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Integrated Masters in Management and Industrial Engineering

A PDCA IMPROVEMENT APPROACH ON THE RECRUITMENT DEPARTMENT OF A CONTACT CENTER COMPANY

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"Quality is never an accident; it is always the result of intelligent effort." (John Ruskin).

ABSTRACT

While the Lean philosophy is widely established in the Manufacturing industry as a viable solution, the Service Industry has not as much adherence to the Lean philosophy. Lean is starting to see considerable growth in this sector, but there is still a long road left to go. When considering the Contact Center industry in specific, literary evidence is reduced.

This dissertation addresses an improvement project conducted in the Recruitment department of a Contact Center company. The project's chosen methodology was a Plan, Do, Check, Act cycle with thirteen stages (Project Characterization, Stakeholder Engagement Plan, Process Characterization, Initial State, Problem Identification, Solution Development, Solution Implementation Plan Execution, Solution Implementation, Final State, Implementation Results Discussion, Control Mechanisms, Company-Wide Roll Out and POC Hands Off).

In this project were analyzed five different metrics (Lead Time, Time to Attrition, Attrition Turnover, Attrition Quantity and KPI Achievement) used to evaluate the project's performance and the results were structured using four different splits of the existing data (Industry, Market, Team and Recruiter). After mapping the process and conducting side by side sessions with the goal of deeply understanding the process, the improvement team surfaced eleven different problems in the Recruitment department. For those, eleven different solutions were implemented with the goal of improving the metrics in scope.

After a six month data collection period, data from the post-implementations state of the process was extracted, showing that, beyond any doubts, three metrics improved (Lead Time, Time to Attrition and Attrition Turnover), one metric did not improve nor deteriorated (KPI Achievement) and the other metric decayed drastically (Attrition Quantity). Lead Time improved on average at least 50% of the initial value, Time to Attrition improved almost 20% and Attrition Turnover also improved close to 20%.

Keywords: Lean, Service, Industry, Contact, Center, PDCA, Continuous, Improvement.

RESUMO

Enquanto a filosofia *Lean* já está bastante estabelecida na indústria da Produção, a indústria dos Serviços não apresenta a mesma aderência à filosofia. O *Lean* está a começar a testemunhar crescimento considerável neste setor, mas ainda existe um longo caminho pela frente. Quando considerando a indústria de *Contact Centers*, a evidência literária é muito reduzida.

Esta dissertação aborda um projecto de melhoria conduzido no departamento de Recrutamento de uma empresa que opera na indústria dos *Contact Centers*. A metodologia escolhida para o projecto foi um ciclo *Plan, Do, Check, Act* com treze passos (Caracterização do Processo, Plano de *Engagement* com os *Stakeholders*, Caracterização do Processo, Estado Inicial, Identificação de Problemas, Desenvolvimento de Soluções, Execução dos Planos de Implementação das Soluções, Implementação das Soluções, Estado Final, Discussão dos Resultados da Implementação, Mecanismos de Controlo, Escalamento do Projecto, Finalização do Projecto).

Neste projeto foram analisadas cinco métricas diferentes (*Lead Time*, *Time to Attrition*, *Attrition Turnover*, *Attrition Quantity* e *KPI Achievement*). Estas métricas foram usadas para avaliar o desempenho do projeto e os dados foram estruturados de acordo com quatro *splits* diferentes (Indústria, Mercado, Equipa e Recrutador). Depois de mapear o processo e conduzir sessões de lado-a-lado para entender profundamente o processo, onze problemas foram encontrados, tendo se efetuado o posterior desenvolvimento de onze soluções.

Depois de um período de seis meses de recolha de dados, o estado de pós-implementação do processo foi estudado, e chegou-se à conclusão que, das cinco métricas estudadas, três melhoraram de forma significativa (*Lead Time*, *Time to Attrition* e *Attrition Turnover*), uma não melhorou nem piorou (*KPI Achievement*), e a outra foi deteriorada (*Attrition Quantity*). *Lead Time* melhorou em aproximadamente 50% do valor inicial, enquanto que *Time to Attrition* melhorou cerca de 20% tal como a *Attrition Turnover* que também melhorou 20%.

Palavras chave: *Lean*, Serviços, *Contact Center*, PDCA, Melhoria, Contínua

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ACRONYMS

ASME	American Society of Mechanical Engineers
ATR	Authorization to Recruit
BPMN	Business Process Model and Notation
BVA	Business Value Added
CI	Continuous Improvement
CRM	Customer Relationship Management
CV	Curriculum Vitae
CVA	Customer Value Added
DL	Distribution List
FIFO	First In First Out
FR	French
FTR	First Time Right
GDPR	General Data Protection Regulation
HC	Head Count
HR	Human Resources
IT	Information Technology
JIT	Just in Time
KO	Knock Out
KPI	Key Performance Indicator
NH	New Hire
PDCA	Plan, Do, Check, Act
PIPM	Process Improvement and Project Management
PMBOK	Project Management Body of Knowledge

PMI	Project Management Institute
POC	Point of Contact
POTS	Plain Old Telephone Service
Q&A	Questions and Answers
RACI	Responsible, Accountable, Consulted, Informed
ROW	Rest of the World
RPA	Robot Process Automation
SF	Success Factors
SIPOC	Supplier, Input, Process, Output, Customer
SJT	Situational Judgement Test
SLA	Service Level Agreement
SME	Small-Medium Enterprise
SOP	Standard Operating Procedure
SP	Spanish
TPM	Total Productive Maintenance
TPS	Toyota Production System
VOC	Voice of the Customer
VSM	Value Stream Mapping
W@H	Work at Home
WBS	Work Breakdown Structure
WFM	Work Force Management
WIP	Work in Progress

INTRODUCTION

This Chapter has the purpose of giving context, not only regarding this dissertation as an academic document but also to the improvement project methodology and its structure. The Introduction chapter consists in four sub-chapters: Contextualization and Motivation, where the context and background of the project is given; Study Goals, where the purpose of the project is presented; Study Methodology, where the project structural framework is addressed and Dissertation Structure, where the paper elements are described.

1.1 Contextualization & Motivation

Along with the exponential populational growth witnessed during the 20th century and on through the 21st century, the world Gross Domestic Product (a monetary measure used to shed light on the value of a specific market or product over a specific period of time) has also been growing almost continuously since the 1900s (Konchitchki & Patatoukas, 2014). This evolution encompasses over a century of economic, political, and social progress and has resulted and will continue to result in a more selective and informed final consumer that expects faster, better, and more customized products and/or services. It will also result in a continuously more competitive and dynamical economical marketplace, that delivers increasingly better products and specialized services in a shorter period of time at lower prices.

At the end of the Second World War, the European and Japanese economy were devastated and in desperate need of a turnaround. Alongside the population growth, marketplace evolution and the fact that clients were getting increasingly more selective, companies faced incredible competition and besides having to make an effort to reach as much customers as possible, they also had to start looking at their own internal processes, so they

could reduce costs as much as possible, thus maximizing profit without having the need to increase revenue. At this point Continuous Improvement is born. The companies that were able to understand this thrived, the ones that didn't, eventually ended up closing doors (Paladugu & Grau, 2020). From that point on, increasingly bigger attention has been given to process improvement techniques and methodologies and several philosophies such as Lean Thinking, Six Sigma, Total Productive Maintenance, Theory of Constraints, amongst others, were created (Malinova *et al.*, 2022).

In this project the philosophy chosen to be addressed is Lean Thinking, a methodology that presents the main goal of ultimately reducing the time a process requires to be carried out. Lean is based on logical premises and enables any manager to differentiate activities that generate value, from activities that generate waste, from activities that generate either, amongst other useful insights, that help the manager follow a successful and lucrative business strategy for the company (Martin *et al.*, 2014). The Lean Thinking methodology presents several methods and techniques in its toolkit for this purpose. One very famous method featuring in the Lean methodology is the Plan, Do, Check, Act (PDCA) cycle. This method is a process improvement strategy that enables a structured approach on the improvement project and allows the improvement team to follow a specific path and keep its focus on the ultimate goal which is defined at the very beginning of the project (Prashar, 2017).

In this project, the PDCA cycle will be applied to a company acting in the telecommunication industry. The telecommunication industry is a sector that first appeared in the 1830s with the invention of the telegraph. From that point until today's time, the sector continuously grew until today's value of around 1700 billion USD worldwide. The industry is now in rapid change and technology is furiously taking over the entire sector, with Robot Process Automations (RPAs), Optical Character Recognition (OCRs) and other technologies of the sort taking a huge part in every company of the sector's activity and business model (Abraham, 2008).

Although the sector presents a wide range of company types, the improvement process described in this paper, takes place in a Contact Center company that handles inbound contacts which primarily relate to customer support and technical assistance. The company engages with various clients (companies) and its business model mainly consists in providing the customer support to its clients' customers. There are two distinct sectors in this company: Operations department, responsible for handling the client's expectations and providing the customer with optimal customer service; and Support departments, responsible for providing

the Operations the necessary for them to run smoothly, including manpower, financial stability, among others.

Worldwide the company employs approximately 80.000 people, and, in Portugal, it employs almost 5000 people. Nationally, the company has four locations and has almost 30 different high-profile clients. The Portugal branch is in charge of the Greece and Italy branches and is now surfacing as a Continuous Improvement excellence center for all of Europe and Middle East Asia. For purposes of identification, and due to General Data Protection Regulation (GDPR) issues the company in question will, from this point on, be addressed as CompanyOne.

The improvement project in question is applied to the Recruitment department of CompanyOne. CompanyOne is currently undergoing a deep internal transformation of making every process of its economic activity as Lean as possible along with a big and structural digital transformation, witnessing a considerable bet and focus in new technologies and automation opportunity.

The company is hugely betting in specialized training of its employees and multi leveling their expertise. CompanyOne has recently invested in creating a Continuous Improvement department that counted with the entrance of freshly Master graduates specialized in Lean and Six Sigma methodologies, amongst with other team members with strong analytical and software development skills, which composed the improvement team of this paper's project. This team had two big purposes: helping the process improvement teams surface improvement opportunities in the Operations department; and being responsible for optimizing the Internal Departments (Recruitment, Human Resources (HR), Sourcing and others). One of those Support departments is the Recruitment department which is composed of several Recruiters and a managerial structure and is in charge of hiring Agents (name given to the people answering the phones) and supplying the Operations department demand.

The content described in this document regards the improvement project performed in the Recruitment department of CompanyOne by action of this corporate Lean mindset implementation strategy. The project consisted in the implementation of a PDCA cycle featuring thirteen different steps for process improvement, during the period of ten months.

1.2 Study Goals

This project, as explained before, was carried out in CompanyOne's Recruitment department and had the main goal of hiring more Agents (staff) in fewer time, with higher quality. For this

purpose the improvement team resorted to a PDCA cycle which featured thirteen steps and had the goal of improving the entire hiring procedure of CompanyOne, making it more agile, less bureaucratic, with the capacity to return better quality Agents and above everything else, faster.

The project was planned to take ten months, and during the entire duration of the project, the improvement team had the job of studying in detail the process in question, surfacing process flaws and problems, developing suitable and profitable solutions, creating sustained and realistic implementation plans and effectively implementing those solutions alongside mechanisms to control the behavior of the process along the way.

Throughout the process five metrics were defined as good performance indicators of the Recruitment process as a whole. These metrics are the Lead Time (time a Recruiter takes to hire an Agent), the Time to Attrition (time an Agent takes to leave CompanyOne), Attrition Turnover (ratio of people who leave CompanyOne over hired people), Attrition Quantity (sheer amount of people that leave CompanyOne) and KPI Achievement (average bonus achievement score of the Agents). The main goal of this improvement project is to implement measures that can in fact improve the process. The indicators for this improvement are the metrics defined previously. A successful project will generate better scores on those metrics after the solution's implementation than the ones witnessed in the pre-improvement implementation state of the process.

1.3 Study Methodology

The study methodology featuring in this improvement project is an adapted PDCA cycle to the specific necessities of the company where the project was carried out, CompanyOne. The methodology features thirteen distinct and indispensable stages for the entire improvement process. The methodology features four different steps (as the name suggests, those steps are the Plan, Do, Check and Act steps), which are going to be briefly described next.

The Plan step is the step that takes the longest time to be conducted and is also the most important step of the whole improvement project. It is in this step that the project is going to be closely studied in detail and the main problems that the improvement team is going to focus on are going to be selected and possible solutions for those problems will be developed. This step encompasses six different stages:

- i. The Project Characterization, where the project is carefully defined, stating Stakeholders, project boundaries and in-scope and off-scope subjects. This is a very important step as it holds the key for organized and structured project management.
- ii. The Stakeholder Engagement Plan, where a scheduled plan of meetings with the several different required Stakeholders of the project/process is executed and ownership is distributed throughout the intervenients. This step allows the project to not be forgotten, and the Stakeholders to keep engaged and motivated.
- iii. The Process Characterization, where the improvement team will do a deep dive in terms of knowledge about the process, resorting to Gemba workers side-by-sides, Department War Rooms, and Process Mapping. At the end of this stage, the Improvement team should have a considerable amount of information about the process.
- iv. The Initial State, where the process is going to be quantifying, putting numbers and hard data where, previously, were just ideas and intuition. At the end of this stage the improvement team must have to be able to identify, with certainty, where problems are located.
- v. The Problem Identification, whereas the name suggests, problems will be surfaced and identified and communicated to the necessary Stakeholders.
- vi. The Solution Development, where, also as the name suggests, possible Solutions for the previously found problems will be developed. This stage must always be performed with the aid of the Gemba workers and the Management of the process, to make sure the correct problems and solutions are identified, and the problem does not turn its focus to an incorrect place.

The Do step is the step where the solutions developed in the previous step will be implemented. This step encompasses two stages:

- i. The Solution Implementation Plans Execution, whereas the name suggests, the implementation plans for the previously developed measures are built, confirming the measures are correctly implemented in the process and serve the predefined goal. Also, in this stage, points of contact are defined and ownership of the improvement project is shared with the Management of the process.
- ii. The Solution Implementation, where the solutions are in fact implemented and data is collected for a specific and predetermined period of time.

The Check step is the step where the improvement team is going to understand if the measures implemented in fact returned benefit for the company or not. It is a purely analytical step and features two different stages:

- i. The Final State, where the results of the process, in a specific time period after the implementation of the Solutions, are extracted and studied.
- ii. The Implementation Results Discussion, where it is understood if the Implementation served the supposed purpose for the company. In this step statistical hypothesis testing is advised but not mandatory. The takeaway from this stage will define if the project was successful and measures resulted in improved procedures (and consequently improved performance metric results) or if the improvement team needs to go back to the Plan step once again to re-assess the process and find new solutions to address.

The Act step is the final step of the methodology and is the step where the control procedures are defined, along with the required administrative procedures to officially finish the project. This step includes three different stages:

- i. The Control Mechanisms, where the control procedures are defined for the measures that actually returned in benefit, to make sure after the improvement team finishes the project and leaves the process, the implemented measures do not fade away and stop being used.
- ii. The Company-Wide Roll Out, where a company-wide assessment will be performed understanding if there are other departments/processes that could benefit from the measures implemented in the improvement project.
- iii. The Documentation Hands Off, where the ownership of the implemented solutions will be handed to the respective responsible people, along with the entire project documentation, data and results, for further necessary needs.

1.4 Dissertation Structure

This dissertation is divided in four distinct chapters: "Introduction", "Lean Philosophy and Other Support Tools", "Case Study" and "Conclusion".

The first Chapter, "Introduction", features the Contextualization and Motivation, the Study Goals, the Study Methodology and the present sub chapter, Dissertation Structure.

The second chapter of the dissertation, Lean Philosophy and Other Support Tools, features two sub-chapters, the sub-chapter Lean Philosophy and the sub-chapter Other Support Tools

The sub-chapter "Lean Philosophy" features four integrating sections: Lean Fundamentals, that explores the background, origins and main pillars of the Lean Philosophy; "Lean Tools", that explores the main tools of the Lean Philosophy, required to fully understand the Lean mindset; "Lean in the Service Industry", which is an high level literature review about the Lean applications in the different sectors of the Service Industry; and "Lean in the Contact Center Industry", which is also an high level literature review, this time about Lean applications in the Contact Center Industry.

The sub-chapter Other Support Tools features a theoretical introduction to the necessary tools for the completion and complete comprehension of the document and the project.

The third chapter of the dissertation, "Case Study", features four sub-chapters. The first sub-chapter corresponds to the first step of the improvement methodology, "Plan". This sub-chapter is divided in six stages (Project Characterization, Stakeholder Engagement Plan, Process Characterization, Initial State, Problem Identification and Solution Development). The second sub-chapter corresponds to the second step of the improvement methodology, "Do" and is divided in two stages (Solution Implementation Plan Execution and Solution Implementation). The third sub-chapter corresponds to the third step of the improvement methodology, "Check" and is divided in two stages (Final State and Implementation Results Discussion). The fourth sub-chapter corresponds to the fourth step of the improvement methodology, "Act" and is divided in three stages (Company-Wide Roll Out, Control Procedure and POC Hands Off).

The fourth and last chapter of the dissertation, "Conclusion", features the presentation of the main takeaways and resulting thoughts of the project and the future projects from there resulting.

LEAN PHILOSOPHY AND OTHER SUPPORT TOOLS

2.1 Lean Philosophy

After the Second World War, in a period where the Japanese economy was at the bottom of a steep slope, the Toyota Motor Company entirely turned its focus to the production of automobiles, in an attempt to preserve its competitiveness in the world market scene. These were difficult times, Toyota was short on resources, and faced strong competition from the United States of America with General Motors and Ford taking advantage of their country's superior economic power, using several production lines to push forward new products. Each line was dedicated to only one type of vehicle, what made up a fragile and slow production system (Tomino *et al.*, 2009).

Taiichi Ono realized that one way Toyota could remain competitive was to transform their assembly lines in convertible, flexible lines that could get work done simultaneously in several types of automobiles taking advantage of better conversion times than the competition and maintaining the manufacturing costs similar to the American companies. Around 1950, Toyota was presenting cars with high quality, and in their factories the conversion times were incredibly lower than the Western competition, the level of inventory was low and the production was performed in small batches which later gave birth to the highly profitable system that is now known as "One Piece Flow". The Toyota Production System was born. The Lean philosophy was born with it. The company's profits skyrocketed, and the company was doing better than ever, eventually becoming the biggest and most well managed car company in the world (Marinelli *et al.*, 2021).

Quickly the rest of the world started to notice Toyota's breakthroughs and getting interested in the know-how behind it. Many companies sent representatives to the Japanese company's factories as Toyota is well known for never denying access to the Lean philosophy behind their success to other competing companies; adopted the procedures and strategies used by this company. These adaptations made in Western companies using as guidelines, the principles of the Japanese company, were majorly miscarried and at first these companies' management couldn't understand how these methods, which worked so wonderfully in Japan, were such a big bust in the Western world (Bittencourt *et al.*, 2019).

