureaucracy.
Recommendations	– Use external specialized sourcing tool to simplify processes, optimize tasks during RFQ time, and automate information flows. Recommended to start with category management, and as software use Ivalua. – There should be a global system to manage all Contingent Workforce within the company. By not having a system, some processes are surpassing IP. – APR and PO processes are too manual and very time consuming for buyers, they should be automated.

Table 5.11.: Detailed Inefficiency Mapping of Indirect Purchasing at "The Automotive Company"

5.1.2.3. P&I Administrators

Two administrators from the People & Innovation department of “The Automotive Company” were interviewed, resulting in the below inefficiency mapping:

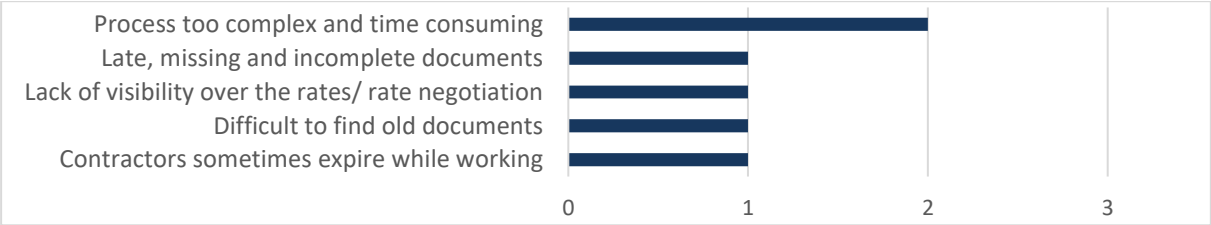


Figure 5.12.: People & Innovation Inefficiency Mapping

The detailed comments are reflected by process stage in the table below:

Contractor Start and Termination	– Contractors have expired while working, as there is a two-year limit for keeping contractors and no measures were taken to extend them.
Legal Compliance	– Opening all the documents and checking all the data is not a value-adding job, but it is an important part of legal compliance.

Process Visibility	– There is no visibility over the entire process, which is greatly based on trust.
Process Complexity	– The current process is too long, time consuming and requires many people. – P&I involvement in the process does not add a lot of value, with many people doing the same thing and copying the same information to different places.
Document Collection	– As there is a lot of internal rotation within P&I, it is often difficult to find back documents in the contractor mailbox. – Often, when inputting the data into PeopleSoft, there are late, missing attachments or incomplete documents. Mistakes are also common and include missing info on where contractors will work from and birth dates.
Recommendations	– Ideally P&I would not have to manually input information into PeopleSoft, this information should flow automatically. – Everyone should be able to prepare documents, especially the managers which are responsible for collecting them. In case of an audit, it would be very easy to track who was involved.

Table 5.13.: Detailed Inefficiency Mapping of People & Innovation at "The Automotive Company"

5.1.2.4. Vendor Management Specialist

The vendor management specialist for the IT&D division mentioned the inefficiencies below:

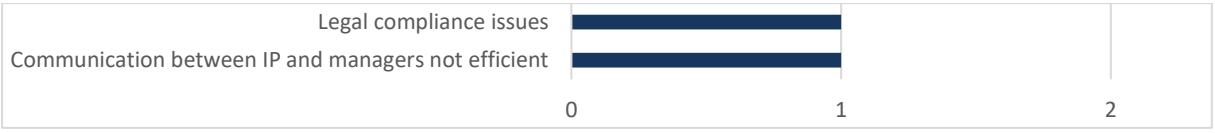


Figure 5.14.: Vendor Management Specialist Inefficiency Mapping

The detailed comments are reflected by process stage in the table below:

Rate Negotiation	– There should be an incentive for divisions to want to work with Purchasing. The value of Purchasing must be understood within the company.
Legal Compliance	– Some IT&D managers don't comply with the process and negotiate business agreements when company policy states only Vendor Management can do so.
Recommendations	– Given the size of "The Automotive Company", a very structural solution would be required, external software might be too restrictive. – Recommended working with ServiceNow as it is a stable and automated process with an audit trail, and tickets which flow automatically to P&I. – There should be a better alignment between Vendor Management, IP and top management. If IP and Vendor Management recommend a certain company, or advise against another, it is important for top management to follow. – Each supplier has a different rate approach, meaning the cost for the same profile varies from company to company. Ideally there would be uniform rates.

Table 5.15: Detailed Inefficiency Mapping of Vendor Management Specialist at "The Automotive Company"

5.1.2.5. EA & Tech Standards Specialist

The Vendor Management Specialist for the IT&D division mentioned the inefficiencies below:

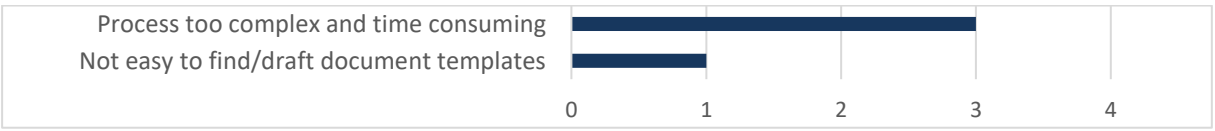


Figure 5.16.: EA & Tech Standards Specialist Inefficiency Mapping

The detailed comments are reflected by process stage in the table below:

Contractor Start and Termination	– Takes a long time to onboard contractors. – Only managers get contractor expiration notification, contractors will not know their own expiration date as the company cannot store contractor emails. A manager cannot keep track of 50/60 contractors and sometimes notifications are missed, and the contractor expires unexpectedly. – Takes too long to reactivate an expired contractor (up to two days). – System accesses are not given automatically, must be requested in ServiceNow.
Process Visibility	– PeopleSoft can only be accessed by P&I so if managers want to see their contractors, they have to request P&I, which is impractical
Document Collection	– The E3 form is very time consuming and is not used by IT&D. If there is to be a universal process the E3 form must be somehow replaced – There are not enough quality checks in PeopleSoft (allows P&I to enter data with mistakes, which causes problems in downstream systems).
Recommendations	– If process is to be extended to NMSCs, they will need to hire specialized people to input the data, as PeopleSoft is not user friendly (=extra costs). – Currently there is no way of making sure the person who shows up in the office in the first day of the assignment is in fact the contractor.

Table 5.17: Detailed Inefficiency Mapping of EA & Tech Standards Specialist at "The Automotive Company"

5.1.2.6. Data Analytics and HR solution

The Data Analytics and HR Solution Manager mentioned the inefficiencies below:

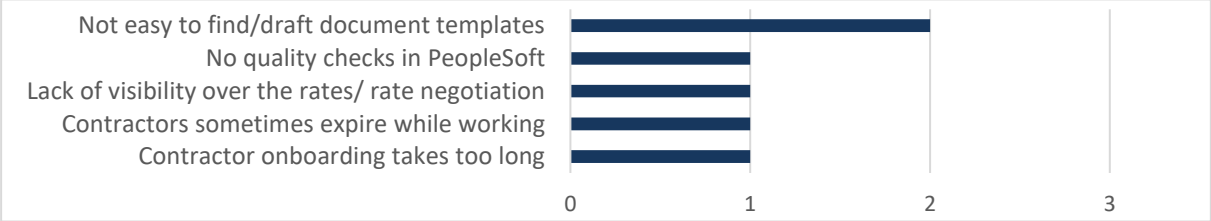


Figure 5.4: Data Analytics & HR Solutions Inefficiency Mapping

The detailed comments are reflected by process stage in the table below:

Process Complexity	– The process is very complex and inefficient, too many ins and outs for managers. – Each form must go through a series of approvals, time consuming for P&I teams.
Document Collection	– The E3 form is very manual and not logical (managers have to go back and forth in the document as they do not know the position numbers in advance). – The link between Service Now/hiring managers and PeopleSoft must be done manually and one by one by P&I.
Recommendations	– If contractor management is rolled out to company NMSCs there will be problems due to different country legislations which may affect contractor rules. – Ideally there would be a form for contractors in ServiceNow, which would launch an automatic approval flow. – If integrating PeopleSoft with another system, there needs to be a distinction between contractors and permanent members, which will be another layer of complexity.

Table 5.19: Detailed Inefficiency Mapping of Data Analytics & HR Solutions at "The Automotive Company"

6. Discussion

In this chapter, interview results were discussed with the support of a focus group composed by process stakeholders, and root causes were determined. Operational and tactical countermeasures were linked to each root cause and later combined into a strategy for “The Automotive Company”.

6.1. Result Analysis

The feedback from the different interviews was combined, resulting in an overview from which we could prioritize the main problems in the process. This overview was presented to three stakeholders from key stakeholder groups – People & Innovation, Hiring Management, and Data Analytics & HR Solutions – during a focus group, to promote dialogue, understand the impact, consequences, and discuss the root cause of each mentioned inefficiency.

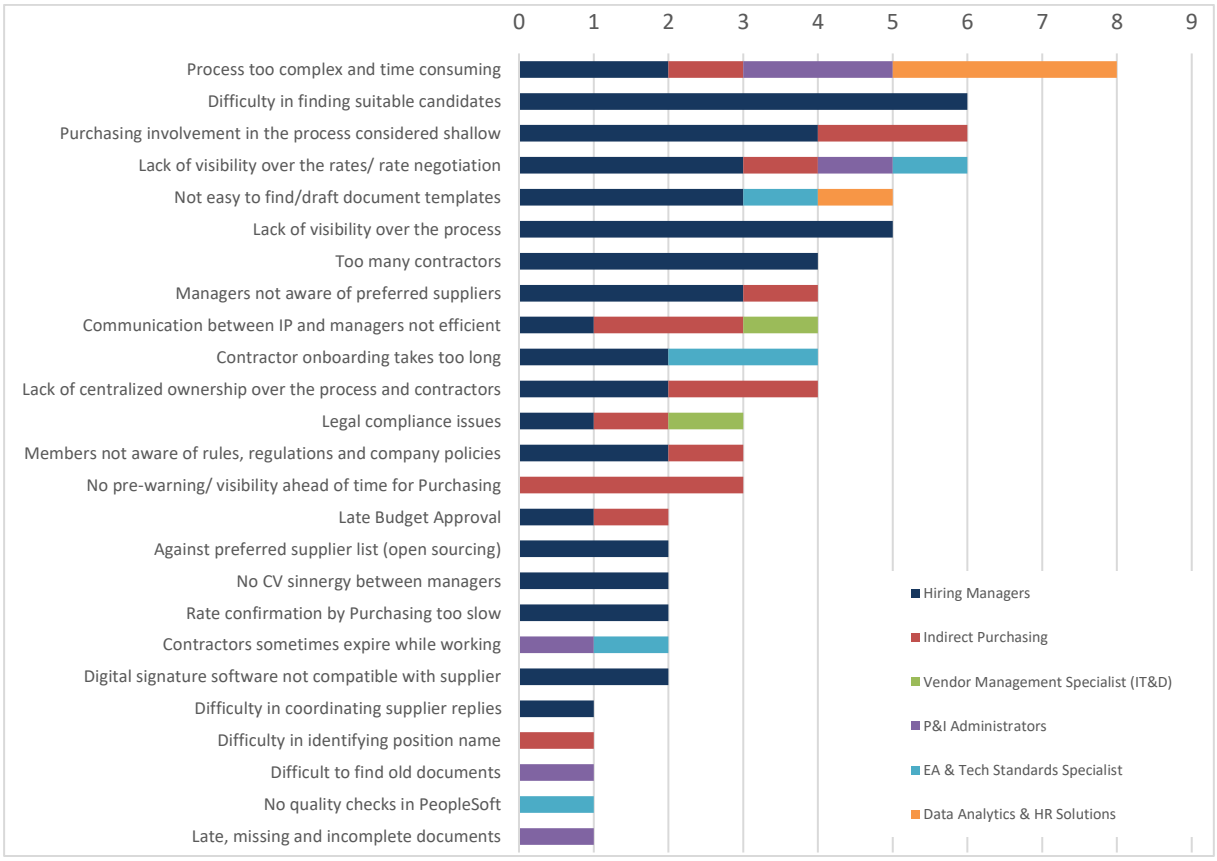


Figure 6.1.: "The Automotive Company" Inefficiency Mapping

From analyzing the table above, it was determined that some of the inefficiencies mentioned were not in fact root causes, but symptoms of underlying organizational problems, which were determined after thorough stakeholder discussion.

For example, top inefficiency, mentioned by eight stakeholders from three different stakeholder groups was that the process was too complex and time consuming – from interview testimonies and focus groups feedback, it was possible to determine this inefficiency resulted from the combination of several others and was not a root cause itself. Based on previous literature, and focus group findings, it was possible to attribute several root causes responsible for the different process inefficiencies, which will be further explained in the following chapters.

6.1.1. Main Inefficiencies

This research has identified several issues related to contractor management at "The Automotive Company", namely:

- fragmented, time consuming and complex internal processes, marked by a lack of information from the hiring managers' side on both general procedures and legal issues, resulting in an increased compliance risk.
- struggle to find suitable candidates and a misalignment over rate cards for similar positions/skills.
- lack of collaboration amongst stakeholders in coordinating the process and working together to share information.
- lack of support due to the lack of ownership over the process, leaving it vulnerable to inefficiencies.
- no strategic direction for the future of contractor sourcing within the company, with opposing opinions amongst stakeholders – some prioritizing cost, whilst others prioritizing talent capture and a long-term vision and resisting to the increased use of contractors.

Many of these findings were in line with results from the Aberdeen Group's study (2006), explored in this dissertation's Exploratory Study Results chapter, revealing little evolution in contractor management processes since the early 2000's. Those common points were namely: no real process ownership, with many entities involved; labor-intensive processes which require many man hours; poor visibility over the process from stakeholder point of view; struggle to find suitable candidates; lack of collaboration in coordination the end-to-end process; and compliance-related issues.

Despite interviews having mentioned an evolution in systems used throughout the years, these systems still present low integrations amongst themselves, resulting in several non-added value manual tasks to be performed by company workers.

6.1.2. Inefficiency Root Cause Analysis

The main inefficiencies were then grouped based on their root causes, determined via a root cause analysis (RCA) process during a focus group meeting involving the main stakeholders. The RCA process assumes that it is more effective to systematically prevent and solve underlying issues than to treat ad hoc symptoms. As such, five main inefficiency root causes were determined: lack of ownership over the process to keep stakeholders aligned, informed and accountable; lack of supplier information; lack of process understanding and poor communication and collaboration amongst stakeholders; loss of talent and lack of strategical direction on the topic of contractors; and inadequate softwares to support the process.

Inefficiency Root Cause	Sub-inefficiencies
No function/entity/person responsible for stakeholder alignment and accountability during the process	Process too complex and time consuming; Lack of visibility over the rates/ rate negotiation; Late, missing, and incomplete documents; Communication between IP and managers not efficient; Contractor onboarding takes too long; Lack of centralized ownership over the process and contractors; No pre-warning/ visibility ahead of time for Purchasing; Late Budget Approval; Rate confirmation by Purchasing too slow; Contractors sometimes expire while working.
Lack of information on supplier offer	Managers not aware of preferred suppliers; Difficulty in finding suitable candidates; Difficulty in identifying position name; Difficulty in coordinating supplier replies.
Lack of process understanding and poor communication and collaboration amongst stakeholders	Purchasing involvement in the process considered shallow; Not easy to find/draft document templates; Legal compliance issues; Members not aware of rules, regulations, and company policies; Against preferred supplier list (open sourcing); Lack of visibility over the process.
Talent loss and lack of strategical direction on the topic of contractors	Too many contractors and not enough permanent members; No CV synergy between managers.
Inadequate softwares to support process	Difficult to find old documents in contractor mailbox; No quality checks possible in PeopleSoft; Contractors sometimes expire while working; Digital signature software not compatible with supplier.

Table 6.2: Inefficiency Root Cause Analysis

6.1.3. Proposed Countermeasures

Operational and tactical countermeasures were then associated with the five main inefficiency root causes, formulating a set of actions for the development of a company strategy:

Identified Inefficiencies Root Causes	Operational Countermeasures	Tactical Countermeasures
No function/entity/person responsible for stakeholder alignment and accountability during the process	Constant monitoring of the process from one department, aware of all contractor sourcings and ready to support stakeholders; this entity or contact person should keep track of timing of the different process steps to make sure process is	Define one single entity as responsible for the process which will support the stakeholders, improve their relationships, and track process timeline; Develop an action plan that will allow this entity or contact person to monitor all the contractor

	running smoothly and not facing significative delays;	sourcings within the company;
Lack of information on supplier offer	Prepare guide with information on the preferred suppliers and share it with the hiring managers; Prepare a matrix with different position titles and share that matrix with the suppliers, to make sure we are discussing the same positions; Explain to hiring managers the added value of having preferred suppliers – better cost, better relationship with supplier, more efficient communication, and negotiations.	Promote preferred suppliers and develop stronger relationships as a way to get better candidates; when considering new preferred suppliers, assure they can provide a vast range of expertise;
Lack of process understanding and poor communication and collaboration amongst stakeholders	Explain to hiring managers the added value of having preferred suppliers – better cost, better relationship with supplier, more efficient communication, and negotiations. Make also available to hiring managers process map, procedure guide, and regulation guide, as well as attribute an entity/ contact person to support when questions arise;	Have at the display of all stakeholders a map of the current process; Elaborate a guide for all hiring managers on how to proceed; Prepare a document explaining all rules, regulations and company policies related to contractor sourcing; attribute a contact person responsible for process and make sure all process intervenient know they can reach out to this person for questions on the process;
Talent loss and lack of strategical direction on the topic of contractors		Promote CV synergy within hiring managers via the responsible entity/person; weigh out pros and cons of contractor sourcing to understand which strategical direction to follow; review laws which don't allow contractors to be integrated in company meetings and other internal processes; review legal framework that limits contractor capacity.
Inadequate softwares to support process	Start categorizing emails per supplier on the contractor mailbox;	Consider new softwares to support the process; find a technical solution to bridge the gap between systems already used;

Table 6.3.: Operational and Tactical Countermeasures to Identified Inefficiency Root Causes

6.2. Strategic Direction Discussion

Based on the mentioned root causes and proposed countermeasures, a strategical analysis was held, corresponding to the first stage of Planellas & Muni's Circle of Strategic Decisions (2019), represented with the help of a Balanced Scorecard/Strategy Map Combination matrix.

The main purpose of using this matrix is because it allows for a visual representation on the items that should be tackled by the company strategy. The findings are represented in the figure below and are divided into the following categories: organizational capability, internal process,

internal customer, and financial. For the first two categories, actions are mentioned in order to improve the process, and for the second two, KPIs are presented linked to the actions identified. The proposed actions and KPIs are linked by association arrows, and result in the following outcomes: reduction of non-value adding tasks, task and time optimization, improved stakeholder experience, and no cost increase derived from the proposed process improvement measures.

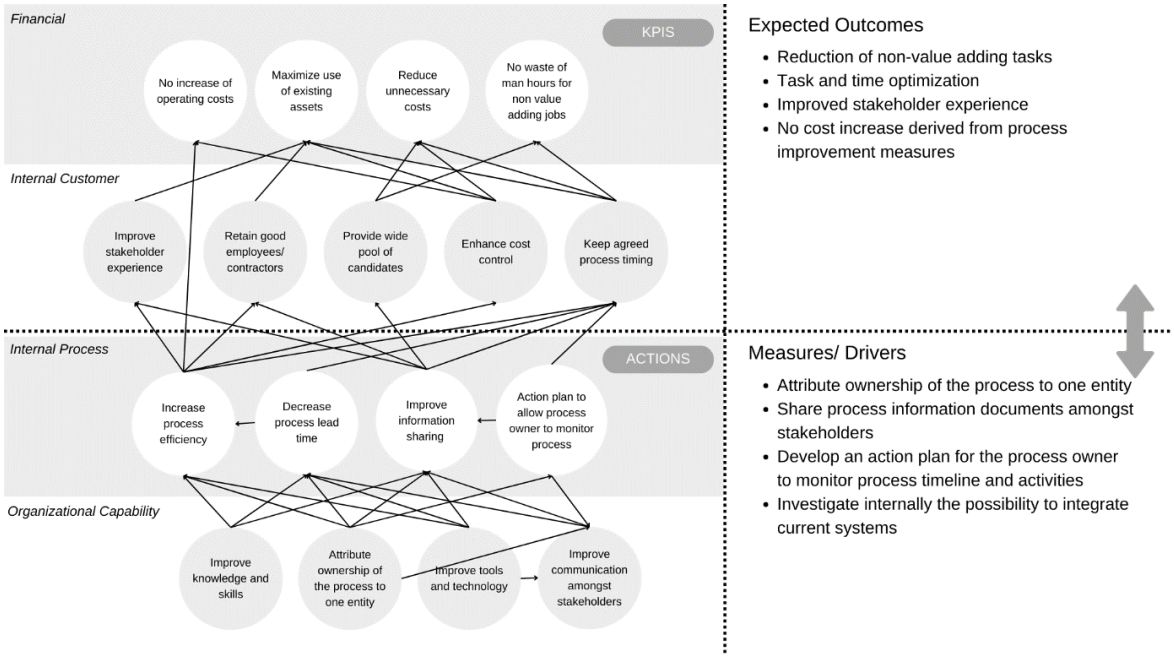


Figure 6.4.: BSC/ Strategy Map Combination matrix applied to "The Automotive Company" (2022)

This matrix, together with the countermeasures proposed on the previous subchapter, represents the foundation of the strategy development achieved by the focus group for “The Automotive Company”. The matrix is represented in larger scale in **Appendix 9.12)**.

CHAPTER 7

7. Conclusion

The results of this work suggest new insights into “The Automotive Company’s” contractor management process, from an internal stakeholder perspective, in addition to the proposal of several recommendations to further develop found inefficiencies and improve the organization’s workforce management. This reflection aims to direct companies into rethinking their processes to promote information sharing and knowledge capture, and modernize their internal contractor management processes, promoting a smoother integration of contractors and leaner processes.

Additionally, this research also contributes to the existing pool of contractor management literature, providing new insights that can allow other organizations to reflect on their internal operations, by endorsing a contractor management strategy and promoting a series of instruments to support organizations in building more optimized processes.

This dissertation’s methodology was the result of a collaboration between CSR and DSR, which adapted the research framework for collaborative multidisciplinary projects proposed by Costa et al. (2016). This framework consisted of two different stages, differentiated by their timeline in relation to the development of three constructs: a standardized process design, divided into different stages and subprocesses; an inefficiency/ improvement matrix per stakeholder; and a framework for strategy development combining the Balanced Scorecard and Strategy Map methodologies.

The first stage was the development and analysis of the literature review and related exploratory studies, and the subsequent interviews and analysis of “The Automotive Company” internal documents. The insights from those sources allowed to design the contractor management process using BPMN, and to develop an inefficiency/ recommendation matrix according to the opinions gathered in the interviews. After those constructs were developed, they were presented and discussed in a focus group with interviewees from three different stakeholder groups, which debated on the results and helped frame the foundations of a strategy for “The Automotive Company”.