It was later understood that the Lean principles can't just be used as a toolbox that whenever necessary is opened and the required tools are picked and used to solve certain, specific problems. The Lean principles must be implemented in a company as a philosophy and mindset that allows one to rethink the whole productive system in a way to keep looking for any possible improvements taking use, first, of one's imagination and problem solving abilities, and only then think of budget for transformation (Achanga *et al.*, 2006).

Nowadays, Lean is more present in the panorama of the global market, being acknowledged as an already proved philosophy and management strategy, other than a set of tools that allows companies and individuals to reach each personal or corporate goals using imagination, compromise and discipline (Negrão *et al.*, 2016).

The key point in the Lean philosophy is understanding the principles behind it. The logic that supports the entire process of decision making, promoting communication and engagement between departments and individuals to solve common problems and reach better results (Powell & Coughlan, 2020).

The main goal of the Lean philosophy is reducing the time a product/service takes to be ready to use by the consumer. This time reduction is accomplished with standardized procedures, agile supply chains, perfect communication and common engagement between different elements of the company's structure (Pinto *et al.*, 2019).

2.1.1 Lean Fundamentals

In this subchapter, the five pillars for the successful implementation of a Lean mindset in any company/department/process/activity are going to be addressed and explained in detail.

2.1.1.1 Define value

The first, and most important pillar of the Lean philosophy is to understand what value is and how it is being created. Oxford English Dictionary defines value (*Value - Definition, Pictures,*

Pronunciation and Usage Notes / Oxford Advanced American Dictionary, 2021) in three different ways:

- i. "How much something is worth in money or other goods for which it can be exchanged."
- ii. "How much something is worth compared with its price."
- iii. "The quality of being useful or important."

More than any monetary measure, value is the most important asset for any company in the business of exchanging one thing for another. It is, then, imperative for any company to know what type of value it generates, how it generates it and for whom is the value "valuable" (Holtskog, 2013).

According to the Lean philosophy, value is only determined depending on the customer of each single action or activity performed. Every action has a different customer. The customer can either be an external customer, for example, a paying client or an internal customer, for example, another department, depending on the scope of the process, being also possible to simply just be another coworker (Griffin & Hauser, 2001).

Before any usage of the Lean philosophy it is key to determine who the customer is, for each process or activity, and what the customer requires for his/her needs to be fully satisfied. The best and most trustworthy way to understand what is the customer values is to ask directly to the said customer either through interviews, inquiries, questionnaires, or if the customer is just another department or coworker to ask him/her directly. After understanding what the customer values is necessary to address the company's processes and understand which of the current activities really add value, according to the customer (Aguwa *et al.*, 2012; Griffin & Hauser, 2001).

According to the Lean philosophy, every activity can be boxed into one of two groups: Value Added activities or Non Value Added activities.

Although there is some arguing about the concrete definition of a Value Added activity or Customer Value Added activity (CVA), an highly regarded definition for Customer Value Added activities is any activity that changes the form or functionality of a product or service to make it more similar to the form the customer is willing to pay for, any activity that the customer is willing to pay for or any activity that augments the competitiveness of the product itself (Salvatierra-Garrido & Pasquire, 2011).

Non-Value-Added activities can also be divided into two groups: Business Value Added activities and Waste activities.

Business Value Added activities are activities that reduce the organization's financial risk, or activities that support the necessary financial risks. One example of these type of activities are the reporting ones, where the customer does not pay for them nor is he/she willing to, but for the company are an indispensable necessity. Any activity that without it, the delivery of the product is jeopardized or prevented, is a Business Value Added activity (Zighan & EL-Qasem, 2020). Any activity that is mandatory by law or any type of legislation and/or regulation is a Business Value Added activity. All these activities, although mandatory or necessary do not add value to the product in the eyes of the customer so, they should take up for the minimum time possible in the company's activity, once they are crucial for the process but the client is not willing to give money for them (Teichgräber & de Bucourt, 2012).

The other type of Non-Value Added activities are Waste activities. These activities can be characterized by not creating any kind of value for the process, for the customer or for the entire organization's performance. Hence, these activities should be eliminated completely from the process at once. Although, seemingly, these activities should be easily recognized, most of the times are the activities that take the biggest percentage of time in process, being a common practice in almost any type of organization. These are the activities that should be targeted in a planned and strategized approach to the company's processes and reduced to the maximum or, ideally, completely eliminated (Snee, 2010).

As Lean philosophy may seem intuitive to implement and maintain, many organizations struggle to see things clearly, and instead of trying to improve the worst parts of their processes, they focus on what they have of positive, and try to improve and furtherly optimize those activities, the Customer Value Added activities. In this case, organizations often leave out of their thought of improvement the Business Value Added activities and the Waste activities (K. Vora, 2013).

A key understanding for a Lean-thinker, must always be: Waste must be eliminated, BVA must be reduced to the maximum and CVA is left as it stands. As mentioned, Waste activities must be eliminated. To eliminate waste from the processes in practice, those same processes need to be analyzed in detail, exhibited using hard data and rethought to achieve a redesigned process without featuring the waste activities. One key point of this procedure is to actually finding the Waste activities. To identify wasteful activities, Taiichi Ohno, the brain behind the Toyota Production System, stated and isolated, three main different types of Waste (Goldman, 1992).

Toyota's three M model states the three main types of Waste that can be found in a company: *Muri*, *Mura* and *Muda*. These types of Waste are explained in detail.

i. Muri

This concept stands in the Lean philosophy for the overload of the production systems of a company, the unreasonableness of loading the systems with more load than what they can endure on a long term, either it is a machine or an employee. This type of Waste is responsible for pushing the average limits of the production systems to the limit. In the case of an employee a consequence of this overload can be the reduction of their safety while working or the quality of their outputs due to the excess load. In the case of a machine, the overload can lead to faster wear of the machine which can lead to breakdowns and even defective production. This type of Waste can be mitigated through Standardized Work, or *Heijunka*, where workloads are leveled out and processes are transformed so they take approximately the same time to be executed. If Standardized Work is achieved resorting to Standard Operating Procedures (SOPs) and Standardized Reporting, the reduction of the *Muri* Waste is easily achieved. The reduction of this type of Waste results in increased motivation of the workforce, increasing lifetime of the machinery, which results in higher quality of production, improved productivity and consequently reduced costs and improved profit (Karr-Wisniewski & Lu, 2010).

ii. Mura

This concept stands for irregularity of processes. It is witnessed when there is a big disparity of demand on different moments in time. A process that is not leveled can have multiple consequences for the business, the most pressing one being the uncertainty associated with the process. The process can have times where it is overloaded while other times being idle. This uncertainty surfaces the problem of reliability to urgent orders (Ohno, 1982).

One way to mitigate this type of Waste is, similarly to the *Muri* Waste, to resort to Standardized Work. Standardized Work allows the company to have a sharper forecasting capability which improves revenue and cost at the same time (Johansson *et al.*, 2013).

iii. Muda

The Muda Waste is the purest of Waste and is purely characterized for time wasting in unnecessary action. It represents every way someone can lose time. When considering the *Muda* type of Waste there are seven different types of Waste: Inventory, Transportation, Motion, Over Processing, Over Production, Waiting and Defects. Later an additional one was also inserted in this list which is Neglect for Human Talent making up for the acronym **DOWNTIME**:

D for **D**efects;

O for **O**ver Production;

W for **W**aiting

N for **N**eglected Human Knowledge

T for Transportation

I for Inventory

M for Motion

E for Extra Processing

Next are presented the different types of Waste activities that are can be possibly found in any type of company. These eight types of Wastes are going to be furtherly detailed.

i. Defects

Oxford English Dictionary defines a defect as presented "A fault in something or in the way it has been made that means that it is not perfect." (*Defect - Definition, Pictures, Pronunciation and Usage Notes / Oxford Advanced Learner's Dictionary*, 2021).

In the economical market scene, something that is not in its perfect form is considered unfit for the use of the customer. Every activity that returns defective outputs must be considered as a Waste activity. The Defect type of Waste is considered to be one of the most harmful types of Waste for a company, as the company is, not only, losing money because the processes undergone did not result in a suitable outcome but also because those processes must be redone in order to achieve a satisfactory final product (Pranavi & Umasankar, 2021).

ii. Over Production

Over Production is a type of Waste that is characterized by producing more than what is being demanded. It is intimately connected with bad planning and lack of flow in the company's processes. Over Production only happens when the forecasting tools/procedures of a company are not in tune with the actual state of the business. This type of waste can generate several types of harmful consequences for a company, either it is more employees than what is really necessary or extra costs of warehousing and transportation due to excess stock. There is also the cost opportunity of holding unwanted stock for a period that could be spent in other aspects/products of the company.

Besides external demand, Over Production can also be found in internal demand. A company can present plenty of Over Production Waste and still only deliver the right amount of goods to the customer. This means that certain departments of the company can be producing more than what is needed by other departments. This is a clear sign of lack of flow in the process. Departments must work under the Kanban philosophy to mitigate this, only producing after or at the time the other departments need the products (Stevenson & Hendry, 2006).

iii. Waiting

Waiting is a type of Waste that is characterized by every type of waiting happening in a company. Waiting can have the form of workers waiting for product, workers waiting for information, machines waiting for material, machines waiting for maintenance, company waiting for supply, amongst others. Waiting is, as it is Over Production, a type of Waste that is deeply connected with lack of flow in a company's processes. Once again, the Kanban methodology of working is a good way of reducing this type of Waste, because if the company and every department of the company works under the "Pull" philosophy, minimal waiting time is spent in the company's procedures and employee availability to multitask is gained in a significant way (Ansari Esfeh *et al.*, 2022).

iv. Neglected Human Knowledge

Neglected Human Knowledge is a type of Waste that is deeply connected with the ability of a company to truly implement the Lean mindset across all departments and employees and not only as a toolkit to use when necessary. One important concept every Lean-oriented company should understand is the necessity to empower their employees, giving them the means and tools required for them to come forward and give their thoughts and opinions about the processes they think could be improved and how could they be improved (Purushothaman *et al.*, 2020).

The Neglected Human Knowledge type of Waste is found when employees have the information of what type of procedures should the company adopt to improve their process, eliminating Waste and unnecessary actions, but because the company does not promote this type of engagement between the Gemba workers and the improvement teams, these ideas are not implemented, therefore generating even more Waste (Farndale *et al.*, 2021).

v. Transportation

Transportation is a type of Waste that is easily characterized. It is the type of Waste generated when unnecessary material is moved from one place to another. Transportation does not account for the unnecessary movement of employees, and simply targets the movement of merchandise or raw material. It is usually found along with the Motion type of Waste.

This type of Waste logically generates extra costs of transportation, labor, processing and consequently final cost of the products produced. It is a type of Waste, as most of them, which is always connected with a company's poor planning ability, specifically lack of planning in terms of routes and logistics (Sala *et al.*, 2019).

vi. Inventory

Inventory is a type of Waste that is characterized for the excess of stock in the form of Work In Progress (WIP) work not yet done, or every finished product or raw material left forgotten and

laying still in a company or just waiting to be handled, whether it is emails in a mailbox, paper stacks of printing paper in the drawer, screws on the floor, finished products waiting to be shipped, amongst everything else that can be encompassed with these examples (Rabbani *et al.*, 2021, p.).

Many times, the Inventory type of Waste relates to the Waiting type of waste. If a product must be left waiting it is immediately creating unnecessary stock and queueing. Inventory can also, obviously be related with Over Production. This type of waste strives with the habit companies have of ordering in bulk. The Lean methodology states that the way to minimize Waste (specifically Inventory Waste) is to work with a method of ordering small batches while developing a relationship of trust with several suppliers (Teng *et al.*, 2011).

In many cases inventory is necessary, either it is for safety stocks or for working flow stocks. However, this type of waste is just aimed at the unnecessary inventory of finished products or raw materials. Just because Inventory is a type of Waste it does not mean all types of Inventory in a company must be eliminated.

The main concept that must be understood in order to mitigate this and all types of Waste is to understand the Just In Time methodology, which states that what is necessary must appear at the necessary place, in the necessary amount at exactly the right time (Takahashi *et al.*, 2004).

vii. Motion

Motion is a type of Waste that is characterized for any movement that is unnecessary, either it is a machine or an employee moving from one place to another without having the need for it, an unnecessary search for a tool or material, an unnecessary movement in an activity due to lack of ergonomic planning, and everything that can be encompassed by these examples.

Motion is almost always related to Extra Processing and Transportation Wastes. Motion can be dramatically reduced resorting to work planning techniques such as the 5S, Spaghetti Diagram amongst others (Kim *et al.*, 2021).

viii. Extra Processing

Extra Processing is the type of Waste characterized for any sort of handling in the product that is not necessary or could be done in a smarter, faster, and more efficient way. This type of Waste is deeply connected with the Neglect for Human Knowledge type of Waste once Extra Processing of a product usually happens when the different voices of the business are not clearly heard by the company (Teichgräber & de Bucourt, 2012).

This type of Waste always results in higher staffing, material, and machinery costs, which consequently results in higher total production costs for the company and eventually leads to

less profit. This Waste can be minimized resorting to Work Breakdown Structures and Standardized Work. It can also be reduced alongside Neglect for Human Knowledge, listening to the Gemba workers along with the Voice of the Customer, in order to understand what really needs to be done to make the product gain its full value and what can be eliminated from the process (Hicks, 2007).

2.1.1.2 Define Value Chain

Understanding the value chain and knowing who belongs in it is a key element for a Lean oriented company. A Lean oriented company is a company that knows its suppliers and its clients and makes an effort to optimize its relations with the said company and maintain ties of trust with them, regularly engaging with both the suppliers and the clients to align expectations, necessities and requirements (Lamming, 1996).

The key aspects for a successfully efficient value chain are communication and sharing of information. If these concepts are well put into practice, profit for every intervenient of the value chain is merely a consequence. In order to the previously described is first necessary to map the value chain. Although there are several tools and techniques to do such, the Value Stream Mapping (VSM) is the most famous and complete one. A VSM is a data-rich process map which is used to better understand the organization's information, financial and material flow (Lima & Rolim, 2010).

2.1.1.3 Set a Flow

Flow is established when all the steps in the production process are lined up without waiting periods, wasting time in defected units and rework activities. This means that the Work-In-Progress is reduced to the minimum possible and, preferably, eliminated altogether. Each step should add value to the process, and the product/raw material should not be submitted to any kind of waiting, once this just demonstrates poor planning capability by part of the management of the process. A usual misconception is that a company to attain flow should have all its employees busy at all times, which in fact, is not the case. Lean methodology states that flow is achieved when the transition from raw material to finished good happens without wasted time, and not by maximizing the occupancy of the employees (Oppenheim, 2004).

This necessity of not wasting time with defected units or re-work units, presents a very important concept in the Lean methodology: First Time Right (FTR). The FTR concept states that it is better to take more time perfecting something than sending it in a faster fashion but

without being completely fit to use. This concepts state that the cost of taking more time to perfect something are smaller than the cost of rework of the entire product (Kalaria *et al.*, 2020). Another important concept of achieving Flow in a company/department is *Heijunka*. *Heijunka* is a method of working in which production is aligned so all processes take approximately the same time so there are no bottleneck processes. If all processes are aligned and take approximately the same time to be executed, it is easier to forecast the supply, demand and the production capability of the company. When thinking about meeting demand one concept that jumps to mind is the Takt Time (Korytkowski *et al.*, 2013).

2.1.1.4 Work on Pull

The Lean principle of having a company work on a Pull strategy, is based on the necessity the company has of minimizing waiting periods and unnecessary actions. A functional Pull system has its composing elements working with a philosophy of only delivering necessary and desired output when requested, either it is regarding an external client or an internal one. The base notion worth understanding with this principle is to always work under real requirements. A company must possess a system of information flow where departments can signal the suppliers (internal or external) to deliver the ready-to-use input. A Kanban system that incorporates the principles of the Just in Time philosophy must be incorporated in the company's procedures in order to fully comply with the Work on Pull principle (Lage Junior & Godinho Filho, 2010).

Departments/Individuals should only produce what is necessary, at the exactly right amount and exactly when the customer needs it. This is the principle of the Work on Pull principle. If a company can produce this, waiting periods will be cut drastically, along with unnecessary processing of the product (motion, inventory, transportation, amongst others), increasing productivity and motivation (and consequently revenue) while reducing costs. This will translate in drastically improved performance and in consequence, heightened profit (Golhar & Stamm, 1991).

2.1.1.5 Continuously Pursue Perfection

Process improvement is attained while following the previous four principles, however the most important principle, and the one that in fact defines a Lean-oriented company is this one, the fifth, the continuous pursuit of perfection. This principle states that Lean improvements are not static events but in fact continuous and encompassing events in which improvements are implemented in a cyclical way. Correctly resorting to this principle allows a company to go from

implementing Lean as a toolkit to really understanding and putting in practice Lean as a state of mind or a philosophy, taking advantage of the drastic reduction of costs that will be witnessed. This principle promotes engagement between employees and management while also promoting communication between departments, resulting in more encompassing improvement projects and more efficient measures implemented (Rossi *et al.*, 2012).

One tool that perfectly embodies the way of thought of the Pursuit of Perfection principle is the Kaizen approach which is a six-step methodology to improve processes through small actions. The steps consist in the following: 1 – Finding an opportunity of improvement; 2 – Observe the Current Situation; 3 – Explore new ideas involving as much people as possible; 4 – Purpose a solution and a way to test it; 5 – Implement it and keep track of the results; 6 – Evaluate the solution and create mechanisms of control to avoid going back to the old way of doing things. These steps must be followed with the four previously described Lean principles in mind. Once the six steps are executed the improvement team or the work group must go back to step one, initiating yet another improvement initiative (Tortorella *et al.*, 2020).

This Kaizen methodology is aimed at continuously improving every process of the company by part of every employee of the company. The Lean philosophy states that it is not possible to reach a state of the process in which improving is impossible. Improving should be relentless and never ending. This way a company can truly call itself Lean-oriented (Jimmerson *et al.*, 2005).

Besides the six steps the Kaizen methodology presents, it also presents five guidelines to make sure the improvement initiative is maximized. 1 – Teamwork, the initiatives undergone must always be tackled in a team composed of the people impacted by the process that is trying to be improved. This way, better and more efficient solutions will be surfaced and better results will come out of the improvement initiative; 2 – Personal discipline, every intervenient should respect at all times all other participants in the improvement initiatives, especially during Brainstorming sessions in which mannerly debate should be promoted and disrespectful debate should be severely punished; 3 – Improved morale, the improvement initiatives should be mechanisms to boost morale and motivation and not to wear down employees. It is crucial that the improvement team maintains the Gemba workers motivated, what will result in the surfacing of more accurate improvement solutions; 4 – Quality circles, composed of five to seven employees, quality circles are regular meetings to discuss issues arising in the daily work or to discuss strategy and ideas regarding the improvement initiatives; 5 – Suggestions for improvement, companies should train every of its employees to be able to identify and give solutions for processes that are not optimized. They should feel comfortable

either suggesting improvements or taking it in their own hands to improve the process themselves (Mostafa *et al.*, 2013).