Findings were mostly related to the role different internal stakeholders have in the process and the inefficiencies and recommendations provided by them on how to optimize the process. Out of the inefficiencies mentioned, the following stand out by the frequency they were mentioned and their relevance for different stakeholder groups: difficulty in finding suitable candidates, revealing a gap in the market for a company which can provide the desired candidate profiles within the necessary timeframe; lack of process understanding, a direct result of poor communication amongst stakeholders and lack of centralized ownership over the process; the use of more contractors than what is desired and the poor integration of those contractors within the company, which translates into a higher detachment from part of the team to the company’s vision and strategy; bad visibility

over template documents, preferred supplier list, legal requirements, signature requirements, and overall process flow, the result of an insufficient overview and decentralized documentation; long onboarding times after the contractor is hired, result of the manual integration between existing systems which is currently done by manual input, and lack of better and more modern internal systems, amongst other reasons; and overall time consuming processes, which are the reflect of all the previously mentioned findings.

For future steps, the interviewees mentioned as improvements: centralize process data and ownership into one function; increase collaboration among other internal stakeholders; have a clearly defined process and protocol for each of the stakeholders involved in the process; clearly define and provide a guide containing the information requirements for compliance tracking and risk management; and adopt technology to promote better collaboration.

The main inefficiencies were then divided into five main groups: 1) Lack function/ entity/ person responsible for stakeholder alignment and accountability during the process; 2) Lack of information on supplier offer; 3) Lack of process understanding and poor communication and collaboration amongst stakeholders; 4) Talent loss and lack of strategical direction on the topic of contractors; 5) Inadequate softwares to support process.

Per each inefficiency group, operational and tactical countermeasures were proposed, which were then the baseline to drafting a strategical direction proposal for "The Automotive Company", in accordance with the first Stage of Planellas & Muni's Circle of Strategic Decisions (2019) – Analysis.

The strategic proposal had the following drivers: attribute ownership of the process to one entity; share process information documents effectively amongst stakeholders; develop and action plan for the process owner to monitor the process timeline and activities; and investigate internally the possibility to integrate current systems. Expected outcomes are the reduction of non-value adding tasks; task and time optimization; improved stakeholder experience, whilst guaranteeing no cost increase derived from these changes.

This dissertation departed from the research question: "How to optimize the contractor creation and management process in the context of an Automotive OEM?". To answer this question, the research relied on data obtained from "The Automotive Company" stakeholder interviews, internal company documents, related literature, and focus group results. Based on the feedback of the interviews and the analysis of "The Automotive Company" internal documents related to contractor management: inefficiencies and improvements were mapped, processes were drafted, research findings were discussed during a focus group, and strategy mapping was done confronting different stakeholder group' interests to determine key actions to develop, and KPIs to be achieved.

As such, to reply to the research question, the key to optimizing contractor management at an Automotive OEM is to firstly understand the process, map out the different stakeholders involved,

and discuss the process with them from a critical approach. Following that, the data must be analyzed, and stakeholder groups must be confronted together to discuss the results in order to reach a consensus on what can be applicable for the future of the company.

From a knowledge-sharing perspective, the model presented in this dissertation – development of in-depth interviews with key stakeholders; inefficiencies and improvement recommendation mapping; drafting of the processes; confrontation of the interviewees on research finding during a focus group; and strategy mapping together key actions to develop and KPIs to be achieved – aims to serve as a reflection proposal for companies which have similar contractor-related processes as those of "The Automotive Company" and wish to improve them. The steps proposed in this model can serve as a guide to support companies into critically analyzing and reflecting on their internal processes, so they can become more aware of the constraints present in their organizations and have a better idea of how to tackle them in future initiatives.

7.1. Limitations and Future Research

Although this study can contribute to the industry by providing insights into the world of contractor management and valuable recommendations to OEMs using similar processes to those of "The Automotive Company", there are still limitations which can offer the basis for future research and discussion.

Firstly, this research looked at the contractor management processes of "The Automotive Company", which due to its specific company culture and internal processes cannot be representative of all OEMs. Further research developed in other companies working with engineering contractors is encouraged, being it from different industries (automotive, chemical, software-related, etc.) or sizes (local vs international), to determine if the findings of the dimensions analyzed, including inefficiencies amongst stakeholders vary from process to process, or if there are some common points to all processes which can be tackled by applying the same countermeasures.

Furthermore, there is also the need to replicate this work in other geographical and cultural contexts, as these may influence stakeholder perspective and provide additional insights. Secondly, the specific sample utilized represents another limitation to the findings. Although the best efforts to select a broad sample of expertise amongst stakeholders were put into place, a larger sample of members from each stakeholder group should have been considered, as well as the input from other non-internal stakeholders which also intervene in the process. As mentioned by Larson (2010) heterogeneous organizations must balance perspectives from the contractors, from the contracting companies, and from their internal employees (Chen & Brudney, 2009). As such, future research should utilize a sampling method that allows for a non-aleatory and non-probabilistic sample to be

selected amongst different companies and should also grasp the full scope of the process. To do this, contractors should also be interviewed, as well as supplier representatives. As these stakeholders are directly involved in the process, they might add a different perspective and provide additional insights. Additionally, the focus group only included stakeholders from three groups, when in fact a total of six groups were considered. For future research, it is recommended all stakeholder groups be involved in the focus group discussion. Another improvement that could be considered would be to take more relevant notes on what was discussed during the focus group and provide more detail on which ideas were excluded or considered to include in the strategy drafting framework and the motive for those decisions.

During this research, only the first stage of Planellas & Muni's (2019) Circle of Strategic Decisions was considered – the Analysis Stage. According to this circle, to make a strategic decision, options must be generated, compared, and finally implemented. More models and matrixes should have been discussed, proposed, and analyzed via a SWOT Analysis model (Corporate Finance Institute, 2022) which would support comparing and selecting the most suitable one.

Consequently, future research should test the efficacy, applicability, and robustness of the proposed countermeasures among a broader range of companies, different aleatory samples and include more stakeholder dimensions than the ones analyzed in this project. It would also be interesting to develop in parallel some research on relevant interview findings – for example almost half of all managers interviewed spontaneously mentioned they would prefer to have less contractors and more permanent members within their organizations. Further research is recommended in order to understand the reasons behind the resistance to an increased number of contractors and explore the legal frameworks which shape and limit contractor duration within a company.

8. References

"The Automotive Company" (2019). Contractor Management Processes [Internal report]. Private collection, The Automotive Company, Brussels, BE.

Abolhassan, F. (2017). Security: The real challenge for digitalization. *Cyber Security, Simply, Make it Happen | Springer, Cham*, 1-11.

Adner, R. (2006). Match your innovation strategy to your innovation ecosystem. *Harvard Business Review 84 (4)*, 98-107.

Adner, R. (2017). Ecosystem as Structure: An Actionable Construct for Strategy. *Journal of Management, 43*, 39-58. doi:https://doi.org/10.1177/0149206316678451

Adner, R., & Kapoor, R. (2010). Value creation in innovation ecosystems: how the structure of technological interdependence affects firm performance in new technology generations. *trategic management journal, 2010-03, Vol.31 (3)*, 306-333.

Agarwal, D., Bersin, J., Lahiri, G., Schwartz, J., & Volini, E. (2018). The workforce ecosystem: managing beyond the enterprise. *Deloitte Insights*. Retrieved from https://www2.deloitte.com/za/en/pages/human-capital/articles/the-workforce-ecosystem.html

Ahmed, H., & Mohamed, M. (2017). The effect of knowledge management critical success factors on knowledge management effectiveness and performance: An empirical research in Egyptian banking sector. *The Business and Management Review Journal*, 201-211.

Akram, K., & Hilman, H. (2018). .Effect of knowledge management activities and dynamic capabilities on employee performance in the banking sector. *Empirical Evidence from Pakistan Studies in Business and Economics Journal*, 41-60. Retrieved from http://doi.org/10.2478/sbe-2018-0019

Alagaraja, M. (2014). A conceptual model of organizations as learning-performance systems: Integrative review of lean implementation literature. *Human Resource Development Review, 13(2)*, 207-233.

Allee, V. (2003). *The Future of Knowledge: Increasing Prosperity through Value Networks.* Boston, MA: Butterworth-Heinemann. doi:10.1108/14691930810845777

Alleyne, P., Doherty, L., & Greenidge, D. (2006). Human resource management and performance in the Barbados hotel industry. *International Journal of Hospitality Management 25(4)*, 623-646.

Allwood, M., & Lee, W. (2004). The Impact of Job Rotation on Problem Solving Skills. *International Journal of Production Research 42 (5)*, 865-881.

Altman, E. J., Kiron, D., Schwartz, J., & Jones, R. (2021). The Future of Work Is Through Workforce Ecosystems. *MIT Sloan Management Review*.

Altman, E., Schwartz, J., Kiron, D., Jones, R., & Kearns-Manolatos, D. (2021). Workforce ecosystems: a new strategic approach to the future of work. MIT Sloan Management Review and Deloitte. Retrieved from http://marketing.mitsmr.com.s3.amazonaws.com/offers/FOW2021/62470-MITSMR-Deloitte-Report-2021.pdf

Armstrong, M., & Taylor, S. (2020). *Practice, Armstrong's Handbook of Human Resource Management.* Kogan Page Publishers.

Autio, E., Mudambi, R., & Yoo, Y. (2021). Digitalization and globalization in a turbulent world: centrifugal and centripetal forces. *Global Strategy Journal (in press)*.

Autor, D. (2001). Why do temporary help firms provide free general skills training? *Q J Econ 116*, 1409-1448.

Bai, C., Dallasega, P., Orzes, G., & Sarkis, J. (2020). Industry 4.0 technologies assessment: A sustainability perspective. *International Journal of Production Economics, 229, 107776*. Retrieved from https://doi.org/10.1016/j.ijpe.2020.107776

Bamberger, P. (2018). AMD— clarifying what we are about and where we are going. *Academy of Management Discoveries, 4(1)*, 1-10.

Bandera, C., Keshtkar, F., Bartolacci, M., Neerudu, S., & Passerini, K. (2017). Knowledge management and the entrepreneur: insights from Ikujiro Nonaka's Dynamic Knowledge Creation model (SECI). *International Journal for Innovation Studies, vol.1, no. 3*, 163-174.

Baranes, A., & Palas, R. (2019). Earning movement prediction using machine learning-support vector machines (SVM). *Journal of Management Information and Decision Sciences, 22(2)*, 36-53.

Barney, J., & Wright, P. (1998). On becoming a strategic partner: The role of human resources in gaining a competitive advantage. *Human Resource Management, 37*, 31–46.

Barrientos, S. (2013). 'Labour Chains': Analysing the Role of Labour Contractors in Global Production Networks. *The Journal of Development Studies*, 1058-1071. Retrieved from https://doi.org/10.1080/00220388.2013.780040

Birkinshaw, A. (2018). What to expect from agile. *MIT Sloan Manag. Rev. 59 (2)*, 39-42.

Bondarouk, T., & Brewster, C. (2016). Conceptualising the Future of HRM and Technology Research. *International Journal of Human Resource Management, vol.27, no.21*, 2652-2671.

Bouncken, R., Lehmann, C., & Ratzmann, M. (2013). Shades of gray: effect of external work arrangements on firm performance under operational and strategic contingencies. *Journal of Business Economics, Vol.83, No. 3*, 291-317.