The Kaizen approach aims to decentralize knowledge and promote its propagation through the company, while reducing waste and improving efficiency and effectiveness of the company's processes also increasing productivity and consequently reducing cost and increasing profit (Paul Brunet & New, 2003).

2.1.2 Lean Tools

In this section of the paper, several relevant different Lean tools are going to be exposed in detail.

2.1.2.1 PDCA Cycle

The PDCA cycle is a control framework for problem identification and improvement solution implementation. It has its initial foundation with the creation of Shewart's cycle (1939) and the Deming wheel (1950). In 1951, Kaoru Ishikawa incorporates the Deming Wheel in the Japanese production industry giving birth to the current PDCA cycle (Platje & Wadman, 1998). This 1951 version of the PDCA cycle encompasses 4 steps: Plan - Identifying problems and possible causes and solutions, Do - Implementing those solutions, Check - Evaluating the results of the Implementation, Act - If the results are suitable resort to standardization, if the results are not, then go back to the Plan stage (Isniah *et al.*, 2020).

The PDCA cycle was initially aimed at the Production Industry, later being adopted by the Services Industry and more recently by the Tech Industry and is designed into four global steps, as it was previously described, however each step may be divided in additional further steps, depending on the process in question and the desired goals of the improvement project (J. Singh & Singh, 2015).

Detailing further the four steps of the PDCA cycle approach:

- i. **Plan** - It is the step in which all improvement projects must start. This is the step where goals are defined, the process is surgically revised to understand where problems are being generated, what is causing the problems and the way to minimize those causes, the proposed solutions. To execute this phase correctly a detailed strategic plan must be performed at the beginning of the project, which must state the stakeholders of the process and the project, the desired goals and the timelines of the project.
- ii. **Do** - It is the step in which the solutions surfaced in the Plan phase are put into practice. After defining which measures may solve the problems in hand, the

improvement team must compose Implementation plans for the proposed solutions so the workers know exactly what is being changed, why it is being changed and with what purpose. After composing the implementation plans of the measures to be implemented and forwarding them to everyone impacted by those changes, it is then necessary to implement the proposed measures.

- iii. **Check** - It is the step where the results of the implementations performed in the Do phase are analyzed. In this step it is important to resort to quantifiable and specific metrics and reporting to understand the suitability of the implemented solutions. The results must be formally kept and should be compared with the initial goal of the implementations.
- iv. **Act** - It is the step where the improvement team will act upon the results of the Check phase. It is a step that is also used to sharpen the solutions implemented if necessary and to scale them to other necessary departments or processes. Taking into consideration the implementation results, if they are suitable and as desired, a process standardization is in place to check which other processes or departments might benefit from the solutions implemented in the project. If the results are below than the expected, the improvement team must go back to the Plan phase where the process is going to be revised once again to understand which problems were left hidden.

One main aspect of the PDCA cycle is that this is a technique that is not to be performed once, but instead it is a cyclical tool that keeps generating new projects as more PDCA cycles are performed. It is a key process improvement methodology and one of Lean's most important tools. It is also in the basis of the Kaizen philosophy (Matsuo & Nakahara, 2013).

2.1.2.2 Value Stream Mapping (VSM)

The Value Stream Mapping (VSM), as all other forms of representing a process in its whole, is a critical tool when doing a Lean improvement project. The Value Stream Map is divided in two distinct steps, the first step starts by mapping the situation that is lived in the company in an initial phase, and the main focus is to be as accurate as possible, not trying to camouflage any flaws (Ng *et al.*, 2013).

In the second step, is then constructed a "to be" state of the same mapped process, and a plan is made to move from the starting state ("as is") to the desired state ("to be"), meaning that the same process should be rethought with the goal of eliminating waste and optimize, both the value chain and each individual process. The correct way of thinking in this phase should be to eliminate "Waste" activities, reduce as much as possible the Business Value

Added activities, and left untouched the Customer Value Added activities (Mostafa & Dumrak, 2015).

This tool, by definition, is one where every participant in the process meets in an encompassing session trying to understand the logic and value behind each activity to which the final product must be submitted to, and not just the participant's individual tasks. This is an exercise that makes possible for everyone to understand the process from the point of view of every other participant, and in a global scale, avoiding problems in which the employees think that their activity is the activity that requires more external help, what can lead to masked optimization which can later result in problems. The VSM is an important tool to properly understand and take conclusions on the existing process, thus making possible for the project manager, and every other participant in the process to visualize where waste is being created and which redundant steps of the process should be eliminated, leading to an overall process optimization (Rahani & al-Ashraf, 2012).

In order for a VSM session to be successful the entire team should be included in the discussion, not only the improvement team and the managers of the process, but also, and extremely important, the employees that do the "actual work", the Gemba workers. Including everyone in the execution of the Value Stream Mapping can, often, lead to disorder and even chaos. Thus, the mediator of the meeting, in the case, the Lean Project Manager, should always direct the team towards value and never lose focus, directing every employee towards the same goal, the goal of depicting the exact picture of what happens in the company, encouraging respectful debate and heavily supporting interchange of ideas but stopping the discussions when they stop being useful, never allowing personal attacks or performance accusations. The fact that the entire team takes part in this exercise avoids optimization of the incorrect major problem leading to a more general overview of the entire process/company of every employee and subsequent higher standard improvement results (Hines & Rich, 1997).

The task of designing the VSM may appear relatively simple but may be a task that takes a long time to be perfected, that is why a VSM session is not a brief or a half-day type of exercise. A VSM session should always be a full-day type of exercise in which every employee should be present and give their input at their part of the process. Although one day off work may be costly or even impossible for some companies, representatives must be chosen with the goal of encompassing every part of the process, ultimately resulting in the real understanding of the company's processes and contribute to the mitigation of waste, which in financial terms results in the reduction of misspent money and consequently the rise in profits, thus compensating the time spent in the session (Serrano Lasa *et al.*, 2008).

For the VSM to be considered useful and to pass along the message that is supposed to, requires certain elements to be incorporated in it. The following are important items that should, always, when possible, be included in the Value Stream Mapping:

Voice of the Customer

The Voice of the Customer according to the Lean methodology is the single most important element in any activity because allows the organization to know how to define value. Accordingly, it is obvious that the Voice of the customer, more specifically the requirements of satisfaction for the customer must always be visible and very specific. Thus, the entire company should be able to easily understand which activities the customer finds valuable and is willing to pay for.

Process Transition Points

Points that mark transitions of the product/raw material between departments, work stations, activities, employees or machines. These points should be as specific and accurate as possible to fully understand the boundaries of each work station/activity and efficiently dealing with the full process, not leaving out any type of activity.

Work-In-Progress (WIP) Units

For every Process Transition Point there usually is a point for the hoarding of inventory. The unfinished goods that are to be handled in the break point of one workstation to another should also be detailed in the VSM. This will allow the improvement team to understand where the biggest hoard of unused material (Inventory type of Waste) is being generated. Further necessary actions should be taken to deal with this.

Customer Value Added, Business Value Added and Waste Activities

After detailing every single activity included in each process that the raw materials undergo in order to become final products, is then necessary to define each one as being Customer Value Added activities if they change the form or utility of the product or if the client is willing to pay for those activities; Business Value Added activities if they do not add value directly to the customer but are necessary for the process to culminate as desired; or simply Wasteful activities if they do not represent strictly necessary activities. When, identifying activities as Waste, it should also be specified what kind of Waste that activity represents.

Re-Work Count and Re-Work Process Integration

In the case that the process comprises re-work, the re-work count/percentage should be defined and made visible. The VSM should also integrate the re-work flow and how a material that requires re-work integrates again in the productive process. In the case that re-work occurs in more than one occasion, each possibility should be depicted in the VSM.

% Defects and Batch Size

An important factor in the success of the prediction of the results of the Value Stream Mapping 'to be' state is both, the determination of the percentage of defects in each process/machine, if applicable, and the batch size of each process/machine. This way, everyone in the company can have a notion of which processes are more likely to produce products that don't meet the expected requirement criteria, and which processes may present itself as a bottleneck.

Process Lead Times

Each activity should be divided in the smallest possible granularity, giving as much detail as possible on the composing elements of each activity in the studied process. The Lead Times for the different activities and sub-activities, when possible, must be presented.

Machine Up-Times/ Conversion time

The times in which a machine is down or takes to convert to produce a different process or product must also be presented in the VSM. This allows the improvement team to understand the ratio between the machine's productive time and the machine down time, enabling the decision making about the machine's fitness to the specific tasks.

Number Orders/Time frame

Besides the Voice of the Customer, which is a key element to be understood in the development of a VSM, the demand is also an extremely important factor of a well done VSM. To plan an improvement project successfully with the help of the VSM, is necessary to know at all points in the process what the demand volume is, to understand material and money flows in the process.

Information, Material and Financial Flows

Besides all the elements previously described, the flows of the resources of the process must be closely described. Not only Material Flow must be present in the VSM but also the Financial and Informational Flows. Usually the Financial Flow is contrary to the Material Flow. The Informational Flow is key to understand how the request procedure works in the process and also to check possible Kanban implementations.

After finishing the "TO BE" state's VSM, is then necessary to rethink each individual station, always resorting to imagination and ingenuity instead of investment. The objective should be decreasing the WIP in each individual station and consequently in the whole process/company. The decrease of WIP in the process contributes to the reduction of time that the raw material/finished product takes under the company's responsibility before having it sold. The bigger this time is the bigger the cost of opportunity for the company that sells it. Besides reducing the WIP the VSM's main goal is to identify and reduce Waste and reduce time the process takes to be carried out (Solding & Gullander, 2009).

2.1.2.3 Kaizen Event

The Kaizen event (or Daily Stand up Meeting) is a process optimization technique that can be conducted with two different objectives in mind. It can be conducted as an everyday routine where the main goal is to continuously optimize the process/department in question or as a sporadic event with the goal of solving a specific problem or reaching a specific target (Maarof & Mahmud, 2016).

In the first scenario the Kaizen event methodology consists in an arrangement of daily meetings (should take no more than 30 minutes a day) between the Gemba workers and the Management of the process/department in which essential topics for the well-functioning of the operation in question, such as road blocks in the last day's work, requirements and demand for the current day's work, difficulties and availability, amongst other factors. The matters that must be discussed in this 30 minute meeting should be everything that may compromise the smooth functioning of the operation (Stray *et al.*, 2016).

In the second scenario (the Kaizen event being used as a sporadic event with a specific goal) the meetings should be scheduled for the duration of time necessary to the project (sometimes during one week, sometimes during one month, sometimes more) and with the required people. Usually this is a weekly exercise in which every Stakeholder of the process is reunited and a discussion is had about what the best measures to put in practice are to achieve the desired goal (Knechtges & Decker, 2014).

The main difference between these two approaches is the regularity of the meeting and, in parallel, the long term benefits from there resulting. The approach with the 30 minute meetings as integrating part of the company's processes results in much bigger profit increase than the one which the technique is used sporadically. When these meetings are seen as a way to communicate inside the departments/companies and not as just a "start of the day obligation", the true potential behind this methodology is unlocked. Every day the staff gives

their contribution about the up sides and down sides of the process, enabling the managers to have better notion about the true state of the process and being able to act faster in order to make the process according to the specifications and requirements of the business and client (Glover *et al.*, 2011).

2.1.2.4 A3 Management

The name A3 derives from the international-size piece of paper A3. In Toyota, it was believed that every problem regardless of its type or sector, could and should be transposed to one single piece of paper that allows every intervenient who looks at it to understand the process in its entirety. The A3 Management methodology facilitates the understanding of the existing problems, describing them using only the necessary detail, and allowing the entire team to work together towards a resolution. It is also an excellent tool to document the standard work that either, is or should be done in the process, while exploring complex solutions to improve the process and explaining new products or concepts if the case calls for it (Filho & Calado, 2013).

As with the entire Lean philosophy, the A3 Management system relies on three main components to achieve success in every project. Standardization, Collaboration and Visibility. Regarding Standardization: The A3 template, although it can vary from team to team or process to process, should be standardized along with the metrics, processes, and procedures of the company. This enhances the improvement project and facilitates the implementation of solutions. This template Standardization also enables the improvement teams to get accustomed to the improvement process, boosting its usage and implementation results (Flug & Nagy, 2016).

Regarding Collaboration: As with the entire Lean philosophy, Collaboration is a buzzword of A3 Management and stands as the main pillar of every successful improvement project. An improvement project should not be conducted, and solutions should not be implemented without the input from every one that will be impacted by those changes in the process, as they have valuable input to give and may present better alternatives that will have higher adherence. Collaboration is the key for truly successful process improvement. Harder than coming up with solutions is to make those solutions last and be effective. Only with collaboration that is possible. The A3 methodology should only be used in a workplace where Collaboration is done effortlessly (Munoz, 2017, p.)

Regarding Visibility: One term deeply connected with Collaboration is Visibility. Employees should have visibility over what happens not only in their workplace (either it is

work related to their superiors or work colleagues), but also in their department and organization. This helps keeping employees motivated and productive. The A3 Management captures this sentiment and the A3 template is one of the best tools to explain in detail without wasteful information exactly what is happening and what will happen in the improvement project. This enables people not to do duplicated or irrelevant work (Shahrودي & Aarabi, 2021).

For the previously stated reasons, a detailed thought-out structure of the A3 is essential for a successful project. These are the most common components for the successful implementation of an A3 report: Title; Owner/Date; Background; Current Conditions; Goals/Targets; Analysis; Proposed Counter Measures; Plan; Follow Up, and each one of these components is briefly described next.

Title - Identifies the problem, theme or issue of the improvement project as detailed as possible (without any unnecessary information).

Owner/Date - States who is responsible for the problem and when was the last time the process in question was revised.

Background - Introducing in which context does the problem appear and what is the importance or benefits from the resolution of the said problem.

Current Conditions – Describes, in detail, what is currently known about the problem and necessary process details. In this phase the process is going to be measured to have hard data backing up the process of decision making.

Goals/Targets - After understanding the present situation is necessary to understand what we are trying to achieve. Goals must be Specific, Measurable, Agreed upon, Realistic and Time constrained. Only then is it possible to draw specific strategic plans to achieve the desired state.

Analysis - It is going to be understood how the goals set in the previous phase are going to be achieved. This is the phase for understanding what the underlying causes of the gap between the desired state are and the current one.

Proposed Countermeasures - Corrective actions to address the problem in question, filling the gap between the both states are going to be proposed.

Plan - It will be defined an action plan for the implementation of the accepted countermeasures. The action plan should contain enlightening detail on who should do what, at what time and how.

Follow Up - Scheduling of further follow up review to see the progress of the implemented solutions. The learning process and change requirements should be met and

future or remaining issues should be anticipated and impact minimization measures should be put into practice to prevent them.

Although these are the most common components of any A3 template, companies and industries may mold it to fit their specific necessities, when existing. There is no problem in changing the structure of the A3 as long as the main objective of the methodology is not lost. The only rule to follow when adapting the structure of the A3 approach is to make sure the phases are linked amongst each other (taking into consideration the resolution of the problem) in a way that makes the judgment of success easy and accessible (Alnajem, 2020).

2.1.2.5 Visual Management

Visual Management is a close-range communication strategy based on cognitively effective information conveyance and is an important tool in the Lean philosophy. It has an important role in several Lean tools such as the 5S (Seiri, Seiton, Seisou, Seiketsu, Shitsuke) methodology, the Kanban methodology, the Kaizen Board, Poka Yoke, amongst others. The Lean philosophy states that everything that can be translated from text to images, pictures, graphs or symbols should be so. The human perception and memory captures image and sound far more easily than words. Lean is about making things simple and intuitive to boost obviousness, standardization and mistake proofing, always with the thought of reducing the time a process takes to be carried out (S. Singh & Kumar, 2021).

Visual Management plays a key role in this effort to make things simple. It provides an effective solution to enhance information flow in organizations. However, for visual management to yield its full benefit, it needs be part of a bigger plan. It has to be linked to a performance management program, which provides input into visual management, and a continuous improvement initiative, which receives inputs from visual management (Murata, 2019).

Resorting to stimuli, either they are visual or acoustic, Visual Management can communicate quality information, aiding people to understand the business context in which they are involved by merely looking around. The main goal of Visual Management is to communicate with the "doer", so the action becomes self-explanatory, self-ordering, self-regulating and self-improving (Kurdve *et al.*, 2019).

Visual Management presents quite a few benefits in terms of improving the processes in which it is applied in. In a process where Visual Management is implemented successfully, the process flow is visible from start to finish while its information is publically displayed. Transparent organizational elements generate information, which later generates profit. Visual

Management reflects people's adherence to the expectations of the processes, transforming the abstract concept of discipline into directly observable and concrete practices. It is a key element in delimiting people's behaviors in order to achieve optimal results while also helping the improvement teams to keep improving the process by perceiving things that are not made obvious. What cannot be translated to a palpable design, picture, amongst other forms of representing, maybe is a waste and should be rethought to be eliminated altogether. Visual Management also allows easier training, once it is always easier and faster to learn with the help of sensorial stimuli, facilitating the job, simplifying actions and/or processes and creating shared and responsible ownership (Glegg *et al.*, 2019).

2.1.2.6 Takt Time

The Takt Time, as the name indicates (Takt means Rhythm in German), is the pace that a process must respect in order to respond to 100% of the customer demand. As mentioned previously, the Takt Time is the time per process and does not take into account the number of workers in each station (Brioso *et al.*, 2017).

One big reason why the Takt Time is rarely considered in some companies is due to the uncertainty each company lives every day. The companies that have the most accurate prediction of demand are the ones that can arrange themselves in the most efficient way thus being able to respect the Takt time in each Process Lead Time. The Takt Time can be calculated through the following formula:

$$Takt\ Time = \frac{Total\ Available\ Time}{Total\ Customer\ Demand}$$

The Takt Time is purely a comparative measure. For a company to know if it is on track to meet customer demand the Takt Time is the measure that should be monitored, and then considered against the Process Lead Time. If the time a process is taking to run is longer than the supposed Takt Time then the process will not be able to meet the demand of the customer in the specified period of time. Ideally the Process Lead Time should always be shorter than the Takt Time. That way a company always knows that for the demand they are experiencing they are producing the goods faster than the rate at which the customer is requesting them (Ali & Deif, 2014).

2.1.2.7 Standardized Work

Standardized Work, or Standard Work is a key discipline in the Lean philosophy. Standard Work is defined as a set of work procedures attaining the best methods and sequences for each process and each worker. As all Lean methods, standard work has the goal of minimizing waste while maximizing performance. It is a critical tool to maintain pace and rhythm (Takt in German) in the process. This essential to keep the speed of the operation aligned with the flow of customer demand. There are two elements intimately connected with Standardized Work: Takt Time and Work Sequence (Pereira *et al.*, 2016).

Takt Time, being the rhythm at what a company can produce compared with customer demand, has a key role in the definition of the standard time a process should take. Managing production according to Takt Time allows detection of abnormalities in due time and response accordingly. Having a standard work sequence is also a key role in achieving standardized work. A standard work sequence is defined for representing the fastest, safest and most efficient way of doing the process. For defining Standardized work it is essential to balance lines determining the exact necessary number of workers, not more, not less (Burton *et al.*, 2019).

Standardized work's fundamentals are deeply rooted in several Lean tools, such as: Kaizen, Heijunka, Jidoka, Total Productive Maintenance and the Just in Time methodology, amongst others. The successful implementation of Standardized Work has several fast returning benefits. As standard work is implemented, variation is reduced and the process becomes more predictable and controllable. Quality is increased, costs are reduced, required inventory can be better anticipated and delivery times can be better scheduled. Contrary to popular belief standard work does not make the process more dull or demotivating, but in fact makes work more efficient and allows staff to have more time for creative work. It also helps workers structure their work and dominate their craft easily and fast. One other aspect is that the training becomes drastically more simple and quick, without the necessity to waste time in training staff for too complex work. In the case of the existence of Standardized Operating Procedure protocols, all of these aspects mentioned previously are exponentially augmented (Johansson *et al.*, 2013).

One last and very important benefit of using Standardized Work is the fact that for any improvement project or initiative, is necessary to have defined two process states, a before-solution-implementation state and an after-solution-implementation state. In order to define those two distinct states is necessary to previously exist a standard version of the process in order to make comparisons between the states before and after the implementation of

solutions. In short and summarize, it is easier to find opportunities for Improvement in a stable and controlled process (Liu, 2012).

It is stated that standardized work should be created to clarify, define and outline the methods and processes with the aim of attaining the best possible monetary results for the company, alongside the best possible motivational results for the employees.

One last thought to be passed on regarding Standardized Work, is that Standard work does not mean Equal work or Repetitive work. The main goal is to standardize processes to achieve quality, safety, time and reduction in costs, however there should always be left a space for creativity and generation of new ideas to really keep continuously improving the process. Standardized Work would be explained in detail to every employee who is not comfortable with any change, making sure none is left out of the improvement and change procedure (Orchard, 2014).

2.1.3 Lean in Services

Lean is historically a fabric of the production industry, however throughout the times, it has been adapted to all other industries and segments of business, including the Service Industry (Antosz & Stadnicka, 2017). The main difference between the Manufacturing Industry and the Service Industry is that while in the Manufacturing Industry, the main asset of a company is the product it produces, in the Service Industry that asset is an intangible product, a service provided to anything or anyone for any purpose. The Service Industry counts with several different sectors of activity such as the Public Sector, the Retail Industry, the Healthcare Industry, amongst many others of the sort. As long as a customer is willing to pay for a service, that cannot be described as a physical, tangible product, the business activity of that imaginary company can always be defined as part of the Service Industry (Lee *et al.*, 2008).

For the purpose of giving further detail on the background of Lean applications across different segments of business activities included in the Service Industry, a high level literature review was performed. For this literature review the three main sectors of business activity of the Service Industry, according to literary volume, were considered. The Healthcare Industry, the Food Industry and the Public Sector were the areas where the biggest literature volume was located, thus the choice on reviewing them. Lastly, a general catch of applications in diverse areas of the Service Industry is presented. This literature review will focus primarily on general examples of Lean-related process improvement initiatives and the PDCA cycle implementation will also be addressed when possible.

The first Industry considered is the Healthcare Industry. This Industry has several application evidence and has extensive Lean-related literature. Based on the literature review performed by Rathi *et al.* (2021) in 2021, 80 articles referred to the application of Lean techniques/methods in the Healthcare Industry, 47 of which took place in developed countries while the other 33 took place in developing countries.

In 2007, (Manjunath *et al.*, 2007) implemented a variant of the Lean philosophy, Lean Six Sigma, in a hospital located in South India (Manjunath *et al.*, 2007). It highlight the importance of customer focus, information sharing and human resource development for the well-managing of any hospital.

In 2017, Vaishnavi & Sures (2020) carried out a Lean initiative focused on identifying readiness factors for the implementation of Lean initiatives in hospitals. (Vaishnavi & Suresh, 2020) highlighted 16 factors which were crucial for the successful implementation of Lean initiatives in the healthcare industry. Those factors were: Management commitment; Effective communication; Customer focus; Supplier management; Good-usage of tools; Teamwork and execution technique; Effective use of technology; Organizational strategy; Goal management culture; Continuous performance measurement; Employee commitment and trust; Recognition and reward system; Project selection and product design; Time and cost management. These are critical factors for success that can be translated, not only to the Healthcare Industry but also to any Industry or situation regarding the implementation and application of the Lean philosophy.

In 2019, Improta *et al.* (2019) study the implementation of Lean practices in an Italian hospital. The matter focused on this article is the time between admission in the hospital and factual surgical treatment in femoral fractures. The article states that reductions of up to 54% of the time a patient takes to be admitted in the hospital and subsequently submitted to surgery were accomplished.

In 2021, Jiang *et al.* (2021) implemented a PDCA cycle, aimed at the hospital information management system to avoid intravenous drug bacterial infection of nursing staff resorting to the Lean philosophy theory and the PDCA tool. Jiang *et al.* (2021) also estimate that the correction of medical advice increased in a range going from 55% to 85%

Considering the Food Industry, plenty of application evidence can be found in the existing literature. The literature conducted in 2018 by Costa *et al.* (2018) focused on 58 different papers and reached the conclusion that Lean initiatives in fact reduced costs and increase productivity. Costa *et al.* (2018) found that the main barrier for the adoption and

successful Lean implementation is the human behavior and the receptiveness the staff presents to change.

In 2005, Cox & Chicksand (2005) analyzed the capability of a company to truly implement Lean principles and techniques and maintaining the financial competitive edge regarding the fresh meat industry. The findings of these study point out to the difficulty a meat industry has in truly converting to the Lean philosophy. The main problem Cox & Chicksand (2005) states is the complexity of driving lean collaboration inside the supply chain, implementing flow principles due the accelerate rhythm and competitiveness of the frozen and fresh meat sector. This article is fit to demonstrate the obstacles the Lean philosophy faces in its implementation.

In 2009, Jain & Lyons (2009) studies the implementation of lean practices in the United Kingdom food and drink industry. This study presents a case study about the data of six different companies and states four main areas of action of Lean initiatives: Waste elimination; Employee involvement and empowerment for continuous improvement; Supplier integration; Alignment of production with demand. These are the factors that the author state as being the areas in which Lean initiatives focus the most. Jain & Lyons (2009) also states that in these initiatives, have resulted in time decreases anywhere from 50% to 900%. This serves to show the power Lean initiatives have in processes that were never subject to these initiatives.

In 2015, Dora & Gellynck (2015) studied the implementation of the Lean philosophy principles in the food processing industry in Belgium. In this paper the author implemented a House of Quality process of thought to understand the main enablers and obstacles to the adoption of these principles. The investigators produced a step-by-step framework for the adoption of the Lean philosophy principles, stating that the main factor to take into consideration before the adoption of the Lean philosophy is the human behavior associated with the change that comes with it. Besides this human setback, the author draws attention to the necessity of ensuring the measures implemented are not lost in the long run, stating the Importance of control procedures (Dora & Gellynck, 2015).

One Industry that also presents plenty of application evidence of Lean-based initiatives is the Public Sector. Considering this Industry, Lukafka *et al.* (2020) performed a literature review addressing 73 different Lean-based improvement initiatives applied to the Public Sector.

In 2007, Furterer & Elshennawy (2005) implemented the PDCA cycle methodology to the Finance department in Florida, United States of America. The process studied in this paper, relates to payroll, purchasing and accounts payable, accounts receivable and monthly reconciliation. Through the Implementation of the PDCA cycle and Lean-based management

and process improvement principles, the improvement team managed to successfully decrease the payroll processing time by 60%, purchasing and accounts payable processing time was reduced by 40%, accounts receivable processing time was decreased by 90% and the monthly reconciliation processing time was reduced by 87%. The improvement team states that the most important factor for the success of this project was the capability to maintain information about the project visible to everyone who required it. Thus highlighting the necessity of information flow and visibility in any improvement project (Furterer & Elshennawy, 2005).

In 2010, Radnor & Walley (2008) performs a review on the most important factors to have in mind when proceeding to the implementation of Lean in public services. This review states that the most important values to have in mind are: Process-based view besides product-based view when transforming Lean from the manufacturing industry to the service industry; Focus on Value; Waste Elimination; Employee-driven change. All these factors should be taken into consideration when implementing Lean, either in the Public Sector, or in the Service Industry in general.

In 2017, Antony *et al.* (2019) describe several Lean implementation projects in police stations over various matters. In specific, the author addresses the optimization of a process of Occupational Health and Psychotherapy referral by the Scottish Police Authority, in which the main goal is to understand if the staff is ready for work. Approximately 30% of referrals were being rejected or needed correcting. By implementing a PDCA methodology, the improvement team was able to reduce 68% of the rejected referred each month, amounting to a cost reduction of about 60000 British pounds yearly.

Although the Healthcare Industry, Food Industry and the Public Sector represent a considerable portion of the Lean-based initiatives happening sector-wise in the Service Industry, Lean is starting to be applied to practically every area of the Service Industry Leite & Vieira (2015). Examples of applications of the Lean philosophy in the Service Industry besides the Healthcare, Food and Public Sector are going to be presented.

In 2011, an analysis focused on the impact Lean initiatives can have in the supply chain of a company, addressing the importance of training the suppliers in Lean tools and methods. The authors stated significant improvement in cost and time reduction. Also they reported the different types of Lean-based initiatives a project can fall under, such as Heijunka, SMED, Standardized Work, 5S, Poke Yoke, Kanban amongst others. It is an interesting paper to understand which types of improvement project have more in common with the Manufacturing and Service Industry and which are more difficult to adapt from one to the other (Cudney & Elrod, 2011).

In 2014, Leyer & Moormann (2014) carried out a study to understand which was the actual State of the German financial Industry. For this study, a large scale survey system was implemented and thousands of employees from different companies in the Financial Industry were inquired. The authors stated that, when inquired employees (and consequently companies), say the Lean "degree of adoption" in their companies is much higher than what is disclosed by the employee's behavior and responses. This serves to shed light on the fact that several companies may seemingly be implementing Lean, but if the paradigm of the company does not change and focus deeply on Quality and Process Improvement, those Lean initiatives only resorting to tools and not mindset will never be successful.

In 2016, case study of the implementation of Lean practices in the administrative and accounting services of an Indian Small-Medium Enterprise (SME) operating in the automotive components manufacturing industry was presented. This study presents the implementation of Standard Operation Procedures (SOP) and the Kanban methodology. The Heijunka way of thinking is also used to balance motion times. Lead time and setup time were reduced by implementing work standardization and the productivity drastically increased. It was reported a 40% reduction of overall Lead time in the whole administrative process (Nallusamy & Saravanan, 2016).

Also in 2016, Stadnicka & Ratnayake (2016) focused the efforts on improving the process of a plain old telephone services (POTS) company located in Poland. The main business case is handling signal transmission over copper loops in large scale providing telephone service to the population. The process the improvement team focuses on, in this paper, are the main POTS services of the company. The authors resorted to a Lean initiative based on the Value Stream Mapping technique, in which an Initial State map was done, a Value Stream Analysis was performed, improvements ideas developed and implemented and a Final State map was later built. Both State maps were compared and the final project results consist in the 50% decrease in Process Lead Time considering POTS installation services, enabling the company in question to duplicate its installation capacity.

In 2020, Alnajem (2020) implemented the Lean philosophy to a Kuwaiti bank regarding the loan process of the facility. The main tool used in this project was Visual Management, identifying Waste through Gemba walks, along with the A3 Management tool. Through the implementation of the A3 Management tool and training sessions explaining basic Lean concepts to the Gemba work force, improvements of up to 30% were accomplished.

2.1.4 Lean in the Contact Center Industry

As previously addressed in the last sub-chapter, the Service Industry is rapidly growing in terms of Lean-based initiative applications. More and more literature about the subject is present and cited.

In 2007, Sprigg & Jackson (2006) report a literature review about the state of Lean implementations in the Contact Center Industry. Data related to 36 companies was analyzed and studied. The author state the finding that employees who are subject to high dialog scripting and more intensive performance control show faster signs of strain than other employees. The study shows that data standardization and deep adoption of Lean measures and philosophy is not the most common practice. Sprigg & Jackson (2006) states the importance of choosing quality over quantity regarding to managers evaluating employee performance.

In 2009, Laureani *et al.* (2010) documents the application of the Lean philosophy to the contact center of a Service Industry company. The process resulted in the increase of the First Call Resolution ration (a metric used in the call center industry to understand what the percentage of customers who have their problems solved in the first call is), decrease in employee turnover (percentage of people who leave the company). The improvement team resorted to Standardized Work improvement procedures and Heijunka methodology implementation. This enabled the Improvement team to make the contact center homogeneous in its data flow and the lines balanced with leveled out work for the entire staff.

In 2009, Piercy & Rich (2009) addresses the process of three UK financial companies' contact centers and illustrates the simplicity/difficulty of implementing Lean and Lean Six Sigma in a contact center. The author presents several improvements regarding cost minimization and quality and performance enhancement. For this purpose, the improvement team resorted to identifying value and waste, mapping the process and developing enlightened solutions for the problems encountered. Piercy & Rich (2009) finishes the paper by saying that while the Contact Center –industry is an ever growing Industry, the customer is more and more selective, so the Lean philosophy stands out as a possibility to find true value, eliminating unnecessary demand and wasteful activities.

In 2015, Tieu *et al.* (2015) analyzed the impact of a Lean-based initiative in the contact center of a urology cancer treatment facility in Boston, in the United States of America. The author draws attention to the necessity of having efficient contact centers in order to make the bridge between customer and business. The team resorted to the implementation of the Pareto

Chart and the Value Stream Mapping to have proper visibility over the unit's procedures and the usage of the Impact Analysis to prioritize required actions. The investigators implemented six different measures which have greatly impacted the cost structure of the organization and the performance of the employees. This article serves to shed light on the aspect that every process can be subject to the Lean philosophy application.

It is worth mentioning the considerably small amount of literature concerning continuous improvement applications in the contact center industry, in special, Lean-based initiatives. Although some papers and plenty of relevant work is found, the sheer numbers when comparing to the Manufacturing Industry or even the Service Industry has no possible comparison whatsoever. The numbers these two Industries presented regarding Lean-based initiatives is much higher than the Contact Center Industry.

2.2 Other Support Tools

The tools that are going to be addressed in this sub-chapter are presented in order of necessity in an improvement project. The tools that are going to be addressed are: The Stakeholders Matrix, the Project Charter, the Work Breakdown Structure theory, the Gantt chart, the Flowchart, the BPMN and the Ishikawa Diagram. The tools are going to be presented in order of appearance in an improvement project. First it is necessary to understand who is involved in a project (Stakeholders Matrix), then is necessary to characterize the project (Project Charter) and define, strategically, what needs to be done in a project (W.B.S.), and have it also defined in time (Gantt chart). After this is necessary to map the process (Flowchart, BPMN) and the Ishikawa Diagram is used to understand problems and possible solutions. These will be the tools detailed in this sub-chapter.

2.2.1 Stakeholders Matrix

When developing and conducting a project one key aspect to its success is whether any type of Stakeholders Management is done or not. Stakeholders have the ability to either support and facilitate the project or hamper and sabotage it. In every project, there is the pressing necessity of identifying, prioritizing and understanding the desires and motivations of its Stakeholders as early on in the project as possible. Knowing and understanding the project's Stakeholders has several benefits. It allows the improvement team to perfect the scoping of

the project making it more efficient and more effective. Enables the project manager to acquire more resources for the project, either it is personnel, funds or simply time.

With frequent communication between project team and Stakeholders and amongst Stakeholders, the project is carried out with the entirety of its intervenients knowing in detail what is going to be done, how it is going to be done, by whom, the benefits of it and what are the changes that will result from the implementations (McGee *et al.*, 2021).

In any successful Stakeholders Analysis, there are three main steps that must be performed. The Stakeholders Identification, the Stakeholders Prioritization and the Stakeholders Motivation Understanding.

The Stakeholders Identification consists in a Brainstorming process, in which the process that is going to be subject of the improvement project will be scrutinized to understand who the people impacted, with influence, or just the people that care about the project successfulness or unsuccessfulness are. These Stakeholders may be organizations or just people, in the case where the Stakeholders are organizations, a correct Stakeholders Identification should not only state the organizations but also the people inside the organization that will have a part in the project (Derakhshan *et al.*, 2019).

After identifying the Stakeholders is then necessary to understand which ones are more important and have the biggest influence over the process that is being improved. A key tool in this Stakeholder Prioritization in the Stakeholders Matrix. The Stakeholders Matrix is a visual tools that allows any improvement team to understand who the process'/project' Stakeholders are, enabling an easy understanding of what voices must be heard and what voices do not matter as much. The Stakeholders Matrix is a four quadrant tool in which the Stakeholders are segmented by degree of Power over the process and Interest on its well-functioning. Figure 2.1 features the regular and standard graphical representation of the Stakeholders Prioritization (Mendelow, 1981).



Figure 2.1 - Example of Stakeholder Analysis

Adapted from: Mendelow, (1981)

As mentioned previously, the Stakeholders Matrix is a four quadrant tool. The first quadrant, marked by High level of Power over the process and High level of Interest in the process' well-functioning characterizes the Stakeholders that should be given maximum priority to their desires and motivations, given that often the Stakeholders that appear in this quadrant is the Management of the process/department, thus the tag in the quadrant "Manage Closely". These Stakeholders will presumably be the ones that will have the most valuable input to add in any improvement project (Amiraslani, 2021).

The second quadrant, marked by High level of Power over the process and Low level of Interest in the process' well-functioning characterizes the Stakeholders that should be given medium priority, thus the tag "Keep Satisfied". These Stakeholders have the power to defuse the project at any point so the improvement team should make an effort not to disturb their motivations. These Stakeholders are by norm the Administration of the process/department, and do not have the necessity to be engaged often but must always be kept on the loop of the progress of the project.

The third quadrant, marked by Low level of Power over the process and High level of Interest in the process well-functioning characterizes the Stakeholders that should also be given priority. These Stakeholders are tagged as "Keep Informed" and represent the people that are more operationally focused. These Stakeholders also hold valuable input once they are, usually, the people that handle the daily operational work.

The fourth quadrant, marked by Low level of Power over the process and Low level of Interest in the process' well-functioning characterizes the Stakeholders that have the least, to none priority in the project. These Stakeholders are tagged as "Monitor" and are usually the people with supporting roles in the project. These Stakeholders should not be given priority over any other and the improvement team must only make sure they do not do anything that can be harmful to the improvement project. Regardless of this, these Stakeholders must also be kept on the loop of the progress of the project.