Braun, R., & Esswein, W. (2014). Classification of the domain-specific BPMN Extensions. *FIP Working Conference on The Practice of Enterprise Modeling* (pp. 42-57). Springer.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology, 3(2)*, 77-101.

Bruning, P. F., & Campion, M. A. (2018). A role– resource approach– avoidance model of job crafting: a multimethod integration and extension of job crafting theory. *Academy of Management Journal, 61(2)*, 499– 522.

Brynjolfsson, E., & McAfee, A. (2014). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies.* New York: W. W. Norton.

Buch, R., Kuvaas, B., & Dysvik, A. (2010). Dual support in contract workers' triangular employment relationship. *Journal of Vocational Behavior, 77: 1*, 93-103.

Bughin, J., Hazan, E., Allas, T., Hjartar, K., Manyika, J., Sjatil, P. E., & al., e. (2019). *Tech for good: Smoothing disruption, improving well-being.* New York: McKinsey Global Institute.

Cahuc, P., & Postel-Vinay, F. (2002). Temporary jobs, employment protection and labor market performance. *Labour Economics*, 131-138.

Carroll, N., & Conboy, K. (2020). Normalising the "new normal": Changing tech-driven work practices under pandemic time pressure. *International Journal of Information Managelent (55), 102186*. doi:https://doi.org/10.1016/j.ijinfomgt.2020.102186

Chakraborty, A. R., & Abu Mansour, N. (2013). Adoption of human resource information system: a theoretical analysis. *Social and behavioral sciences, 75*, 473-478.

Chandra, C., & Grabis, J. (2007). *Reconfgurable supply chains: An integrated framework.* Boston: Springer.

Chapman, E., Sisk, F., Schatten, J., & Miles, E. (2016). Human resource development and human resource management levers for sustained competitive advantage: Combining isomorphism and differentiation. *Journal of Management and Organization 24(4)*, 533-550.

Chen, C.-A., & Brudney, J. (2009). A cross-sector comparison of using nonstandard workers: explaining use and impacts on the employment relationship. *Administration & Society, 41:3*, 313-339.

Chen, K., Chang, T., & Guo, Y. (2020). Selecting an optimal contractor for production outsourcing: a case study of gear grinding. *Journal of the Chinese Institute of Engineers, 43:5*, 415-424. doi:10.1080/02533839.2020.1751723

Chen, P., Wang, M., & Fang, S. (2017). Does Motivation Matter? The Influence of the Agency Perspective on Temporary Agency Workers. *Employee Relations 39 (4)*, 561-581.

Chytiri, A. P. (2019). *Human Resource Managers'role In The Digital Era.*

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly, 35(1)*, 128-152.

Corporate Finance Institute. (2022, 10 12). *Corporate Finance Institute*. Retrieved from https://corporatefinanceinstitute.com/resources/knowledge/strategy/swot-analysis/

Corporate Finance Institute. (2022, 10 6). *Corporate Finance Institute*. Retrieved from https://corporatefinanceinstitute.com/resources/knowledge/strategy/pestel-analysis/

Costa, E., Soares, A. L., & Pinho de Sousa, J. (2016). Situating Case Studies within the Design Science Research Paradigm: An Instantiation for Collaborative Networks. doi:10.1007/978-3-319-45390-3_45

Creswell, J. W. (2014). Research design: qualitative, quantitative, and mixed method approaches. *Thousand Oaks, CA*.

Dalkir, K. (2011). *Knowledge Management in Theory and Practice.* Elsevier.

Daraban, M. (2018). Business Value created by Management Accounting. *CBU INTERNATIONAL CONFERENCE ON INNOVATIONS IN SCIENCE AND EDUCATION.* Prague, Czech Republic.

Davenport, T. H. (1994). Saving IT's Soul: Human Centered Information Management. *Harvard Business Review*, 119-131.

Davidov, G. (2004). Joint employer status in triangular employment relationships. *British Journal of Industrial Relations, 42: 2*, 727-746.

De Propris, L., & Bailey, D. (2020). *Industry 4.0 and regional transformations.* Retrieved from https://www.taylorfrancis.com/books/e/9780429057984.

Deadrick, D., & Stone, D. (2014). Human resource management: Past, present, and future. *Human Resource Management Review, 24*, 193-195.

Dezso, A., Duane, I., & Hoshisson, T. (2012). *Strategic Management: Competitiveness and globalization.*

DiRomualdo, A., El-Khoury, D., & Girimonte, F. (2018). HR in the digital age: How digital technology will change HR's organization structure, processes and roles. *Strategic HR Review, 17(5)*, 234-242.

Doeringer, P., & Piore, M. (1971). *Internal labor markets and manpower analysis.* Lexington: MA: Lexington.

Dvorský, J., Petráková, Z., Khan, K. A., Formánek, I., & Mikoláš, Z. (2020). Selected aspects of strategic management in the service sector. *Journal of Tourism and Services*, 109-123. Retrieved from https://doi.org/10.29036/jots.v11i20.146

Dweiri, F., Kumar, S., Khan, S. A., & Jain, V. (2016). Designing an integrated AHP based decision support system for supplier selection in automotive industry. *Expert System Application, vol. 62*, 273-283.

Ellram, L. M. (1996). The use of the case study method in logistics research. *Journal of Business Logistics*.

European Commission. (2021). Automotive Industry. Retrieved from https://ec.europa.eu/growth/sectors/automotive_en

Evan, W. M., & Manion, M. (2002). *Minding the machines: Preventing technological disasters.* New Jersey: Prentice Hall.

Fabbri, T., & Scapolan, A. (2018). Digitalization and HR Analytics: A Big Game for HR Managers. *Human Resource Management and Digitalization*, 243-254.

Fenech, R. (2022). Human resource management in a digital era through the lens of next generation human resource managers. *Journal of Management Information and Decision Sciences, 25(S1)*, 1-10.

Fiorelli, T., Dziczek, K., & Schlegel, T. (2019). *Automation Adoption & Implications for the Automotive.* Ann Arbor, MI.: Center for Automotive Research. Retrieved from https://www.cargroup.org/wp-content/uploads/2019/11/Automation_Adoption_Implications_on_Workforce.pdf

Fonseca, L., Ramos, A., Rosa, A., Braga, A. C., & Sampaio, P. (2016). Stakeholders satisfaction and sustainable success. *International Journal of Industrial and Systems Engineering, 24 (2)*, 144-157.

Fuller, J. B., Raman, M., Palano, J., Bailey, A., Vaduganathan, N., Kaufman, E., . . . Lovett, S. (2020). Building the On-Demand Workforce. *Boston: Harvard Business School and BCG*.

Gamble, E., & Thompson, A. (2009). *Essentials of Strategic Management.* McGraw-Hill: Irwin.

Ghinea, V. M., & Ghinea, M. (2015). *Organizational culture dynamics. Preamble, Quality – access to success, 16(144), 69-72.*

Goldberg, M. (2009). Consumer decision making and aging: a commentary form a public policy marketing perspective. *Journal of Consumer Psychology*.

Gossett, L. (2006). Falling between the cracks: control and communication challenges of a temporary workforce. *Management Communication Quarterly, 19: 3*, 376-415.

Goux, D., Maurin, E., & Pauchet, M. (2001). Fixed-term contracts and the dynamics of labor demand. *Eur Econ Rev 45*, 533-552.

Grant, R., & Jordan, J. (2012). *Foundations of Strategy.* Chichester: John Wiley & Sons Ltd.

Gregor, S., & Hevner, A. (2013). Positioning and presenting design science research for maximum impacts. *MIS Q. 37*, (pp. 337–355).

Grinstein, A., Goldman, A., & Harmancioglu, N. (2007). The impact of strategic and tactical market information. *AMA Educators Proceedings*, 250.

Guile, D., & Lahiff, A. (2017). Apprenticeship for “Liquid Life”: Learning in contingent work conditions for contingent employment. *Vocations and Learning, 10*, 157-175.

Gupta, V. (2019). Procurement strategies for digital supply chains: Concepts and best practices. In *E. Sabri (Ed.), Technology optimization and change management for successful digital supply chains* (pp. 17-38). IGI Global.

Hallstedt, S., Ny, H., Robèrt, K., & Broman, G. (2010). An approach to assessing sustainability integration in strategic decision systems for product development. *J. Clean. Prod. 18*, 703-712.

Hannah, D., & Eisenhardt, K. (2018). How firms navigate cooperation and competition. *Strategic Management Journal: 39*, 3163-3192. doi:10.1002/smj.2750

Hashemi-Petroodi, S., Dolgui, A., Kovalev, S., Kovalyov, M., & Thevenin, S. (2020). Workforce Reconfiguration Strategies in Manufacturing Systems: A State of the art. *International Journal of Production Research*, 1-24.

Henriques, T., & O'Neill, H. (2018). A conceptual model for action and design research. *World Conference on Qualitative Research, WCQR 2018* (pp. 173-175). Lisbon: In António Pedro Costa (Ed.).

Henry, A. (2011). *Understanding Strategic Management, 2nd Edition.* Oxford: Oxford University Press.

Hevner, A. (2007). A three-cycle view of design science research. *Scandinavian Journal of Information Systems 19 (2)*, 87-92.

Hevner, A., & Chatterjee, S. (2010). Design research in information systems: Theory and practice. *Springer Science & Business Media, New York, USA*.

Hevner, A., March, S., Park, J., & Ram, S. (2004). *Design science in information systems research.* MIS Q. 28.

Holsapple, C. W., & Whinston, A. B. (1987). Knowledge-based organizations. *The Information Society, 5(2)*, 77-90.

Honore, T. (2016). *Digitization is not an intangible business development.* Retrieved from https://cdn2.hubspot.net/hubfs/494838/United%20States/Downloads/Columbus-5-Articles-on-Disruption-US.pdf

Houseman, S. (2001). Why employers use flexible staffing arrangements: evidence from an establishement survey. *Industry Labor Related Rev 55*, 149-170.

HRFocus. (2006, Nov). How Organizations are Managing Contract Workers Now. *HR Focus, Vol. 83, Issue 11*, pp. 5-6.

Huang, G., Lau, J., & Mak, K. (2003). The impacts of sharign production information on supply chain dynamics: a review of the literature. *International Journal of Production Research vol.41 iss.7*, 1483-1517.

Hunter, M. (2012). Creating Qualitative Interview Protocols. *International Journal of Sociotechnology and Knowledge Development*.

Iansiti, M., & Levien, R. (2004). The Keystone Advantage: What the New Dynamics of Business Ecosystems Mean for Strategy, Innovation and Sustainability. *Harvard Business School Press: Boston, MA*.

Ibrahi, N., & Reig, H. (2009). What is the value of knowledge practices? *Electronic Journal on Knowledge Management*, 103-112.

ILO. (2016). Non-Standard Employment around the World: Understanding Challenges. *Shaping Prospects, ILO Publications*.

ILO. (2016). *Report on temporary employment agencies and temporary agency work.* Genera: European Union Social Fund.

Israel, D., & Curkovic, S. (2020). Indirect Procurement: A Literature Review and Study of Trends. *American Journal of Industrial and Business Management*, 10, 775-792.

Jacobides, M. G., Knudsen, T., & Augier, M. (2006). Benefiting from Innovation: value creation, value appropriation and the role of industry architectures. *Research Policy 35(8)*, 1200-1221.

Jansen, N. (2017, 03 30). Knowledge Sharing with Contingent Workers. *BSC Wageningen Unievrsity Dissertation*.