After prioritizing the Stakeholders the improvement team must understand their motivations and expectations with the improvement project and should schedule an Engagement Plan to continuously over the duration of the project keep every Stakeholder updated on what is happening in the project (Malik & Tariq, 2021).

2.2.2 Project Charter

The Project Charter is a planning tool that consists in a document that briefly explains the entirety of the project. It should encompass project main problem, goals, explanation, requirements, duration and milestones, budget, stakeholders and main risks/roadblocks. It is a dynamic document that must be updated throughout the duration of the project and whenever necessary (Lester, 2021).

Although there are certain steps/tools that must be performed/used previously to the execution of the Project Charter, such as the Stakeholders Analysis, it is the Project Charter that officially gets the project started. It will be the official document of the project and must state everything that is relevant for the well-understanding of the project and its components. The Project Management Institute (PMI) has created a reference guide called "A Guide to the Project Management Body of Knowledge (PMBOK Guide)" that provides generally accepted knowledge and practices used in the project management profession (Lester, 2021). The PMBOK describes the project charter as "a document that formally authorizes a project." (Lester, 2021).

Project Charters must be as brief as possible but without lacking any relevant information, keeping it as explicit as possible. The Project Charter must be built with the help and participation of the project's Sponsor, the project's team and whoever is considered relevant to participate on the side of the process Staff to make sure its execution is as according to the strategic goals of the company and according to the operational necessities of the Staff (Stapenhurst, 2009).

There are certain fields that are mandatory to appear in the structure of the Project Charter. After analysis of the available literature, nine main topics were defined as crucial to appear in the Project Charter:

Project Name - The project must have an own name, for which it can be addressed and the people that hear it know what is referring.

Project Scope - The project must be delimited in terms of barriers for the action of the improvement team. There is a necessity to perfectly detail what sort of processes and metrics are inside the scope of the project and which ones fall outside of it

Project Objectives - Before the start of the project, the goals of the changes that will result from the project must be previously detailed. Metrics or performance indicators that will be impacted by the project must be thoroughly detailed. These objectives should be traced resorting to the **S.M.A.R.T.** theory in which the objectives defined must be **Specific, Measurable, Agreed upon, Realistic and Time constrained.**

Stakeholder Identification, Roles and Responsibilities - Every intervenient in the improvement project must be identified and their specific roles and responsibilities must be defined as thoroughly as possible.

Project Deliverables - For the success of every project, project deliverables must be defined at the beginning of the project. This way it is possible to evaluate the performance of the improvement team throughout the duration of the project.

Project Assumptions and Constraints - The project background and its possible limitations must be addressed as early as possible. A thorough description of these matters enable the team to get a better grasp of the current situation of the process, and thus allows a more efficient and effective implementation project.

References and Terminology - Any necessary documents or terms that may be susceptible to misinterpretation must be addressed and explained in this section of the Project Charter.

Project Resources - The project's requirements for funding, facilities, resources, office space, computer equipment, office equipment, unique security requirements, and support tools should be identified. Other areas such as training and quality assurance should also be considered. The initial estimated budget for the project should also be presented. The project team and every other additional resource such as software should also be detailed.

Project Performance Metrics - The agreed upon success criteria of the project should be detailed. A project cannot be considered successful before these criteria is met.

Once these fields are sorted the Project Charter is complete and the project is ready to be kicked off.

2.2.3 Work Breakdown Structure

The Work Breakdown Structure is a planning strategy for dividing necessary work into smaller, more doable and graspable portions. The work breakdown structure serves several different purposes and can either relate to the breakdown of a goal/objective, the breakdown of a cost structure or just the breakdown of a task or process. The objective of the Work Breakdown Structure is going from a full project planning into several manageable deliverables. These deliverables can be, either, given a task and task number, or be broken down in even more detailed sub tasks, depending on the needs of the improvement team or the project itself (Jiang *et al.*, 2021).

One considerable benefit in the Work Breakdown Structure usage is that it allows for assignment of the specific smaller tasks to designated people. This allows the process to be conducted with higher shared ownership enabling the project to produce better results (Jeong & Jeong, 2021).

The main purpose of the Work Breakdown Structure is to schedule the project. Each task must be planned and thought out, understanding what is the desired duration for it, while also understanding what are the predecessors and follow up tasks dependent of it. The Work Breakdown Structure is a technique that allows the Project Manager to understand how the project is supposed to go, allowing him to identify the status of the project at any given period in time, managing the work flow and work load accordingly (Lester, 2021).

The Work Breakdown Structure framework encompasses several elements that must feature in any successful W.B.S.:

Task: According to the objectives of the project, tasks must be defined, giving each one a number, an identification (name), a title and a description, thus enabling anyone to differentiate each from the rest.

Task Owner: For each defined task, a person must be nominated to be responsible for the said task. In the case of accomplishment of the task, this person should be applauded and congratulated, in the case of failure this person is the one to be blamed.

Task Dependencies and Predecessors: For each task, the links between dependent and predecessor tasks must be clearly visible in order to understand which tasks should be performed first to accomplish the project successfully.

Task Start and Finish Date and Duration: An estimation of the starting date and finishing date of the several different tasks must be defined, along with the duration/timeline of the entire project.

Task Work Estimate: An estimation of how much time, money and resources each task will consume. Every task must have these calculations done in order to understand the whole weight of the project in the organization and the detailed understanding of the profit of the project.

Task Status: At any step of the project, either being, the project team, the Gemba workers or any other intervenient in the project, the status of all tasks must be clearly visible. Possible examples of Statuses are: Assigned, in Progress, Late, Canceled, Complete, amongst others.

The Work Breakdown Structure is a key element in the detailed planning of a project, allowing a thorough budgeting and cash flow projections with a high level of accuracy, while also giving a good notion of the costs of the project. It also enables the Management of the process to schedule the staffing necessities with higher efficiency and reporting on the monetary impacts of schedule changes immediately (Siami-Irdemoosa *et al.*, 2015).

2.2.4 Gantt Chart

During the 1910s, Henry Laurence Gantt came up with a graphical way to illustrate the schedule of a project. That tool's name, as expected is the Gantt chart. The vertical axis of the Gantt chart depict the tasks required to be performed In order for the project to terminate successfully. The horizontal axis of the Gantt chart presents a timeline and bars as the graphical duration of each task. The Gantt chart should also include the dependencies between consequent actions or processes. A Gantt chart representation is presented as an example in Figure 2.2.

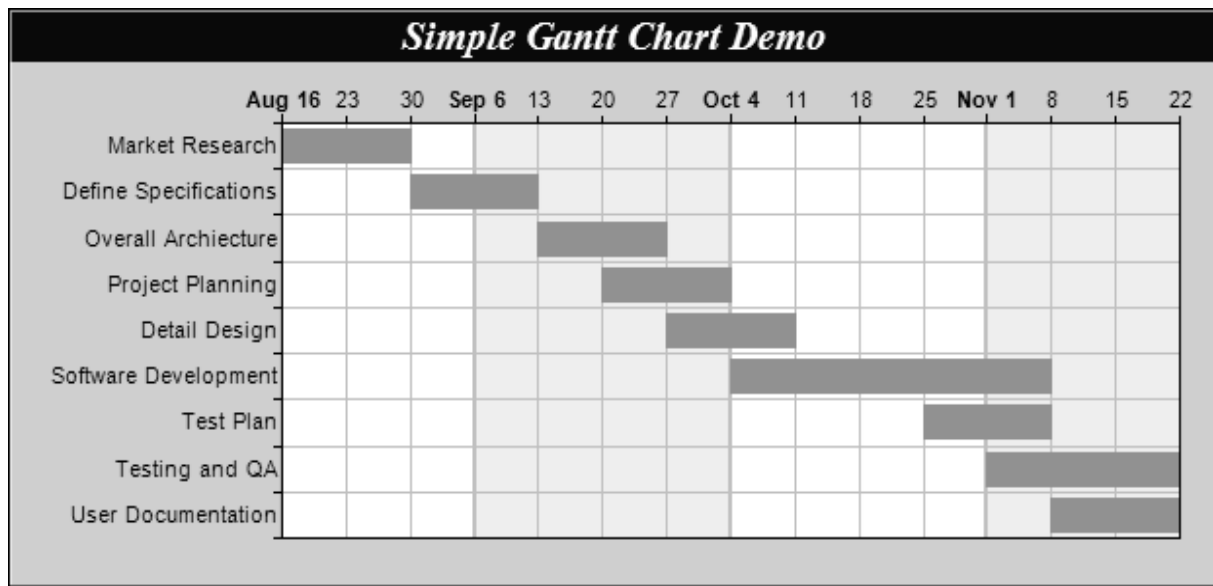


Figure 2.2 - Example of Gantt Chart.

One very important notion to take when considering the execution of a Gantt chart, is that the tasks depicted in the bars should be defined taking into consideration the principles from the Work Breakdown Structure. Every task and sub task necessary to the execution of the project should appear in the Gantt chart, in order to facilitate comprehension. Anyone who looks at the Gantt chart of a project should be able to understand what the process is about, when it started and when it is supposed to be finished and what tasks were performed to execute it (Maylor, 2001).

Although it was initially developed in the 1910s by Henry Gantt, the diagram has suffered innumerable modifications and adjustments to improve its capacity for storing different information. Throughout the times, several elements were added and presently, the most important elements that should always appear in a well-built Gantt chart are: The starting date of the project; the different necessary tasks of the project; which team members are doing which tasks and if necessary which sub tasks; when the several tasks start and finish; what are the dependencies between tasks specifying how they link or overlap with each other and the finishing date of the project (Wilson, 2003).

2.2.5 Flowchart

The first drafts of graphics aimed at representing processes or tasks in order to map company procedures were first introduced in the 1920s. In 1921, Frank and Lilian Gilbreth presented the "Flow Process Chart" to the American Society of Mechanical Engineers (AMSE). In the 1930s, industrial engineer Allan H. Morgensen promoted Gilbreth's tool in a variety of conferences

with the aim of promoting more efficient work procedures. In the 1940s two of Morgensen students spread the methodology, eventually introducing it to Procter & Gamble. In 1947 the ASME adopted an official symbol system for "Process Flow Charts", deriving from Gilbreth's initial work. In Japan, Kaoru Ishikawa stated the Flowchart as an indispensable quality control tool (Graham, 2008).

Also in the 1940s computer programming started resorting to flowcharts to map algorithms and later being used to all types of actions such as analyzing, designing, managing or documenting processes. The literature regarding flowcharts has been swamped by programming and medical related subjects (Rossheim, 1963).

There has been discussion about the specific differentiations between types of flowcharts but the five main types of flowcharts are: Decision Flowcharts, Systems Flowcharts, Product Flowchart, Process Flowchart and Logic Flowchart. These differentiation and segmentation eventually lead up to the creation of several similar tools with specific different goals, such as the Swimlane Diagram, the Data Flow Diagram, the Event-Driven Process Chain Flowchart, amongst the Business Process Mapping and Notation (BPMN) which is going to be addressed in the next sub-chapter (Amjad *et al.*, 2018; Bera, 2012; Ibrahim & Yen, 2011; Jeyaraj & Sauter, 2014).

According the American Society of Mechanical Engineers (ASME), the symbols of the "Process Flow Chart" are detailed In Figure 2.3.

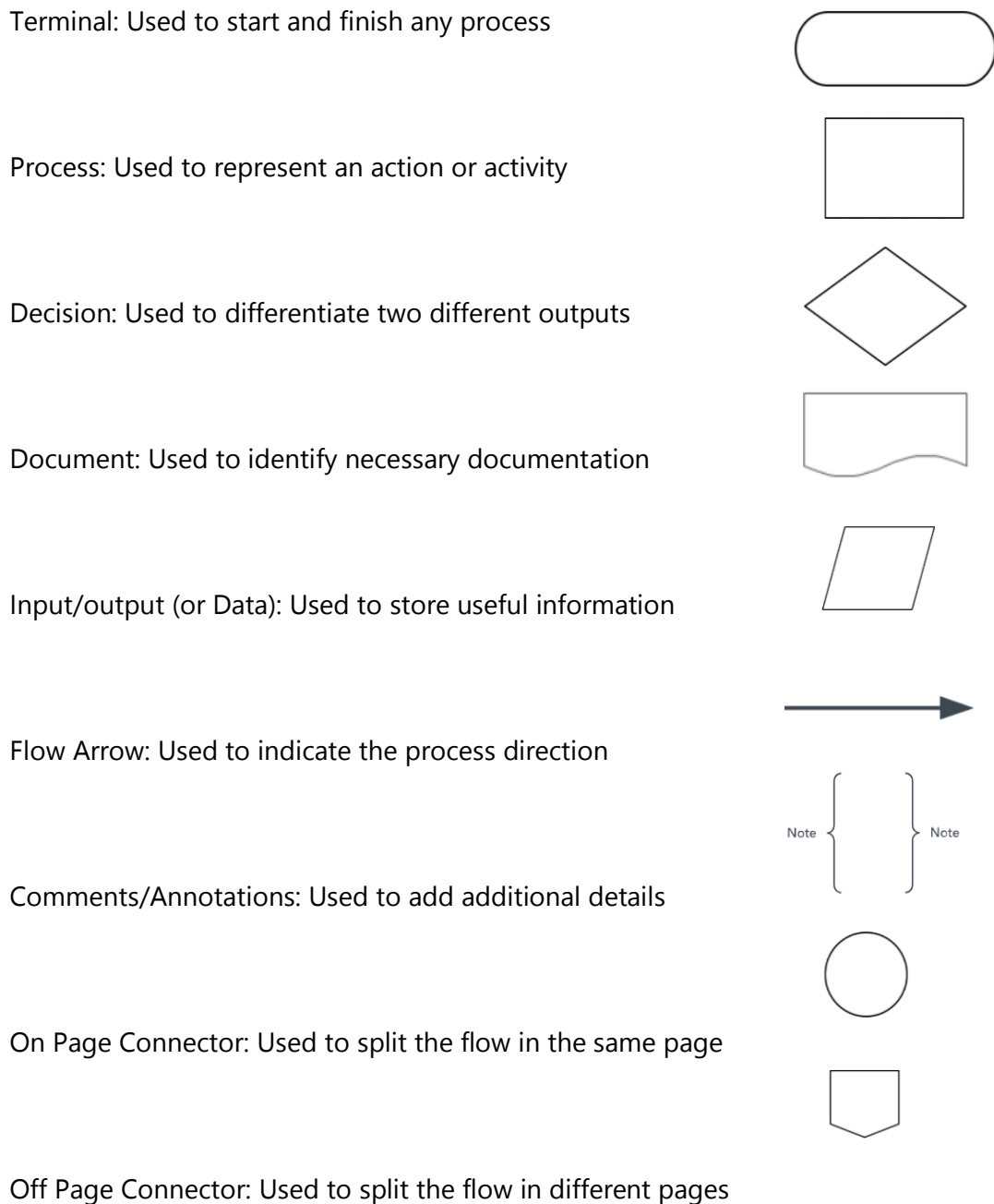


Figure 2.3 – Illustration of symbols of the process flow chart

2.2.6 BPMN (Business Process Modelling and Notation)

Business Process Modeling Notation (BPMN) is a flow chart method that models the steps of a planned business process from end to end. Its purpose is to model ways to improve efficiency, account for new circumstances or gain competitive advantage. A business process is a set of

activities that when executed giving a specific order add up to one global goal or objective, which in most cases, is to represent the structure of the company/process defining roles and responsibilities while also describing relationships and precedencies between actions (Bera, 2012).

Business Process Modeling is the activity of representing processes of an enterprise, so that the current ("as is") process may be analyzed and improved in future ("to be"). The primary goal of BPMN is to provide a notation that is readily understandable by business users, ranging from the business analysts who sketch the initial drafts of the processes to the technical developers responsible for actually implementing them, and finally to the business staff deploying and monitoring such process (Flowers & Edeki, 2013).

The BPMN follows the symbolical structure of the Flowchart but presents a different layout in which the activities are sorted by lane. These lanes identify either who is the responsible for the different tasks or which tool is used in each task, amongst other of the sort.

The BPMN can follow a structure of vertical lanes, horizontal lanes or both. Although the BPMN can change its content to pretty much any given scenario, its structure is closely defined and features five main required elements (Flowers & Edeki, 2013).

Flow Objects: These are the main elements of the BPMN and can be either Events, Activities or Gateways.

- **Events:** These are triggers that can either initiate, change or finish a process. Event types include message, timer, error, compensation, signal, cancel, escalation, link and others. They are shown by circles containing other symbols based on event type. They are classified as either "throwing" or "catching," depending on their function.
- **Activities:** A particular activity or task performed by a person or system. It's shown by a rectangle with rounded corners. They can become more detailed with sub-processes, loops, compensations and multiple instances.
- **Gateways:** Decision point that can adjust the path based on conditions or events. They are shown as diamonds. They can be exclusive or inclusive, parallel, complex, or based on data or events.

Connecting Objects: These are complementary elements that make the connection between the Flow Objects and can either define a Sequence Flow, a Message Flow or an Association.

- Sequence Flow: Shows the order of activities to be performed. It is shown as a straight line with an arrow. It might show a conditional flow, or a default flow.
- Message Flow: Depicts messages that flow across “pools,” or organization boundaries such as departments. It shouldn’t connect events or activities within a pool. It is represented by a dashed line with a circle at the start and an arrow at the end.
- Association: Shown with a dotted line, it associates an artifact or text to an event, activity or gateway.

Swimlanes: These are the elements that define the boundaries between activities and can either be Pools and/or Lanes.

- Pool and Lane: A pool represents major participants in a process. A different pool may be in a different company or department but still involved in the process. Swimlanes within a pool show the activities and flow for a certain role or participant, defining who is accountable for what parts of the process.

Artifacts: These are the elements used to supply any given type of additional data besides the Flow Objects, Connecting Objects and Swimlanes. These elements can be either a Data object, an Annotation or a Group.

- Data object: A data object shows what data is necessary for an activity.
- Annotation: A group shows a logical grouping of activities but doesn’t change the diagram’s flow.
- Group: An annotation provides further explanation to a part of the diagram.

2.2.7 Ishikawa Diagram

The Ishikawa Diagram, also known as Cause and Effect Diagram or Fishbone Diagram, was popularized by Kaoru Ishikawa in the Kawasaki Company in the 1960s, thus the name Ishikawa Diagram. This tool's purpose is to understand the main causes of variability when considering a specific problem, defect, event or objective (Luca, 2016).