Jelassi, T., & Enders, A. (2005). *Strategies for e-business: Creating value through electronic and mobile commerce: concepts and cases.* Upper Saddle River: Pearson Education.

Jeunet, J., & Bou Orm, M. (2020). Optimizing Temporary Work and Overtime in the Time Cost Quality Trade-Off Problem. *European Journal of Operational Research 284*, 743-761.

Johnson, G., Whittington, R., Scholes, K., Angwin, D., & Regnér, P. (2014). *Exploring Strategy: Text and Cases, 10th Edition.* Harlow: Pearson Education Ltd.

Kaji, J., Hurley, B., Gangopadhyay, N., Bhat, R., & Khan, A. (2019). Leading the social enterprise: Reinvent with a human focus.

Kalleberg, A. L. (2011). *Good jobs, bad jobs: The rise of precarious and polarized employment systems in the United States, 1970s to 2000s.* New York: Russell Sage Foundation.

Kaplan, R., & Norton, D. (1997). *Strategy in Action: Balanced Scorecard.* Gulf Professional Publishing.

Kaplan, R., & Norton, D. (1997). The Balanced Scorecard - Measures that Drive Performance. *Harvard Business Review*.

Karuoya, L., & Thomas, A. S. (2017). Knowledge management and the occasional links with performance. *Journal of Knowledge Management*, 67-81. Retrieved from https://doi.org/10.1108/13673270310485631

Kesavan, S., Staats, B., & Gilland, W. (2014). Volume Flexibility in Services: The Costs and Benefits of Flexible Labor Resources. *Management Science 60 (8)*, 1884-1906.

Khahro, S. H., Hassan, S., Zainun, N. Y., & Javed, Y. (2021). Digital Transformation and E-Commerce in Construction Industry: A prospective Assessment. *Academy of Strategic Management Journal, 20(1)*, 1-8.

Kim, S., Wang, Y., & Boon, C. (2021). Sixty years of research on technology and human resource management: Looking back and looking forward. *Hum Resour Manage. 60*, 229-247. doi:https://doi.org/10.1002/hrm.22049

Klein, V. B., & Todesco, J. L. (2021). COVID-19 crisis and SMEs responses: The role of digital. *Knowledge Process Management*, 117-133.

Kochan, T., Smith, M., Wells, J., & Rebitzer, J. (1994). Human Resource Strategies and Contingent Workers: The Case of Safety and Health in the Petrochemical Industry. *Human Resource Management. Spring94, Vol. 33 Issue 1*, 55-77.

Koene, B. A., Galais, N., & Garsten, C. (2014). *Management and Organization of Temporary Agency Work.* New York: Routledge.

Larsson, J. (2010). *Leadership for quality, effectiveness and health in organisations.* Östersund: PhD Dissertation, Mid Sweden University.

Lepak, D., & Snell, S. (2007). Employment subsystems and the 'HR architecture'. *The Oxford Handbook of Human Resource Management*, 210-230.

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). Paradigmatic controversies, contradictions, and emerging influences. *N. K. Denzin & Y. S. Lincoln (Eds.), The sage handbook of qualitative research (4th*.

Lisi, D., & Malo, M. A. (2017). The impact of temporary employment on productivity: the importance of sectors' skill intensity. *Journal for Labour Market Research, Vol. 50 No. 1*, 91-112.

Liu, X., van Jaarsveld, D. D., Batt, R., & Frost, A. C. (2014). The influence of capital structure on strategic human capital: Evidence from U.S. and Canadian firms. *Journal of Management, 40(2)*, 422-448.

Manyika, J., Chui, M., Bughin, J., Dobbs, R., Bisson, P., & Marrs, A. (2013). Disruptive Technologies: Advances that will transform life, business, and the global economy. Retrieved from http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/disruptive-technologies

Masoumi, S., Kazemi, N., & Abdul-Rashid, S. (2019). Sustainable Supply Chain Management in the Automotive Industry: A Process-Oriented Review. *Sustainability*, 11, 3945. Retrieved from https://doi.org/10.3390/su11143945

Matt, C., Hess, T., & Benlian, A. (2015). Digital Transformation Strategies. *Business Information System Engineering 57 (5)*, 339-343.

Mayer, K., & Nickerson, J. (2005). Antecedents and Performance Implications of Contracting for Knowledge Workers: Evidence from Information Technology Services.

McGrath, R. (2013). Transient Advantage. *Harvard Business Review 91 (6)*, 62-70.

Menant, L., Gilibert, D., & Sauvezon, C. (2021). he Application of Acceptance Models to Human Resource Information Systems: A Literature Review. *Frontiers in Psychology, 12*, 1-14. doi:https://doi.org/10.3389/fpsyg.2021.659421

Merriam, J. (1998). Qualitative research and case study applications in education (2nd ed.). *San Francisco, CA: Jossey-Bass Publishers*.

Mihova, T. B., & Ivanova, I. M. (2020). Digitalization of HR activities in industrial enterprises. *IOP Conference Series: Materials Science and Engineering (Vol. 878, No. 1, p. 012069), IOP Publishing*.

Milkaman, K., Chugh, D., & Bazerman, M. (2008). *How can decision making be improved.*

Mintzberg, H. (1979). The Structuring of Organizations: A Synthesis of the Research. *University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical*. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1496182

Mintzberg, H. (1994). *The Rise and Fall of Strategic Planning: Reconceiving Roles for Planning, Plans, Planners.* Toronto: Free Press.

Morales, E. M., García, F. J., & Barrón, Á. (2008). Purchasing as an integrated competence. *Encyclopedia of networked and virtual organizations*, 1309-1316.

Moussa, N., & Arbi, R. (2020). The impact of Human Resources Information Systems on individual innovation capability in Tunisian companies: The moderating role of affective commitment. *European Research on Management and Business Economics, Vol 26 (1)*, 18-25.

Muhanguzi, S., & Kyobe, M. (2014). Aligning work practices, mobile technology and strategy for performance improvement: The case of SMEs in Uganda. *The Electronic Journal of Information Systems in Developing Countries, 60(1)*, 1-22.

Muzyka, B. (2021, May 30). *Top 15 Human Resource Technology (HR Tech) Trends in 2022*. Retrieved from TechMagic: https://www.techmagic.co/blog/top-10-human-resource-technology-trends/#2-technology-upgrade-for-remote-work

Nalebuff, A., & Brandenburger, J. (1996). *Co-Optition.* Booz & Company.

Nawaz, N., & Gomes, A. (2017). Human Resource Information System: A Review of Previous Studies. Journal of Management Research. 92-120. doi:10.5296/jmr.v9i3.11488

Neumann, W., Winkelhaus, S., Grosse, E., & Glock, C. (2021). Industry 4.0 and the human factor – A systems framework and analysis methodology for successful development. *International Journal of Production Economics 233*.

Nguyen, H. N., & Mohamed, S. (2011). Leadership behaviors, organizational culture and knowledge management practices: An empirical investigation. *Journal of Management Development, vol. 30, no. 2* , 206-221.

O'Reilly, C. A., & Pfefer, J. (2000). *Hidden value: How great companies achieve extraordinary results with extraordinary people.* Boston: Harvard Business Press.

Object Management Group. (2022, 09 20). Retrieved from OMG : https://www.bpmn.org/

Odiri, V. (2006). Towards ensuring effective knowledge management in organization – The role of human resource department. *unpublished*.

Odiri, V. (2014). Knowledge management and organizational performance in selected oil companies in Nigeria. *Phd thesis in the department of Business administration, Delta state university, Abraka (unpublished)*.

Ogaja, C. K., & Wanyoike, D. (2015). A comparative analysis of implementation of tactical decisions in public universities in Kenya. *International Journal of Economics, Commerce and Management, Volume III, Issue 5*.

Okunoye, A. (2002). Where the global needs the local: variation in enablers in the knowledge management process. *Journal of Global Information Technology Management*, 4, 18-32. Retrieved from https://doi.org/10.1080/1097198X.2002.10856329

Oxford College . (2022, September 19). *Oxford College of Marketing*. Retrieved from https://blog.oxfordcollegeofmarketing.com/2016/06/30/pestel-analysis/

Pardi, T. (2017). *The Future of Work in the Automotive Sector: The Challenge of Deglobalization.* ILO.

Peffers, K., Rothenberger, M., Tuunanen, T., & Vaezi, R. (2012). Design science research evaluation. *7th International Conference on Design Science Research in Information Systems and Technology.* DESRIST 2012.

Peffers, K., Tuunanen, T., Rothenberger, M., & Chatterjee, S. (2007). A design science research methodology for information systems research. *J. Manag. Inf. Syst. 24*, 45–77 .

Peppard, J., & Rylander, A. (2006). From Value Chain to Value Network: Insights for Mobile Operators. *European Management Journal Vol. 24, Nos. 2–3*, 128-141.

Perez, C. (2010). Technological revolutions and techno-economic paradigms. *Cambridge Journal of Economics, 34(1)*, 185-202.

Pfeffer, J., & Baron, J. (1988). Taking the workers back out – recent trends in the structuring of employment. *Research in Organizational Behavior, 10*, 257-303.

Pisano, G., & Teece, D. J. (2007). Hot to capture value from innovation: shaping intellectual property and industry architecture. *California Management Review 50 (1)*, 278-296.

Planellas, M., & Muni, A. (2019). *Strategic Decisions, The 30 most useful models.*

Porter, M. E. (1980). *Competitive Strategy.* New York: Free Press.

Porter, M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance.* New York: Free Press.

Prahalad, C. K., & Hamel, G. (1990). The Core Competence of the Corporation. *Harvard Business Review 68 (3)*, 79-91. doi:10.1007/3-540-30763-X_14

Reese, R. (1995). Redesigning for Dial Tone: A Sociotechnical Systems Case Study. *Organizational Dynamics, 24, 2*, 80-90.

Reeves, M., & Deimler, M. (2011). Adaptability: The New Competitive Advantage. *Harvard Business Review*. Retrieved from https://hbr.org/2011/07/adaptability-the-new-competitive-advantage

Rejeb, A., & Keogh, J. (2020). 5G networks in the Value Chain. *Wireless Personal Communications (2021)*. doi:https://doi.org/10.1007/s11277-020-07936-5

Ribeiro, R. (2020). Digital Transformation: The Evolution of the Enterprise Value Chains. In *In Advances in Intelligent Systems and Computing (Vol. 1183)* (pp. 290–302). Singapore: Springer .

Roblek, V., & Meško, A. (2016). A Complex View of Industry 4.0. *SAGE Open, 6(2)*. Retrieved from https://doi.org/10.1177/2158244016653987

Rojko, A. (2017). Industry 4.0 Concept: Background and Overview. *International Journal of Interactive Mobile Technologies (iJIM), vol.11, no. 5*, 77.

Ross, D. F. (2015). *Procurement and supplier management.* New York: Springer. doi:https://doi.org/10.1007/978-1-4899-7578-2_11

Roy, R., Souchoroukov, P., & Shehab, E. (2011). Detailed cost estimating in the automotive industry: Data and information requirements. *International Journal of Production Economics*, 694–707. Retrieved from https://doi.org/10.1016/j.ijpe.2011.05.018

Rumelt, R. (2012). *Good Strategy, Bad Strategy: The Difference and Why It Matters.* London: Profile Books Ltd.

Sadiq, U., Khan, A., & Ikhlaq, K. (2012). The impact of information systems on the performance of human resources . *Journal of Business Studies Quarterly, 3*.

Saldana, J. (2015). *The coding manual for qualitative researchers, p.37.* London: Sage.

Sancha, C., Wiengarten, F., Longoni, A., & Pagell, M. (2020). The Moderating Role of Temporary Work on the Performance on Lean Manufacturing Systems. *International Journal of Production Research 58 (14)*, 4285-4305.

Santini, F., Kretschmer, C., & Marconatto, D. (2020). Antecedents, consequents and moderators of business models in SMEs: a meta-analytical research study. *Journal of small business and entrepreneurship*, 1-32.

Schwab, K. (2017). *The Fourth Industrial Revolution.* New York: Crown Business.

Sokoh, G. C., & Okolie, U. C. (2021). Knowledge Management and its Importance in Modern Organizations. *Journal of Public Administration, Finance and Law*.

Stacey, R., & Mowles, C. (2016). *Strategic Management and Organisational Dynamics: The challenge of complexity to ways of thinking about organisations, 7th Edition.* Harlow: Pearson Education Ltd.

Stratman, J., Roth, A., & Gilland, W. (2004). The Deployment of Temporary Production Workers in Assembly Operations: A Case Study of the Hidden Costs of Learning and Forgetting. *Journal of Operations Management 21 (6)*, 689-707.

Taherdoost, H., & Brard, A. (2019). Analyzing the Process of Supplier Selection Criteria and Methods. *The 12th International Conference Interdisciplinarity in Engineering, Procedia Manufacturing 32 (2019) 1024–1034*.

Tan, Y., & Li, X. (2022). The impact of internet in entrepreneurship. *International Review of Economics and Finance, vol. 77*, 135-142.

Taşkan, B., Karatop, B., & Kubat, C. (2020). Impacts of Industrial Revolutions on the Enterprose Performance Management: A Literature Review. *Journal of Business and Management, 26 (1)*, 79-119.

Taylor, M., Marsh, G., Nicole, D., & Broadbent, P. (2017).) Good Work: The Taylor Review of Modern Working Practices. Retrieved from https://www.gov.uk/government/publications/good-work-the-taylor-review-of-modern-working-practices

Teece, D. (2010). Business Models, Business Strategy and Innovation. *Long range planning, Vol. 43 (2)*, 172-194.

Tetnowski, J. (2015). *Qualitative case study research design. Perspectives on Fluency and Fluency Disorders.*

Tiwari, S. T., Chan, S. W., Ahmad, M. F., & Zaman, I. (2019). Application and implementation of E-procurement technologies in malaysian manufacturing firm. *International Journal of Supply Chain Management, 8(2)*, 923.

Toffler, A. (1981). *The Third Wave.* A Bantam Book.

Torpey, E., & Hogan, A. (2016). Working in a gig economy. *Washington, DC: Bureau of Labor*. Retrieved from https://www.bls.gov/careeroutlook/2016/article/what-is-the-gig-economy.htm

Towers, W. (2010). Executives see growth ahead for merged firms. *Workforce Management*, 681-689.

Ulrich, D. (1996). Human Resource Champions. The Next Agenda for Adding Value and Delivering Results. *ISBN 0-87584-719-6, Harvard Business School Press, Boston, MA*.

Uzzi, B., & Barsness, Z. (1998). Contingent Employment in British Establishments: Organizational Determinants of the Use of Fixed-Term Hires and Part-Time Workers. *Social Forces, Volume 76, Issue 3* , 967-1005.

Vacek, J. (2017). On the Road: from Industry 4.0 to Society 4.0. *Trendy v Podnikání, Vol. 7, No. 4*, 43-50.

Van Middendorp, S. (2009). Value networks in organization theory: An overview. *Project: Value Networks and Collaborative Support Networks*. Retrieved from https://www.researchgate.net/publication/266621804_Value_networks_in_organization_theory_An_overview

Visual Paradigm Online. (2022, 10 01). *VisualParadigm Online*. Retrieved from https://online.visual-paradigm.com/knowledge/strategic-map/strategy-map-with-balanced-scoreboard/

Ward, K., Grimshaw, D., Rubery, J., & Benyon, H. (2001). Dilemmas in the management of temporary work agency staff. *Human Resource Management Journal, 11: 4*, 3-21.

Weetman, C. (2016). A circular economy handbook for business and supply chains: Repair, remake, redesign, rethink. London: Kogan Page.

Westerman, G., Bonnet, D., & McAfee, A. (2014). The nine elements of digital transformation. *MIT Sloan Management Review, 55(3)*, 1-6.

Wiengarten, F., Onofrei, G., Fynes, B., & Humphreys, P. (2021). Exploring the quality performance implications of temporary workers: the importance of process capabilities. International Journal of Production Research, doi:https://www.tandfonline.com/action/showCitFormats?doi=10.1080/00207543.2021.1964705

Wiengarten, F., Pagell, M., Durach, C., & Humphreys, P. (2021). Exploring the Performance Implications of Precarious Work. *Journal of Operations Management*, 1-38.

World Economic Forum. (2018). The future of jobs report 2018. Geneva, Switzerland: Center for the New Economy and Society. Retrieved from http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf

Wright, P. M., Dunford, B. B., & Snell, S. A. (2001). Human resources and the resource based view of the firm. *Journal of Management, 27*, 701-721.

Yadav, V., & Sharma, M. K. (2016). Multi-criteria supplier selection model using the analytic hierarchy process approach. *J. Model. Management, vol. 11, no. 1*, 326-354.

Yin, R. K. (2014). *Case study research: Design and methods (5th ed.).* Thousand Oaks, CA.

Zeoli, M., & Billeter, K. (2019). Transforming HR to be more digital (and more human). *Workforce Solutions Review, 10(1)*, 4-7.

Zhang, F., Rio, M., Allais, R., Zwolinski, P., Carrillo, T., Roucoules, L., . . . Buclet, N. (2013). Toward an systemic navigation framework to integrate sustainable development into the company. *J. Clean. prod. 54*, 199-214.

Zott, C., & Amit, R. (2010). Business model design: An activity system perspective. *Long Range Planning, 43(2–3)*, 216-226. doi:https://doi.org/10.1016/j.lrp.2009.07.004

CHAPTER 9

9. Appendices

9.1. Integration of CSR framework within the DSR paradigm by Costa et al.

Phase 1 (Ex-ante stage):

1. Problem and Motivation: For this stage, an extensive literature review was conducted, as well as an exploratory study to develop a theoretical/conceptual framework, together with some design propositions (ex-ante design propositions).
2. Objectives and Ex-ante Evaluation: To help define the objectives for the solutions to be developed, in-depth research was performed using CSR, both ex-ante and ex-post evaluation

of the construct. With this CSR it was be possible to define the objectives for the solution to be developed, as well as to perform a naturalistic ex-ante evaluation of the construct.

Phase 2 (Construct design stage):

3. Construct Design and Development: This stage of the research followed the design cycle of the DSR paradigm, taking place in parallel with the CSR, to iterate between design and evaluation of the construct. The objectives of this research stage were to gather requirements for designing the constructs; to design an information management model adaptable to the processes of internationalization in collaboration; and to design a collaborative decision support system to explore the information management model and capitalize internationalization knowledge.

Phase 3 (Ex-post stage):

4. Demonstration and Ex-post Evaluation: For this stage, CSR and focus groups were used. The procedures to perform this new CSR were the same applied in the ex-ante evaluation, regarding data sources, data analysis and validity ensuring. The difference was that new individuals were interviewed, with modifications being made according to the feedback obtained. This allowed to strengthen the validation of the construct, as well as the generalization of the findings.
5. Reporting and Communication. The scientific and practical contributions of the study were then reported in international peer-reviewed journals and in international refereed conferences. The results of this project were communicated in international and national refereed conferences, doctoral consortiums, workshops, and meetings with interested individuals. These results included the final theoretical/conceptual framework and theory, as well as the final design propositions (ex-post design propositions). Additionally, plans for the evolution and sustainability of the construct were also developed and disseminated.

9.2. Selection of Guiding Questions from Interview Protocol

Profiling questions:

- How long have you been working for “The Automotive Company”?
- How long have you been involved in the contractor management process?

General questions regarding the current process:

- At which stage of the process do you become involved?
- How are you informed of a new contractor (need)?

- Please describe to the best of your knowledge the current contractor management process at “The Automotive Company”, as detailed as possible.
- What type of technology or applications do you use to support the process? Which systems do you have in place?
- Can you identify any inefficiencies in the contractor management process?
- Which improvements would you recommend for the global contractor management process at “The Automotive Company”?
- In an ideal world, which other process reviews, updates or improvements would you like to see in a contractor management process?

Stakeholder-specific questions:

HIRING MANAGERS

- In your interaction with the purchasing team, what kind of information do you provide them, and through which means?
- Do you have a recurring pool of contractors you recommend to purchasing?
- Which ongoing policies do you have with your current contractors (Directives, exclusivity, competency level, etc.)?
- Do you have any type of performance review for contractors? Please specify.

INDIRECT PURCHASING

- What kind of information do hiring managers provide you, and through which means?
- Do you have a say in process specifications (companies used, contractors hired)?
- What ongoing policies do you have with your current Engineering CWF suppliers?
- Do you have standard contracts, or do you make them according to/in partnership with your current suppliers?
- Does Purchasing have a preferred supplier database? Do you agree with the existence of such a database? Why?

PEOPLE & INNOVATION

- Can you identify any patterns in the content of the mistakes submitted in the documents?

9.3. Interview Participant Transcript Coding*

P1	Indirect Purchasing Buyer at “The Automotive Company”
P2	Indirect Purchasing Buyer at “The Automotive Company”
P3	Indirect Purchasing Buyer at “The Automotive Company”
P4	Indirect Purchasing Buyer at “The Automotive Company”
S5	Vendor Management Specialist at “The Automotive Company”

M6	Hiring Manager in Connected Powertrain at “The Automotive Company”
M7	Hiring Manager in Model Based Design at “The Automotive Company”
M8	Hiring Manager in Vehicle Comfort at “The Automotive Company”
M9	Former Hiring Manager in Material Engineering at “The Automotive Company”
M10	Hiring Manager in Chassis Engineering at “The Automotive Company”
M11	Hiring Manager in Multimedia Systems at “The Automotive Company”
M12	Hiring Manager in Fuel Cell at “The Automotive Company”
M13	Hiring Manager in System Development at “The Automotive Company”
M14	Hiring Manager in Powertrain Evaluation at “The Automotive Company”
M15	Hiring Manager in Accessory Planning and Design at “The Automotive Company”
M16	Hiring Manager in Accessory Planning and Design at “The Automotive Company”
M17	Hiring Manager in Material Engineering at “The Automotive Company”
M18	Hiring Manager in Installation and Homologation at “The Automotive Company”
S19	P&I Administrators at “The Automotive Company”
S20	EA and Tech Standards Specialist at “The Automotive Company”
S21	Data Analytics and HR Solution Manager at “The Automotive Company”
S22	Data Analytics and HR Solution Manager at “The Automotive Company”