As seen in Figure 2.3, the name Fishbone Diagram derives from the resemblance the diagram has to an actual fishbone and the name Cause and Effect Diagram derives from the objective of the tool, which is, starting from a problem or objective and taking into consideration the different possible categories of variation that may impact it, understand which are the causes

for the effect that is in study, which can be, as said before, a problem, an objective or just an event. Kaoru Ishikawa stated six causes of variation that almost completely encompass every type of variation that a company can experience. These six different types of variation causes are named the 6M's of Production (Luca, 2016)

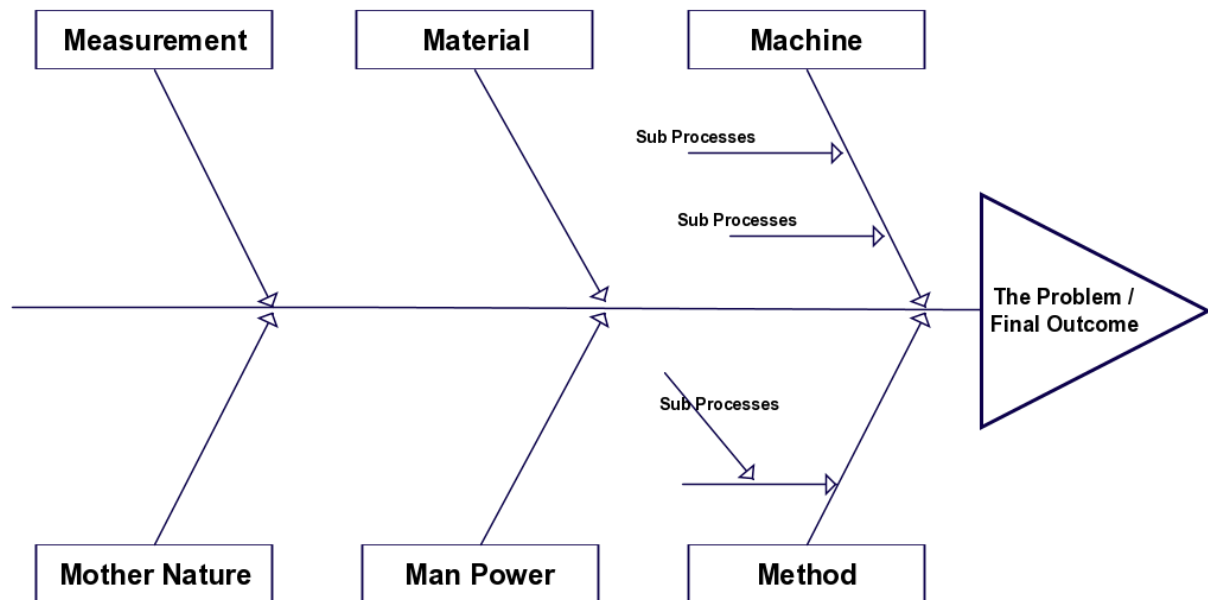


Figure 2.4 - Example of Ishikawa Diagram
Adapted from: Liliana Luca (2016)

Detailing the 6M's that can be seen in Figure 2.3:

- i. **Measurement:** The measurement type of cause of variation encompasses two types of problems that can take place. First it focuses on the metrics used to evaluate the process that can be unfit for the process in question, meaning that the process may be poorly evaluated. The second are the problems that may derive from lack of calibration and maintenance of the measuring devices.
- ii. **Material:** The material type of cause of variation focuses on the possible problems that can derive from everything related to the materials used in the process in question. It can be regarding wrong volumes, poor quality of the product amongst everything that can be framed in this explanation.
- iii. **Machinery (or Equipment):** The machinery type of cause of variation focuses on problems regarding all machines and physical tools that are used In the process in question. It can be due to lack of maintenance, out of spec settings, lack of planning regarding the availability of the machines or equipment in general.
- iv. **Mother Nature (or Environment):** The environment type of cause of variation focuses on two types of problems that can arise. Internal factors and external factors may be of influence to the process. When speaking about internal factors it can be regarding available space, excess noise in a workstation, incorrect layout of the facilities, amongst

others of the sort. When speaking about external factors one can assume that pollution, unfavorable weather conditions, natural phenomenon, amongst others.

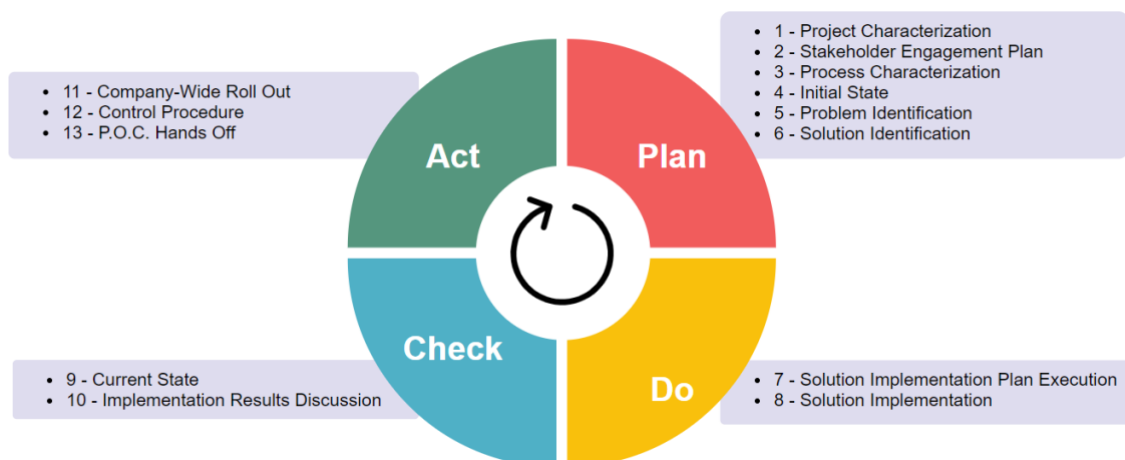
- v. Man Power (or Staff/Personnel): The staffing type of cause of variation focuses on the problems that can arise from lack of worker competency. These problems can be caused by lack of motivation by the working force, lack of morals and principles of the working man or just lack of rewarding from work well done. Either of these factors can be compensated with higher attention on training and on the workforce desires.
- vi. Method (or Processes): The process type of cause of variation focuses on problems that can derive from lack of control over the entirety of the company's procedures. It can be related to software misuse or under usage, lack of quality control, lack of control procedures to guarantee the suitability of the outcomes amongst other problems of the sort.

These are the six most commonly used types of causes of variation in the Ishikawa Diagram but other authors have also proposed other ones, including an addition of 2M's (Management and Maintenance). Certain authors have also proposed different approaches, with the example of the 8P's approach (Product, Process, People, Price, Place, Promotion, Physical Evidence and Performance). Another approach is the 5S's approach (Surroundings, Suppliers, Systems, Skills and Safety) which is more commonly used in projects in the Services Industry (Šimanová & Gejdoš, 2015).

CASE STUDY

This Chapter serves, to explain in detail, the processes, and activities that the improvement team underwent to accomplish this project successfully. The improvement methodology consisted in a regular Plan, Do, Check, Act (PDCA) cycle. This cycle was guided through a thirteen-step approach that allowed a better fulfillment of the PDCA cycle objective, which was, at the end of the project, to have an improved Recruitment department and hiring procedure. The case study in CompanyOne and the application of those thirteen steps are presented and discussed throughout this Chapter in detail.

In Figure 3.1, the full model of the improvement project is depicted. In this picture it is visible the four general phases of every PDCA cycle and the thirteen composing steps to its successful application. These thirteen steps are the improvement team's take on what found necessary for the project. The steps are: Project Characterization; Stakeholder Engagement Plan; Process Characterization; Initial State; Problem Identification; Solution Development; Solution Implementation Plan Execution; Solution Implementation; Final State; Implementation Results Discussion; Control Mechanisms; Company-Wide Roll Out and POC Hands Off. Besides the factual framework and the thirteen-step structure, this methodology is based on



communication and Information sharing between and inside every department to maximize goal achievement and performance capitalization.

Figure 3.1 - Recruitment Project PDCA Implementation Structure

3.1 Plan

The Plan phase of the PDCA cycle includes six steps according to methodology followed in this improvement project. These steps consist in: Project characterization; Stakeholder Engagement Plan; Process Characterization; Initial State; Problem Identification and Solution Development and will be addressed and explained in detail.

3.1.1 Project Characterization

In this step the Problem Statement of the improvement project is defined, and all further actions must be executed having that specific statement in mind for this is what the improvement team's every effort should always be focusing on solving. This is the improvement project's most important step, and it is critical to assure the success of the project, so, the Problem Statement must be surgically defined.

If the Problem Statement is not well aligned with the staffing (or Gemba workers) necessities/desires, or they don't fully understand the goal and requirements of the project, once the improvement team leaves, quickly will the staff return to their old way of doing things, sometimes completely nullifying the changes done in the improvement project.

If the Problem Statement is not well aligned with the Management vision to the present/future of the company, most likely the outputs of the project will not be put into practice. The improvement team may reach valid conclusions that could even impact the business in some fashion but because it is not what the Management has in mind for the company's short/medium term strategy those conclusions may become useless. This may imply that the time spent in the project was not capitalized at least in the measure that the outputs it produced will not be immediately applied. All Lean improvement projects should produce immediate results to be considered successful. If one does not, even if the insights

given by the project are valuable for the company in the long term, but nothing can be used in the short term, the project cannot be considered successful.

For the stated above, the first thing that must be done to define the Problem Statement of the project is a Stakeholder analysis. This analysis helps understanding which voices matter in the improvement project. With this analysis, will be possible to understand who has the last word in which type of matters and, who must be queried when making decisions or implementing measures.

In Figure 3.2, the Stakeholder analysis for the Recruitment project is presented. As all Stakeholder analysis, four quadrants are designated, according to the Influence and Interest of

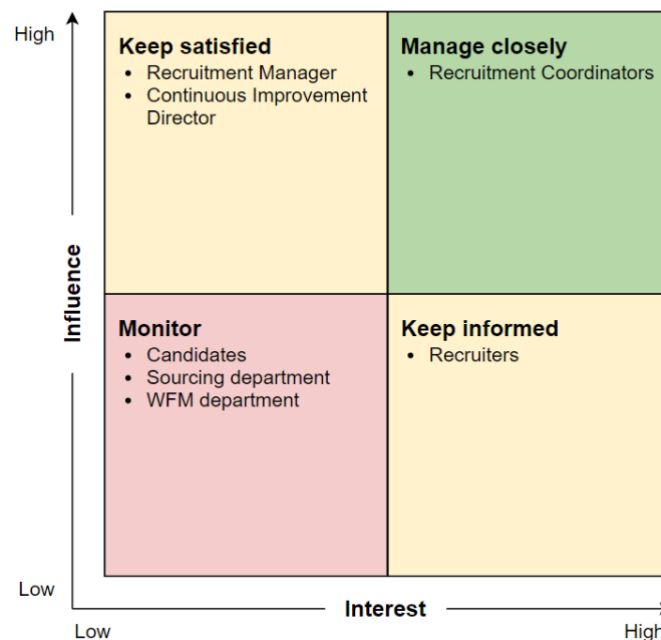


Figure 3.2 - Stakeholder Analysis for Recruitment Project

each stakeholder in the process, they are allocated in each quadrant.

Stakeholders with high influence and high interest in the project, Recruitment Coordinators in this case, are set in the upper-right quadrant under the tag "Manage Closely". These stakeholders should be heard with caution and their inputs should be regarded as very important for the improvement team. The improvement team should always work together with these stakeholders when coming up with ideas/measures to implement, to make sure the measures implemented are truly useful and maximized.

Stakeholders with low influence and high interest in the project, Recruiters, are set in the lower-right quadrant and tagged as "Keep Informed". These stakeholders are also critical for the success of the improvement project, so they should always be kept on the loop of the

progress of the improvement project. In the case that the improvement team does not keep these stakeholders informed, there is a big probability of them losing track of what is happening in the improvement project. Two consequences of this is that important input from their end may not be received and that the measures implemented may not be followed.

Stakeholders with high influence but low interest, are placed in the upper-left quadrant and tagged as "Keep Satisfied". These stakeholders should always be kept satisfied once they have the power to shut down the project at all times. Although they are not present in every step of the improvement project, they must also be kept on the loop of what is happening.

Stakeholders with low influence and low interest in the project are kept in the lower-left quadrant and tagged as "Monitor". They should mainly just be monitored to make sure they do not do anything that might jeopardize the improvement project.

After building the Stakeholder analysis, it is known who the most important people in the project are and what type of communication strategies should be implemented for each one. The most correct way to define the Problem Statement and the scope/boundaries of the project is by collecting the opinions of every stakeholder (only the ones tagged as "Manage Closely", "Keep Satisfied" and "Keep Informed") in one-on-one sessions with each one individually.

To collect their opinions and ideas the improvement team must schedule round table sessions, first with the Administration (In this case the Recruitment Manager and the Continuous Improvement Director), then with the Gemba workers (in this case, the Recruiters) and lastly with the Management (in this case the Recruitment Coordinators). At the end of the round table session with the Recruitment Coordinators, a Problem Statement should be defined and the boundaries of the improvement project must be completely determined as well. The round table with the Administration should be done first, once they are the people in the project with biggest influence and should at all times be satisfied. This session should be used to understand which direction they think the project should go. Usually, most projects have their Problem Statement defined at this phase without discussing it with the rest of the staff. This decision usually presents itself as being a mistake, because once again the rest of the department will not fully understand the directions taken by the improvement team and may not fully comply with the requests made during the project.

The second-round table session should be had with the Gemba workers (in this case the Recruiters). While the round table session with the Administration was a regular meeting based on questions and answers, the session with the Gemba workers should be conducted a bit differently. These types of session should, besides the usual Q&A, be also used to see the

workers in action. This way the improvement team will be able to understand as much important inputs as the workers have to add once they are the ones dealing in firsthand with the company's problems. Besides, this will allow a deeper connection with the improvement team and the workers and at this stage the improvement team should really make an effort to have the Gemba workers think it is their project as well, and that their voice is heard and also very useful. The final roundtable session should be had, in this case, with the Recruitment Coordinators (tagged "Manage Closely"). As they are considered the people with biggest knowledge of the process, the improvement team should always be in close partnership with them and allow them to give their feedback freely, extracting from there as much process knowledge as possible. The improvement team will reach this roundtable session with the knowledge of what the Administration wants for the project (in terms of monetary goals) and what the Gemba workers would like to see fixed/improved in their daily work lives. With this information the improvement team must engage with the Management of the project and fully define the improvement strategy. Aspects like the Problem Statement, boundaries of the project, DO's and DON'T's, possible future obstacles and all other meaningful insights either the Management might have or the improvement team might find relevant should be completely clarified before the start of the project.

All of this information should be compiled in the Project Charter where the entirety of the project settings and predefinitions are defined and displayed. The Project Charter is the improvement project's most important document and is the document that will accompany the improvement team all throughout the project. The Project Charter must always be updated presenting itself as a dynamical element that can be edited in specific situations situation (Specifically, at the end of each phase [Plan, Do, Check, Act]).

In Figure 3.3, the Project Charter for the improvement project is presented. Here, the Problem and Goal Statement are defined, the improvement team is described, and metrics in application scope, deliverables and project metrics are also defined.

Code Name : Darwin			
Problem Statement		Goal Statement	
The time taken to recruit personnel to the open job vacancies is too long and Fill Rate is being impacted. Also, the people that we hire are generating a lot of short term attrition. Also, the Recruitment department presents a lot of potential of improvement and automation.		Reduce Lead Time and Attrition and Surface Further Improvement Options and Automation Possibilities	
Project Leader		Project Approach	
Continuous Improvement Director		PDCA cycle (13 step methodology)	
Project Team		Support Personnel	
Name	Role	Role	
João Saúl	Project Team Member	Recruitment Manager	
John Doe 2	Project Team Member	Recruitment Coordinator	
Metrics IN Scope		Assumptions	
Lead time on delivery		Fill Rate is taking impact from high hiring Lead Times	
Cost of Acquisition		Hiring necessities are higher than ever before	
Attrition (focusing on 90 days) [Short Term]			
Agent Lifetime Value			
Project Metrics		Deliverables	
Ratio of Milestone Dates Met		Data driven conclusions pin pointing opportunities for :	
# of Deliverables Accomplished		Less Cost of Acquisition	
		Reduction in Attrition, focusing on 90 days	
		Increased Lifetime Value	
		Interactions between : Season/Market/Client/Recruiter	
		Opportunities for enhanced methodologies/processes that drive efficiencies	
Project Scope		Project success criteria	
IN - Processes for Recruitment in all languages		Adoption of conclusions taken and deliverables met	
IN - Tools used in the Recruitment process		Increased ROI for the recruitment sources used	
IN - Analysis of Sources used for Recruitment		Adoption of identified opportunities around processes	
OUT - Reporting (this is within Scope for a parallel project)			
Start Date		Estimate Completion Date	
02/11/2020		24/09/2021	
		Name	
Project Leader:		Continuous Improvement Analyst/Project Manager	
Project Sponsor / Champion:		Recruitment Manager	
Process Owner:		Continuous Improvement Director	

Figure 3 3 - Recruitment Project Charter

From this point on, the project is set to advance with the Problem Statement defined. All actions of this project should have this Problem Statement in mind. When in doubt if an action/measure should be put into place or not, the correct thing to do is think back to the Problem Statement and see if the resulting action will be aligned with the Goal Statement of the project. If it is, the action/measure should be done, but if it is not, in under situation should it be taken into fruition. If additional problems rise in the midst of the project duration, the improvement team must duly note them for future analysis at the end of the project. The only thing left before the project is defined is it's planning in time.

In order to specify and limit the project in time, the improvement team resorted to the Work Breakdown Structure (WBS) and fractured the entire projects in smaller stages. The Figure 3.4, depicts the WBS of the entire project and its planning in time (The Gantt chart for the entire project is presented in Appendix A). The stages define are the thirteen steps predefined in the methodology and an additional one regarding the data collection period. This project is designed to take 10 months.

ID	Title	Start Time	End Time
1	Project Characterization	11/02/2020	11/06/2020
2	Stakeholder Engagement Plan	11/09/2020	11/10/2020
4	Process Characterization	11/11/2020	11/27/2020
5	Initial State Measuring	11/30/2020	12/18/2020
6	Problem Identification	12/21/2020	12/25/2020
7	Solution Identification	12/28/2020	01/15/2021
8	Solution Implementation Plan Execution	01/18/2021	01/22/2021
9	Solution Implementation	01/25/2021	03/26/2021
10	Data Collection	03/29/2021	09/03/2021
11	Current State Measuring	09/06/2021	09/10/2021
12	Implementation Results Interpretation	09/06/2021	09/10/2021
13	Company-Wide Roll Out	09/13/2021	09/17/2021
14	Control Procedure & Hands Off	09/20/2021	09/24/2021

Figure 3.4 - Gantt Chart Project Tasks Breakdown

After defining the Problem Statement, building the Project Charter and having the Gantt chart for the entire duration of the project, the improvement project is officially on the way and scheduled in a specific time frame. For this reason, there is no time to waste, once everything has a time limit already specified and if any step takes longer than expected, it will affect the following steps and possibly jeopardize the integrity of the project in its whole.

3.1.2 Stakeholder Engagement Plan

After the definition of the Problem Statement and the Scope of the project is necessary to streamline the information to every intervenient in the process. This may seem irrelevant and is also, often a step not incorporated in regular improvement methodologies, but it is a step that may be of huge importance for the success of the project, and can differentiate a "successful" project from a company-wide, mindset-changing project. Something worth reinforcing is the importance of having motivated workers giving educated input in an

improvement project. These people hold the key for the improvement team to grasp the real scenario of what is happening at the company. If the improvement team cannot develop a benefic type of relationship with the workers, there is plenty of useful information that is going to be missed or will be not be captured at the earliest, which may eventually lead to a misconception of the state of the company/department. Thus, developing a relationship of trust and reciprocity with the Gemba workers is essential for the real success of the project.

The workers' main issue in truly welcoming an improvement project, is the fear of being replaced or being told they are doing things wrong. One very important responsibility of the improvement team is to make sure the employees feel comfortable enough to tell the main flaws of the process, the actions that they think are more difficult to carry out, their ideas of improvement possibilities and their motivation to work for the company in question. It is also a good benefit for the project if motivation drivers for the employees could be put into action alongside the process improvements. As a matter of fact, the construction of the workers' performance bonus should always be made taking into consideration the company's goals in order to maximize the company's profit while maximizing the worker bonus. This is a measure that can have extremely profitable results for the company. This will be addressed further along the document.

Not focusing on performance metrics or paycheck particularities, a good way to boost motivation in the improvement project, is to make sure the Gemba workers know what is being made, why it is being made and when it is going live. This will result in the Gemba workers getting to know better and better the vision of the company for the future, to be able, in time, to give ideas and possibly also leading change. Communication, alongside with Standardization, is the answer to a big chunk of today's companies' problems. This being the case the Lean methodology tells us that the key for success here is, as a company, being able to streamline information to every worker of the company. If this task is successful, every worker will know the company's mission, vision and values.

Additionally, one important thing to secure in the project is that employees feel comfortable enough to share their perspective of the process and their ideas for improvement, creating an environment of participation and engagement.

For the stated above, the improvement team thought it was necessary to have one step of the method used for the project, feature the necessity of continuously streamlining the progress of the project with everyone involved. The people worth including in this process of knowledge sharing are the people regarded in the Stakeholder analysis of the process in question (In this case, the Stakeholder analysis presented in Figure 3.2).

Procedures of information sharing should be set into place early in the project, either it is regular email communication between the people involved or scheduled meetings during the length of the project. The recurrence of the meetings with each stakeholder should be defined according to the importance of the inputs that each will have to add. Usually, the Administration should be informed at every toll gate while the Gemba workers should be consulted regularly during the initial phases of the project. The Management must usually be consulted/engaged with all the intervenient throughout the project.

For the Recruitment project, the Table 3.1 indicates the cadence of the meetings scheduled with each stakeholder.

Table 3.1 - Meeting granularity with each process intervenient.

Stakeholder	Meeting Granularity
Continuous Improvement Director	Once every two weeks
Recruitment Manager	Once every month
Recruitment Coordinator	Once/Twice a week
Recruiters	Once every month
Sourcing department	At the beginning and end of the project
WFM department	At the beginning and end of the project

A strict follow up of this schedule of meetings, enabled the improvement team to be able to keep every intervenient updated of the advances of the project, maintaining meaningful flow information flow all throughout the project and with everyone involved (Recruiters, Recruitment Coordinators, Recruitment Manager and Continuous Improvement Director).

3.1.3 Process Characterization

For maximum understanding of not only the process of the Recruitment department, but also the whole dynamic of CompanyOne and the way it functions, the process is characterized in two different fashions. First a high-level description of how the Recruitment department is located in CompanyOne and its connections to the different departments, and then, a detailed description of the Recruitment process per say, in which the process activities are going to be described and analyzed in detail.

Macro Process Characterization

In Figure 3.5, the company structure of CompanyOne is depicted. This configuration aims to enlighten the different correlations between the several departments in CompanyOne. In order to allow better understanding of Figure 1 the following explanation is given: In CompanyOne, there are 8 distinct active departments: Operations, Process Improvement and Project Management (PIPM), Work Force Management (WFM), Recruitment, Human Resources (HR), Information Technologies (IT), Finance and Facilities. The way the departments correlate

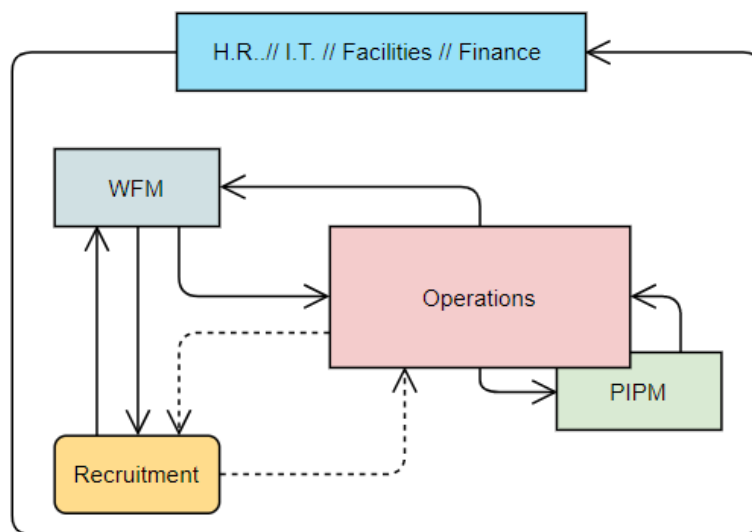


Figure 3.5 - CompanyOne Department Structure

with each other is explained.

The most important department, and the only source of revenue for CompanyOne is the Operations department. The Operations department consists in the department responsible for answering the clients' expectations. Here, Agents (the name given to the staff answering the phones) make sure CompanyOne's clients' customers are well treated and their problems are solved in the possible measure; Team Managers make sure Agents keep their records up to date and are efficient and effective when answering the calls/emails/other forms of communication by part of the customers; Operations Managers make sure the clients' demands are met and when possible exceeded, by outlining strategic and long term goals to the Team Managers. The Operational hierarchy goes from Agent to Team Manager to Operation Manager.

Operations as being the only department that generates revenue, all the remaining departments are referred to as Support departments. Operations is the one department that can never stop and all Support departments should act so Operations encounters the fewest obstacles possible. The department that works more closely to Operations is the PIPM

department. The PIPM department is composed of almost 15 people. These people work as consultants for CompanyOne and are responsible for maintaining excellence in the company's processes. When Operations encounters certain obstacles that require strong analytical skills, the PIPM department gets in action and according measures are put into practice to help solve the Operations problems. For large campaigns (clients that require a lot of man power), specific PIPM staff are assigned to them, only being responsible for that specific campaign's problems, while the rest of the less bulky campaigns request the help of the PIPM department for sporadic situations.

The dotted lines between the Operation department and the Recruitment department symbolize the empty and distant relationship of both departments with each other. Although the Recruitment department's main job is to facilitate the people that Operations require, the fact that there is no solid relationship between both is something to worry about.

The Work Force Management department is the department responsible for calculating and requesting to the Recruitment department, the man power necessities of Operations. In situations of ramp ups or ramp downs (when a client requests more or less people answering the phones due to a variety of reasons, but commonly due to predictions of variation in the interaction volumes of the clients' customers), the WFM department calculates according to the client's interaction count predictions how many people will CompanyOne need to have working for the said campaign. If there is possibility of reallocating staff from one campaign to another it is what should be done, but usually there is always need to hire more Agents, because CompanyOne is witnessing growth almost exponentially since its foundation in Portugal in 1998.

There are 4 departments that will not be addressed in this paper but as being essential to the well function of the company will be quickly summarized. The Human Resources department is responsible for all administrative questions and matters, either it is related to the staff working in the Operations department, either it is related to the staff working in all other Support departments.

The Information Technologies department is responsible for the well function of all technological and computerized assets and tools in CompanyOne. It is also the department responsible for issuing the adequate licensing and making sure everything is in accordance with CompanyOne cyber-GDPR policy.

The Finance department is responsible for acquiring, managing, and optimizing funds of the company. This department also keeps the books in order and assures the monetary targets for the company's stakeholders are met or exceeded annually.

The Facilities department is responsible for acquiring, maintaining and managing all infrastructure items and assets, either it is paying rent, buying new laptops, chairs, tables, etc. and also keeping track of the items that were delivered to each co-worker when necessary.

The Recruitment department is then, the department responsible for receiving the recruiting necessities of CompanyOne from the Work Force Management department, finding possible candidates for the open positions in CompanyOne and proceeding to hire the Agents required for each position. In the next section of this Chapter, the recruiting process will be further detailed.

The Recruitment department is divided in 3 sub-departments: The Sourcing department, the Recruitment department (per say) and the Welcome department.

The Sourcing department is responsible for collecting the candidates' applications from the internal sources, the job boards and the recruitment agencies that CompanyOne has partnership protocols with, filtering the applications making the Recruitment department job easier and inserting only the filtered possible hires in the Recruitment department use software (called Altitude).

The Recruitment department has the role of contacting the candidates, selecting them into each job vacancy and forwarding the candidates to the Human Resources department, where the Onboarding process will be set into motion. The Recruitment department counts with a Recruitment Manager and almost 30 Recruiters that are divided into 4 teams (Spanish & Italian Team; French Team; Porto Team and ROW (Rest of the World) Team), each team with a Recruitment Coordinator (manager of the team). This is clearly the main sub department of the Recruitment department and is where the improvement project will be carried out.

The Welcome department is the sub department responsible for helping the candidates, after being selected for the different job positions, find accommodation, certain documents required to enter the country, VISAs amongst other necessary matters.

From all these departments, the one that will from now on be highlighted and focused on is the Recruitment department (per say). In the next section of this Chapter the working procedures and tools will be discussed in further detail.

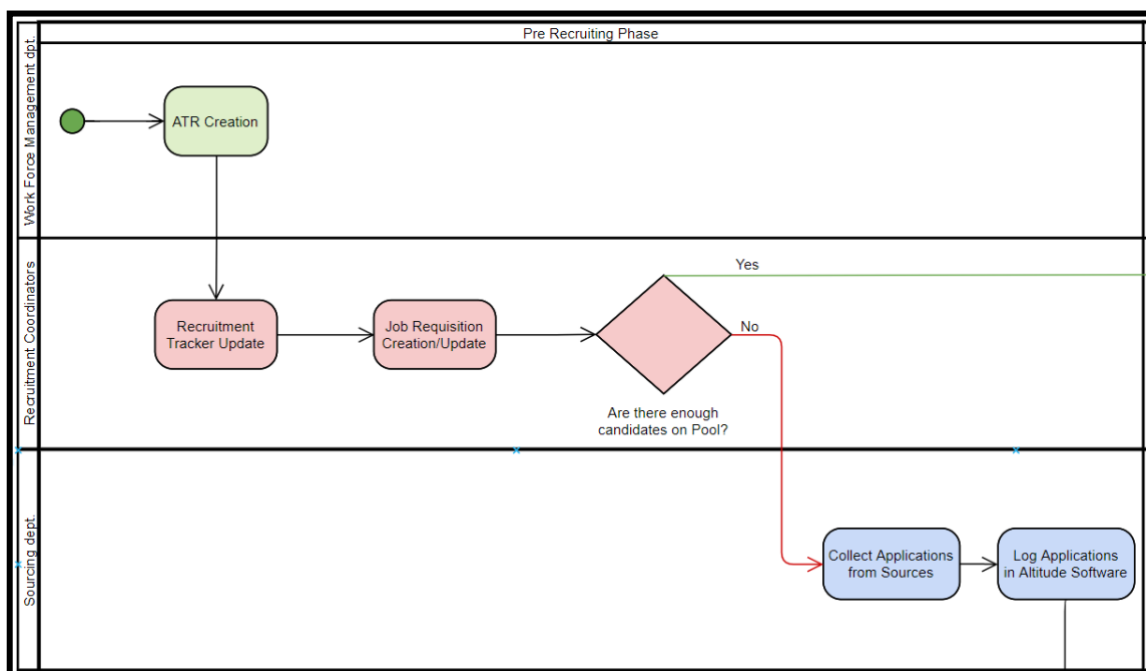
Micro Process Characterization

In this section of the Chapter a deep look at the process that is going to be improved is given. The three figures presented along the section, are pieces of the structured BPMN that was made to shed light on the Initial State of the process, before the implementation of any measures by part of the improvement team. To facilitate comprehension of the BPMN in the

document, certain minimal changes were made to the structure of the BPMN but the whole BPMN is present in the Appendix B and presents the full hiring procedure of CompanyOne.

This procedure contains 3 phases (Pre-Recruiting phase, Recruiting phase and Recruiting Administrative phase) and perambulates through 3 different sectors of the company (WFM department, Recruitment sub-department and Sourcing sub-department) and leading up to the HR department (Onboarding sub-department) and if necessary the Welcome sub-department. Inside the Recruitment department two different job roles are also required (Recruiter Coordinators and Recruiters) to take this process to fruition.

In Figure 3.6, we can analyze the process structure of the Pre Recruiting Phase of the hiring procedure of CompanyOne. In this phase, two departments have active roles in the hiring procedure, the WFM department and the Recruiting Department. This last one, presents two sub-departments with active roles, the Sourcing department and the Recruitment sub-department. This phase consists in the activities previously required for the recruiters to be



able to contact and recruit the several candidates necessary for the existing job openings.

Figure 3.6 - Pre Recruiting Phase BPMN Portion

A detailed explanation of Figure 3.6 is given. After the WFM engages with the Operations department in order to understand the staffing necessities for the coming months, an Authorization to Recruit (A.T.R.) is formulated by part of the WFM department. This ATR contains the information of how many people are necessary, which is the campaign that needs staff, for which market will the candidates be working on and what will be the starting date for

the said wave of New Hires (name given to Agents who were hired for less than 1 month). The ATR is the official document in CompanyOne that states the staffing necessities of the Operations department.

The information contained in the ATR is then passed on to the Recruitment department and the Recruitment Coordinators take care of Updating the Recruitment Tracker, which is an Excel document that is constantly updated and sent to every Recruitment Coordinator and Recruiter three times a day, and is through that document that Recruiters organize their work to meet all client expectations and demand. The Recruitment Tracker is the document that guides the entire hiring procedure in the Recruitment department.

After updating the Recruitment Tracker, the Recruitment Coordinators are now responsible for creating the Job Requisitions. The Job Requisitions are allocated in SAP Success Factors (SF) (the main Customer Relationship Management [CRM] software of CompanyOne, and the software that the Recruitment department uses to manage its work). A Job Requisition must be created for every job opening and should contain the Campaign and Market for which the Agent will be working for, the starting date and the amount of people necessary for the job position.

After creating the Job Requisition, the Recruiters will check if there are enough candidates on pool to fill those open positions. If there are not, the Sourcing department must activate its recruiting sources to collect the several available applications. These applications derive from a variety of different sources. CompanyOne has contracts with several job boards and recruiting agencies, besides having active policies of rewarding employees for bringing people of their trust to the company. After collecting and filtering the applications the Sourcing department must log those applications in the Altitude software. The Altitude software is the software used by the Recruiters to contact the candidates and finish the hiring procedure In

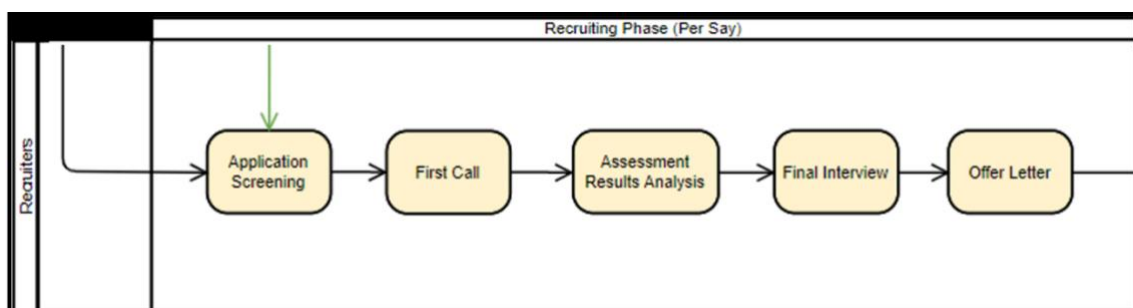


Figure 3.7 - Recruiting Phase BPMN Portion

Figure 3.7, we can see the structure of the hiring process of CompanyOne itself.

This part of the process is completely handled in the Altitude platform and consists in the contact, communication and pre-hire of the candidate by part of the Recruiter. After receiving the applications in the Altitude platform, the Recruiter must quickly screen the Curriculum Vitae of the candidate in "Application Screening" to understand if the candidate application is viable and suitable to CompanyOne. After considering the application viable, the Recruiter must now reach the candidate in a quick phone call that usually does not take longer than ten minutes. In this call, the Recruiter will explain the high-level details of the job and understand the candidate's availability and willingness to start working for CompanyOne, explaining the schedule of the job and most importantly the necessary linguistic characteristics the candidate must have to successfully carry out his/hers responsibilities.

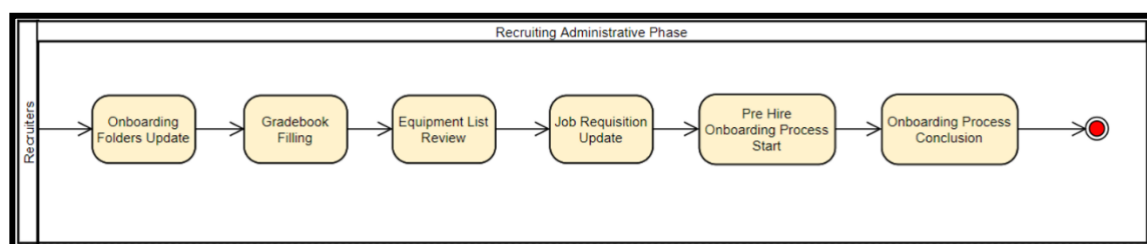
After the candidate being considered suitable for the job opening, he/she must execute an Assessment Test that will, amongst other things, but more importantly, evaluate the level of linguistic proficiency in the language that the candidate will be working in during his/her stay in CompanyOne. The Assessment Test results are also used to build an approximate profile of the ideal worker. This profile is traced based on the goal-fulfilling performance of the Agent during the stay in CompanyOne. The Assessment results are bashed against the performance results of the different Agents and an ideal profile is traced. Although this method could drastically help improve the hiring procedure and boost hiring quality, there is still very little data to support it, giving the "ideal profile" little trustworthiness. Besides this fact, there is also the fact that CompanyOne has very large staffing needs usually over a very short period of time, which ultimately end up forcing the Recruitment department to accept not-so-ideal candidates.