Table 9.1.: Interviewee Description and Coding

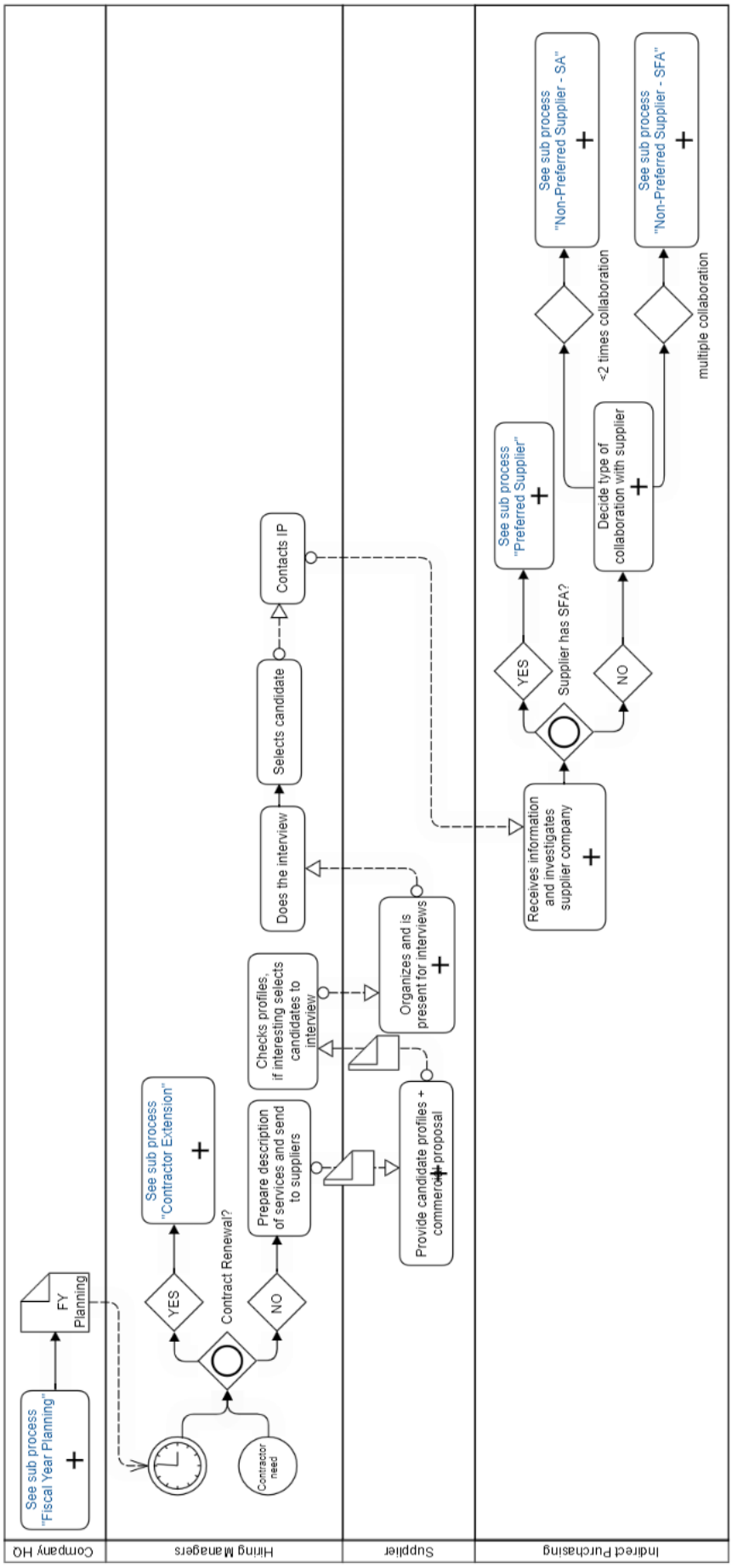
**Interview transcripts are available upon request.*

9.4. “The Automotive Company” Rules on Contractors upon Service Start

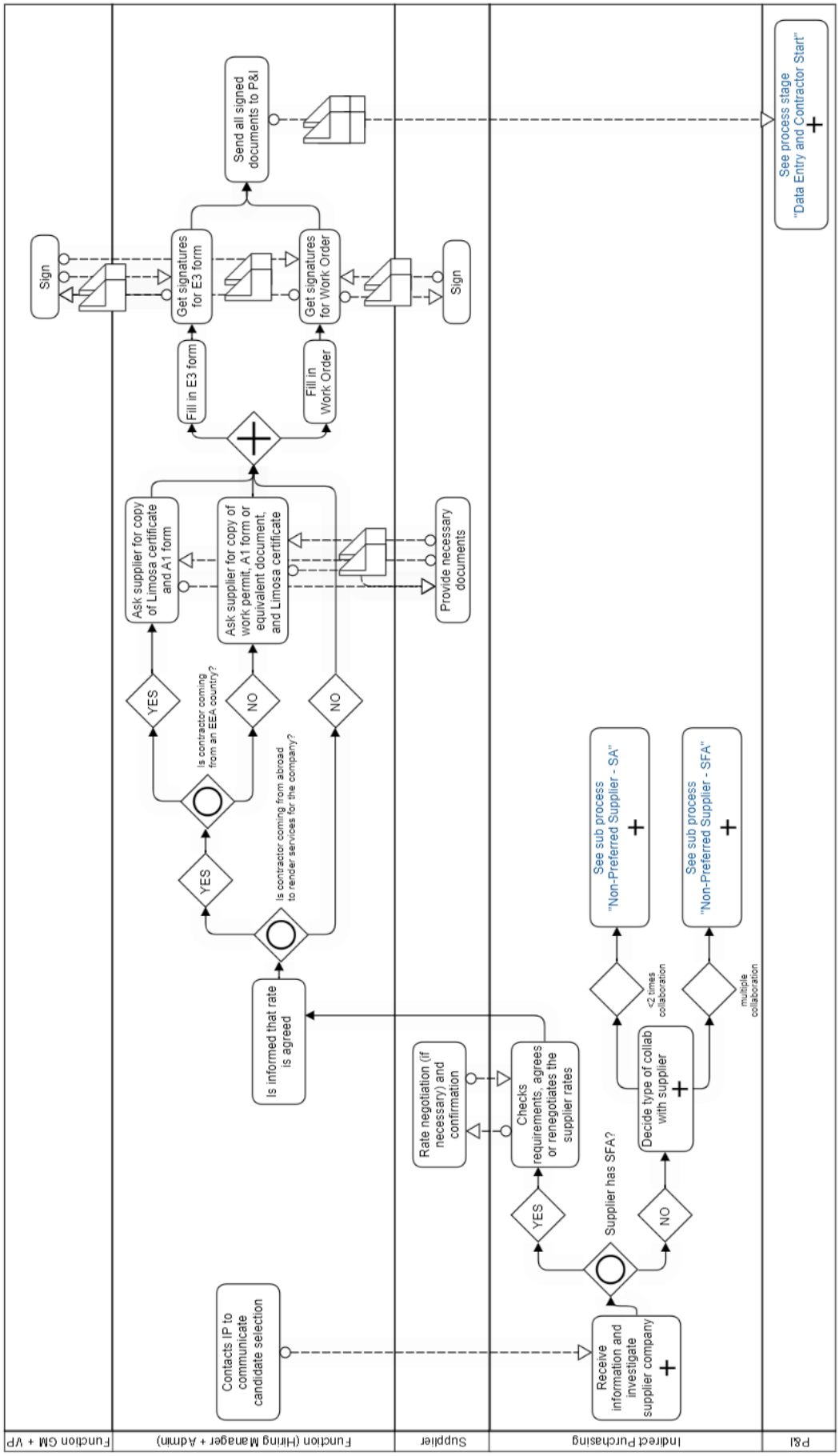
- “The Automotive Company” must not give direct instructions to contingent workers. The service provider is the one that must exercise the employer’s authority over the contingent workforce. If “The Automotive Company” needs to give guidelines regarding the services of the contractor, these requests must be addressed to the contact person of the service provider.

- Permanent employees of “The Automotive Company” must never be required to follow any instructions given by the contingent workforce.
- “The Automotive Company” must have no control over the working time of the contractor. Holidays and working hours of the contractor are determined solely by the service provider. Line managers from “The Automotive Company” must not request contractors to complete time sheets, approve holidays, or give any compensation for extra hours.
- Contingent workers are not part of “The Automotive Company”. As such, they should not be mentioned in organizational charts or any other official company documents or database. On all documents and correspondence, there must always be a clear segregation between contractors and “The Automotive Company” employees.
- Contingent workers’ business cards and email signatures must never give the impression that the worker belongs to “The Automotive Company”. Contractors cannot indicate in their professional networks a position referring to “The Automotive Company”, participate in company events, or even team meetings if their services are not specifically addressed.
- Contingent workforce shall never act as representative of “The Automotive Company” or give the impression of such. They must also never be allowed to discuss the extension, renewal, or amendment of their own service provider’s agreement.
- Contingent workers are employed by their service provider who takes care of their employment conditions and benefits. “The Automotive Company” must agree with the service provider a service fee which covers all costs of the service provider.
- Contingent workers have their own working tools and do not get company cars. For technical and security reasons, “The Automotive Company” can provide these workers with a company laptop, machinery, and a fixed phone number.
- Continent workforce remains under the supervision of the service provider, responsible for carrying out performance reviews. “The Automotive Company” line managers should provide feedback on the quality of the services provided to the service provider.
- “The Automotive Company” cannot take any disciplinary actions against contingent workforce. This is part of the employer’s authority, which remains the service provider.

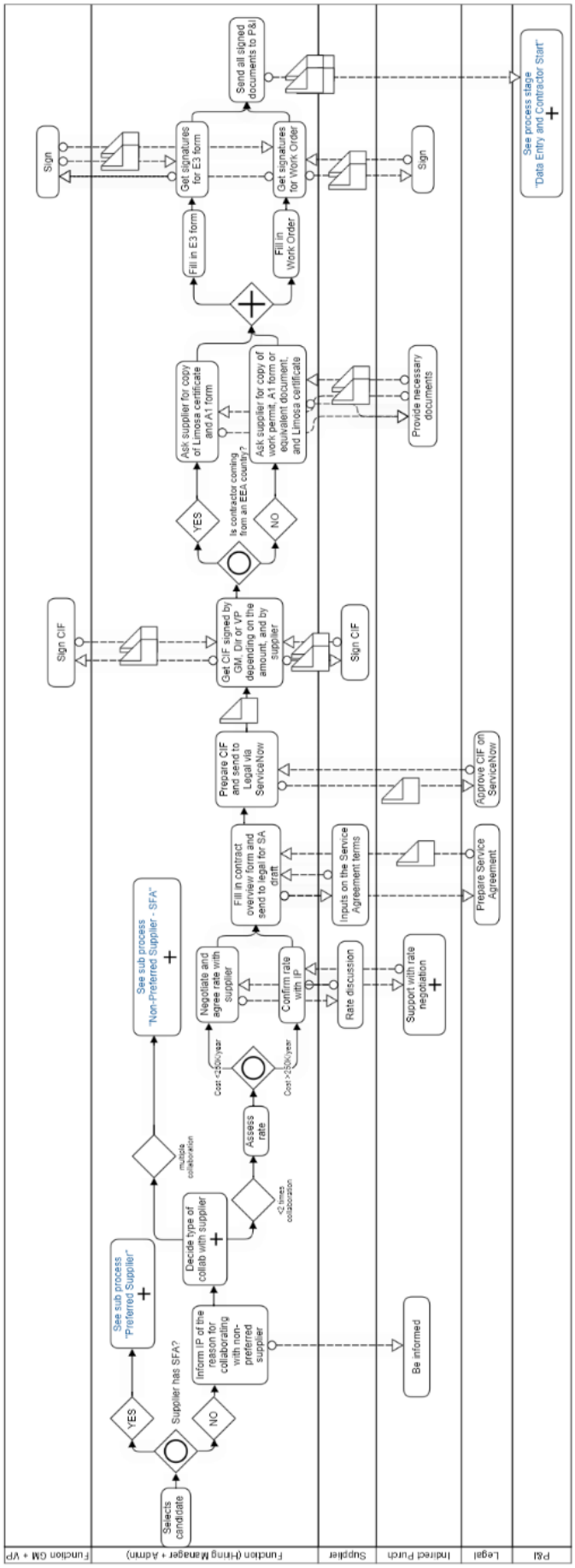
9.5. "Contractor Selection" Process Stage (designed using BPMN, 2022)



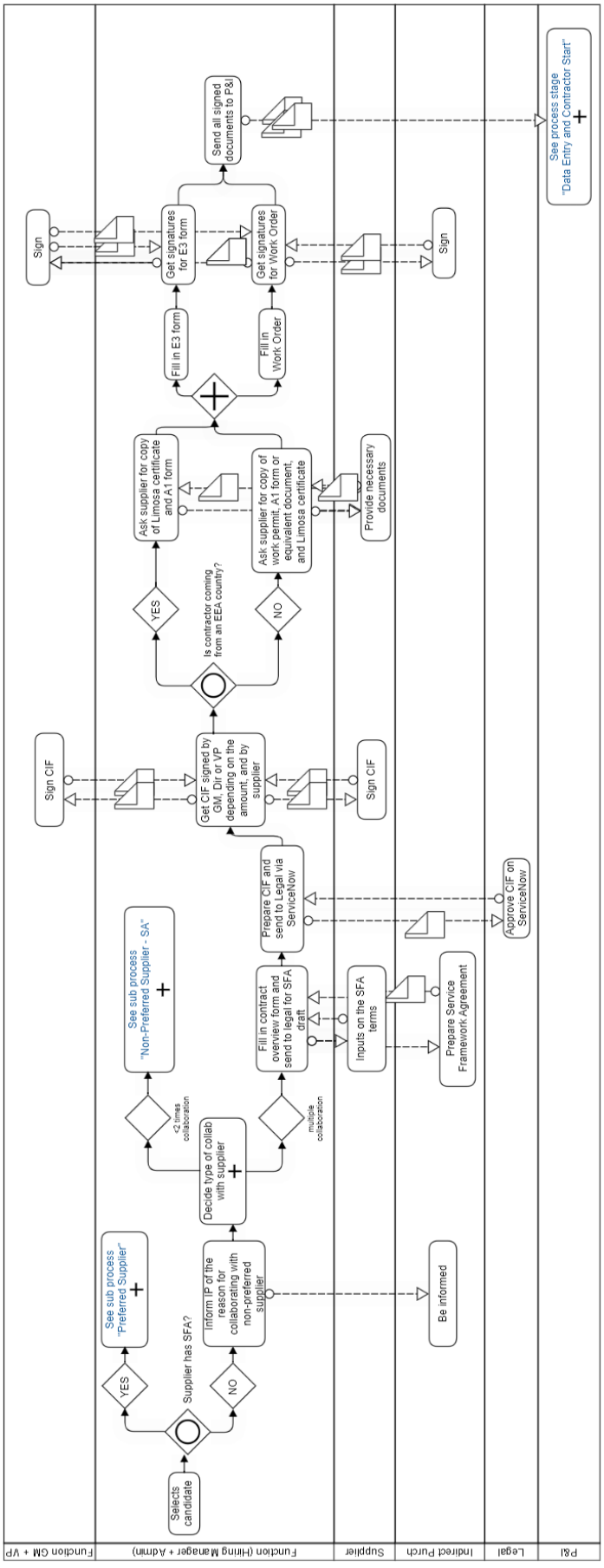
9.6. "Preferred Supplier" Subprocess (designed using BPMN, 2022)



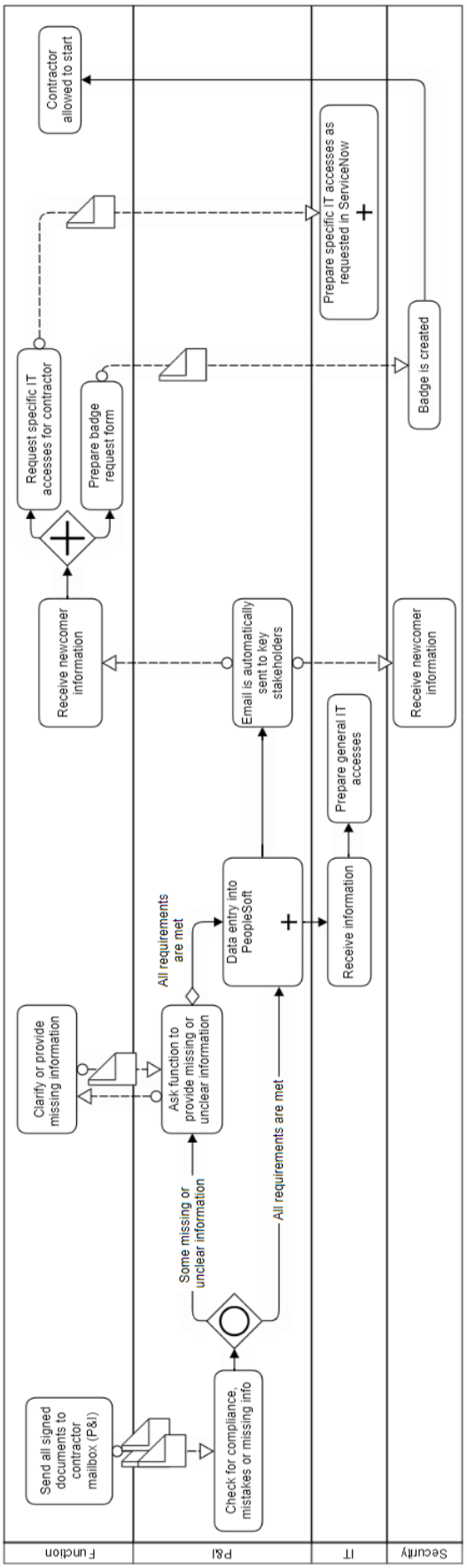
9.7. "Non-Preferred Supplier SA" Subprocess (designed using BPMN, 2022)



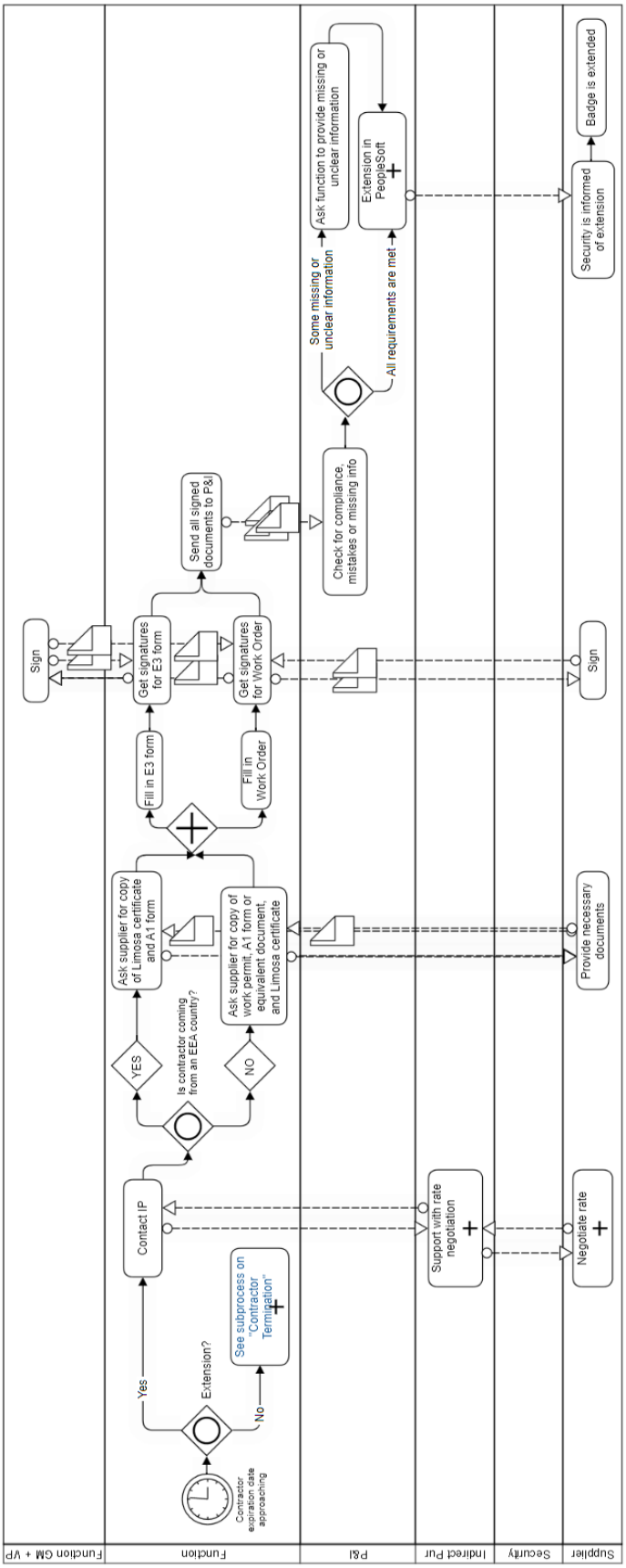
9.8. "Non-Preferred Supplier SFA" Subprocess (designed using BPMN, 2022)



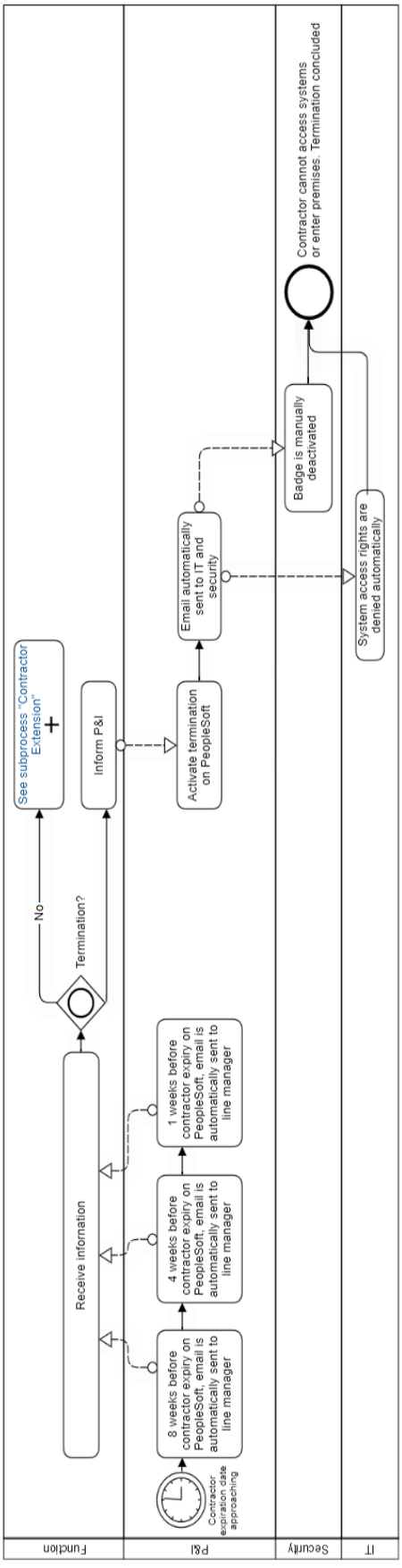
9.9. "Data Entry and Contractor Start" Process Stage (designed using BPMN, 2022)



9.10. "Contractor Extension" Subprocess (designed using BPMN, 2022)



9.11. "Contractor Termination" Process Stage (designed using BPMN, 2022)



9.12. BSC/ Strategy Map Combo matrix applied to "The Automotive Company" (2022)