When the candidate is considered fit in the Assessment Tests, and was already considered suitable in the Recruiter's first contact (because if a candidate applies to CompanyOne via its internal sources the Assessment Test is presented immediately and only after will the candidate be contacted by a Recruiter), is then time to schedule a Final Interview with the candidate. The Final Interviews differ from job position to job position. Some Final Interviews are only carried out by the Recruiters while others are arranged with a specified individual chosen by the client/campaign (for which the candidate will be working for). Usually, the clients that request these type of Final Interview are more exclusive companies that greatly value employee qualification and that are viewed in the economic market as great customer-care experts. These interviews normally take around 30 minutes and are used to further detail the job the candidate will be carrying out and to sort out any type of doubts that the candidate might have, including what type of equipment will the candidate require to do his/her job,

especially when speaking about remote work, which is a matter that is coming up more and more in CompanyOne. Specific aspects of the contract are also set and the candidate is informed that he/she will receive a Job Offer via email.

The final step in the recruiting procedure is sending the Job Offer to the candidate and waiting for him/her to sign it and send it back with a few attached documents. This usually takes about three days. This is the last step for which Recruiters use the Altitude software. From this point on, the purely said Recruitment phase is over and different tools are used, including Excel books and, mainly, SAP SF CRM. SAP SF is the tool administratively recommended to carry out as many tasks as possible, looking at it as the way to centralize, standardize and streamline every process of the company.

In Figure 3.8, the Recruitment Administrative Phase is presented. After confirming the hire, the first thing Recruiters do is updating their Onboarding Folders in which Recruiters put the necessary documents and every information about the candidate/Agent. These documents were allocated in a system of shared folders in a private network and its main purpose was to organize the information required by the HR department. Once the folders were updated, it was necessary to fill the Gradebook report which is also an Excel document saved in a shared folder. The Gradebook is used to store and keep track of the staffing necessities at each time, considering who is being and was hired. The Gradebook is sent to the entire department three times a day through an email thread. This allows Recruiters and Coordinators to know how



many people there are left to hire and for which markets.

Figure 3.8 - Recruiting Administrative Phase BPMN Portion

The Equipment List is a checklist that the Recruiter must collect from the candidate during the final interview. The checklist must comprise of the New Hire equipment's needs to carry out the job he/she was hired to do. This checklist is kept, so the information can easily be transmitted to the Welcome sub-department. It is the Welcome sub-department that will be responsible for facilitating the items missing from the candidates. If the candidate does not have or requires help finding accommodation, is also the Welcome department that is responsible for aiding the future Agents.

After the previous steps are completed, the Recruiter must update the Job Requisition with the candidate in question' information in SAP Success Factors. The process of logging the candidate in the requisition takes around three minutes per candidate. The next step, starting the Onboarding Process is also done in SAP SF and takes also around three minutes. One week after the start of the New Hires, a report is emitted to the Recruitment department presenting a list of the candidates that started working the week before. With this list the Onboarding process by part of the Recruitment department is finished and the candidate is forwarded to the Human Resources department, where the Agent's matters will be dealt from that point on. A SIPOC table is also a good tool to showcase the intervenient of each activity of the process in a more visual and structured way, along with the necessities and provenience of each process and its goals and destinations.

In Appendix C, the SIPOC for the Recruitment hiring procedure is presented. Each of the activities presented in the BPMN in the Chapter Process Characterization are now analyzed in more detail. The Suppliers, Inputs, Process, Outputs and Customers are designated. For analytical purposes, Suppliers was understood as the people who provide the Inputs for the Process and Customers as the people that require the Outputs of the Process.

3.1.4 Initial State

After characterizing the process is then necessary to measure it, understanding its current situation, taking into consideration the Administration financial goals for the company and the process metrics in place at the time of the beginning of the improvement project. This step of the improvement methodology serves to expose the real state of the process before any improvement was done, the Initial State of the process (or AS IS).

The Recruitment department is divided in four teams and composed in total by 24 recruiters. Each team recruits for specific markets. In CompanyOne there are ten main markets that compose pretty much the entirety of CompanyOne's staffing languages. The markets are:

- Arabic
- Dutch
- English
- French
- German
- Italian
- Polish
- Portuguese
- Russian

- Spanish

The Figure 3.9 is demonstrated how the teams are assembled and which team recruits which percentage of each market. In addition, the French team counts with 5 Recruiters, the Spanish and Italian team counts with 8 Recruiters, the ROW team counts with 6 Recruiters and the Porto team also counts with 5 Recruiters. Due to GDPR impediments, it is not possible to share any personal information about the Recruiters

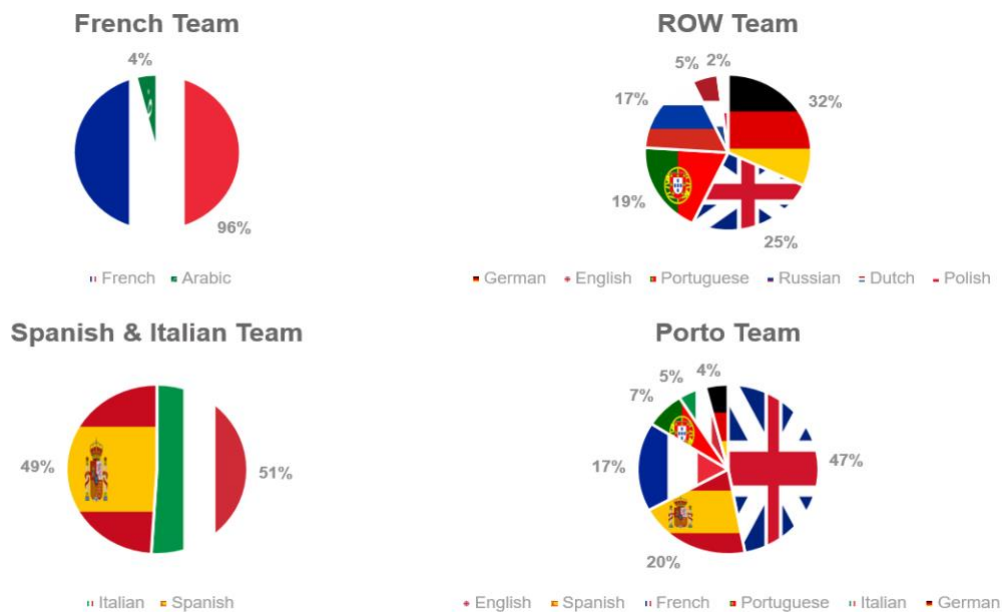


Figure 3.9 - Distribution of Market Hires (per Team)

CompanyOne's clients are also divided in type of business segment, forming eleven different categories, which are:

- Automotive (2 clients)
- Aviation (2 clients)
- Banking (3 clients)
- Consumer Electronics (3 clients)
- e-Commerce (3 clients)
- Healthcare (1 client)
- Insurance (1 client)
- IT / Tech (3 clients)
- Software (2 clients)
- Streaming Services (1 client)
- Travel & Hospitality (5 clients)

Once again, according to GDPR policy, CompanyOne is not allowed to share information about its clients and processes, thus not being possible to deepen the explanation

regarding this subject. For the following matters presented in this document, this information will be perfectly sufficient.

The improvement team opted for doing a double approach method in this part of the process. After the side-by-side sessions with the Gemba workers (Recruiters), the improvement team exposed the project's flaws. This list of problems and subsequent improvement opportunities are presented in the next Chapter. In this Chapter, is presented the parallel method the improvement team used to maximize the span of action of the improvement project. After doing the side-by-side sessions with the Recruiters, Coordinators and Directors/Managers, the improvement team gathered enough logical information to present a diverse set of actions to be implemented in the process with the aim of optimizing certain aspects of the Recruitment operation. While the Recruitment team waited to implement certain measures that required a bit more effort (these measures will be addressed in detail in the Chapter "Solution Implementation"), the improvement team decided to act on a more data-driven axis, using data analysis and statistical tools to make educated decisions. The data analysis results are presented throughout the length of this Chapter.

The first assumption necessary to comprehend the analytical process that the improvement team underwent, is the metrics analyzed for each Industry, Market, Team and Recruiter. For each of these variables, several metric variables were used to extract valid conclusions and patterns. These metrics were:

- Lead Time;
- Time to Attrition
- Attrition Turnover
- Attrition Sample
- Harver Assessment Scores
- KPI Achievement

Explaining these metrics:

Lead Time is the time taken for the Recruitment team to hire one candidate. This time is measured from the point the ATR is opened until the candidate accepts the offer letter. The entire hiring process is done using the Altitude hiring software, in this software the candidates are passed on from status to status until the status "Sel - Selected" is reached. Once this status is reached, it means that the candidate is set to start working in the specific job vacancy. Lead time is thus, calculated using the date of ATR opening and the date of "Sel - Selected" status change.

Time to Attrition is the time taken for the Agent to start working in the company until is let go, or voluntarily leaves the company, if it so happens. This time is calculated using the

Starting date of the candidate (First day of work) until the last day he/she works for the company. According to CompanyOne's Administration calculations, if an Agent stays with the company for more than 3 months, he/she starts to generate profit for CompanyOne. This being said, the Return of Investment on a New Hire is about three months. This is a good measure to understand best and worst performers related to the speed of the process according to each variable.

Attrition Turnover is the ratio of people which leave the company for the people hired. This percentage is calculated using the amount of people who left the company (during a specific period, usually 90 days/3 months) over the amount of people hired during that same period. It is CompanyOne's policy to try keeping the Attrition Turnover, company-wide, under 4% (however, this target has been dropping each year and is set to continue dropping in the future). The 4% target is calculated in a different manner than the one used in the project, here, the Attrition Turnover calculation is performed using the ration of people that leave CompanyOne over people that work for CompanyOne (generally).

Attrition Sample is the cheer amount of people that left the company in a specific period. There is no specific target to be met in this metric, but it is a good measure to understand volumes alongside with percentages to evaluate best and worst performers.

Harver Assessment Score is a metric that is composed by six scores. The Harver Assessment Test is a test possibly executed in two moments of the hiring process. The first possibility for its execution, is when a candidate applies for a job opening through CompanyOne's internal sources (for example: CompanyOne's website, voluntary applications to CompanyOne's email thread, or a hiring system that employees reference acquaintances). If the candidate applies through any of those sources, after the application, the applicant is presented with a general Assessment test. The second possible moment for its execution is between the first and final interview with the Recruiters and only then will the candidate be asked to execute the test. The Assessment test gives 6 different ratings: The Test Score, which is a general proficiency grade that evaluates the performance of the candidate globally; the Personality Score that evaluates the emotional characteristics of the candidate; the Typing Score that evaluates the speed and quality of the sentences written in the Test; the Language Score that evaluates how good is the candidate's proficiency in the language he/she is applying for; the Cognitive Score that evaluates the candidate's capacity for problem solving and quick reasoning and the SJT Score (Situational Judgement Test) that evaluates the capacity of the candidate to place himself in different situations that require adaptation skills. The analysis

depicted in this Chapter took into consideration every test score but only the Harver Match Score will be presented to simplify analysis.

KPI Achievement is a metric to measure the performance of the Agent since his/her enrollment in CompanyOne. This KPI Achievement metric is a score that encompasses several bonus metrics in which the Agent is continuously rated in a monthly basis. The KPI Achievement metric is calculated on the binary criteria of achieving the bonus or not. 100% of KPI Achievement means that, if the candidate had 5 bonus metrics at the end of the month, he reached all of them. If the candidate had an 80% KPI Achievement he reached 4 out of the 5 possible bonus metrics.

During this Chapter a detailed analysis on the performance of the Recruitment department will be done. For each characteristic variable (Industry, Market, Team and Recruiter), all metric variables (Lead Time, Time to Attrition, Attrition Turnover, Attrition Sample, Harver Assessment Score and KPI Achievement) are going to be batched against one another, allowing the improvement Team to gain deep knowledge about the entire hiring procedure. With the knowledge gained by the improvement team in this part of the process, educated measures will be implemented, hopefully leading to significant improvement.

In Table 3.2, are presented the results of the study, analyzing each Industry according to the metric variables described previously.

Table 3.2 - Initial State Metrics (per Industry).

		Lead Time (days)	Time to Attrition (days)	Attrition Turnover	Attrition Quantity (#)	Harver Match Score (%)	Harver Test Sample (#)	KPI Performance (%)
Industry	Automotive	62,20	57,03	32%	59	63,50	34	41,46
	Aviation	42,13	54,64	66%	90	72,00	4	38,01
	Banking	137,10	52,64	71%	72	70,85	13	42,65
	Consumer Electronics	24,09	111,50	33%	12	76,25	4	63,12
	e-Commerce	34,58	85,80	47%	40	72,64	11	75,75
	Healthcare	58,96	59,90	38%	51	70,88	16	70,75
	Insurance	34,13	56,40	26%	8	75,67	12	73,11
	IT & Tech	31,00	64,70	38%	32	75,93	14	68,06
	Software	30,28	84,10	19%	10	70,00	17	66,52
	Streaming Services	32,94	69,10	23%	13	67,83	6	27,40
	Travel & Hospitality	24,73	48,55	28%	287	68,30	100	46,12

Analyzing these results, it is possible to take conclusions about good performing Industries and bad ones. If we take the example of the first three Industries (Automotive, Aviation and Banking) it is possible to understand that these Industries perform below average in almost every metric all around. For the example of the Banking Industry, it is seen that the Lead Time is very high (more than double of the second worst performer, Automotive), this can be due to the fact that the clients of this Industry may be very selective when accepting candidates. Besides the high Lead Time, all Attrition metrics are also poor. Time to Attrition is one of the lowest and Attrition Turnover is one of the highest all around. The KPI Achievement score is also one of the lowest witnessed in CompanyOne. Practically and in conclusion, what

this means is that, for the Banking Industry, candidates take very long to be hired, once they are hired a big percentage of them ends up leaving the company, and they leave the company in a short period of time. The Agents that remain in the company also obtain low KPI Achievement scores. Thus, it is acceptable to assume that the Banking Industry is the worst performer of CompanyOne, at least according to this analysis.

On the reverse side of the coin, it is also possible to withdraw conclusions about good performers in this table. If the example of the Consumer Electronics, Insurance and Software Industries is taken, it is possible to understand that there are also Industries who perform clearly above average. In the specific case of the Software Industry, it is seen a very acceptable Lead Time, good Attrition metrics (all of them outperforming the majority of Industries) and also very acceptable KPI Achievement scores. This, opposing to the Banking Industry, means that candidates are quickly hired, once they are hired, take a long time to leave CompanyOne, and only a few of them actually leave. Besides, the ones that do not leave achieve good bonus results monthly.

In the analysis performed on the Market split of the company we can see a few different but also curious trends. After analyzing Table 3.3, it is possible to see examples of good performing Markets and bad performing Markets in different metrics, not presenting such

Table 3.3 - Initial State Metrics (per Market).

		Lead Time (days)	Time to Attrition (days)	Attrition Turnover	Attrition Quantity (#)	Harver Match Score (%)	Harver Test Sample (#)	KPI Performance (%)
Market	Arabic	68,90	43,00	27%	4	-	-	43,47
	Dutch	43,70	99,00	72%	26	74,25	4	72,34
	English	23,35	45,92	29%	112	63,00	33	50,38
	French	43,52	57,91	45%	184	70,14	29	51,94
	German	67,65	65,12	44%	103	68,73	45	45,99
	Italian	30,44	69,77	31%	83	71,84	38	51,69
	Polish	31,20	71,10	35%	7	73,80	5	44,30
	Portuguese	15,53	39,08	27%	49	65,40	10	46,16
	Russian	44,85	45,90	26%	25	70,00	10	42,42
	Spanish	35,24	43,04	28%	81	71,02	57	50,71

obvious results as in the Industry split analysis.

Taking the example of the Dutch Market is possible to withdraw a couple of interesting conclusions. It is possible to understand that the Dutch candidates are very goal oriented. This conclusion is based on the fact that they present clearly the best scores when speaking about monthly performance. In the Harver Assessment Test, although it is not a very significant difference, Dutch candidates score higher marks than the rest of the markets. Also, in the KPI Achievement score the Dutch market hiring bonus are received after two months (90 days) on the job and when checking the average Time to Attrition of the Dutch Market a whopping 99 days are seen. This means that when Dutch people are hired for CompanyOne they are very goal oriented (accomplishing as much as possible) but most of them (72%) leave after is clearly

the best performing market. Besides these two facts, an interesting takeaway is that CompanyOne's policy states that the 90-day period has passed.

Other interesting inputs that are possible to be taken from this table analysis are: Opposing to the Dutch Market where Lead Time was high, Attrition Turnover was high but the Time to Attrition was also high, the Portuguese and English Markets present very low Lead Times, low Attrition Turnover but also very low Time to Attrition. This means that while Dutch people took long to hire and a big percentage of them left (only after three months), English and Portuguese people are fast to hire and only a small percentage of them leaves the company but when they leave, they leave after a small duration of time, generating short-term attrition, which is a concerning issue for CompanyOne, once every time an Agent generates short-term attrition CompanyOne has not enough time to capitalize the investment it made when hiring the Agent.

It is also possible to visualize that the Dutch Market clearly stands out from the majority in terms of KPI Achievement; the French and German Markets have very similar metrics, with a big percentage of Attrition Turnover (both around 45%) and Time to Attrition (around 60 days) and the French Market is the Market that generates more Attrition in cheer quantity.

Still remaining on the analysis of Market, another study done is now presented in Table 3.4. The Recruitment department has hiring timelines for each Market.

Table 3.4 - Tabulated Hiring Timelines vs. Study Timelines

Market	Tabulated Hirind Timeline (days)	Study Hiring Timeline (days)	% HC outside the spec
Arabic	66	69	67%
Dutch	66	43	29%
English	22	23	27%
French	37	43	42%
German	66	68	49%
Italian	37	30	34%
Polish	66	31	20%
Portuguese	22	15	15%
Russian	37	44	48%
Spanish	34	35	42%

Those timelines are presented in the first column of Table 3.5. The hiring timelines presented in the second column of Table 3.5 are the timelines reached as a result of the study. According to the analysis of the table, it is possible to understand that the timelines presented by the Recruitment department to the Operations and WFM departments are not correct and do not match the reality of what is happening in CompanyOne. It is possible to check that the Markets which better follow the fixed timelines by the Recruitment department is the Portuguese, Polish, English and Dutch Markets. Portuguese and English Markets are obvious choices because it is easy to find people that know how to speak Portuguese or English. The Polish Market is explained by the fact that the immigration from Poland to Portugal is highly

searched by polish people. The Dutch Market being on this list, although not obviously explained at first, an explanation was later found by the improvement team. It is very rare to find candidates that speak the Dutch language, mainly because of the huge differences in salary between the two countries. Due to this fact, every time a recruiter of the ROW team connects with a Dutch candidate, he/she must not lose track of the candidate, for this reason when a job position opens up for the Dutch market, the Recruiters quickly contact the previously contacted candidate, enabling the Team to respect the hiring timeline.

On the opposite side are the Markets that have the worst timeline predictions. These markets are the Arabic, German and Russian. These Markets take much longer to hire than the tabulated timelines, for this reason almost half (German and Russian) of the candidates are hired not respecting the timeline predictions. In the case of the Arabic Market more than two thirds of the candidates are hired outside the Recruitment specifications. This is something that can compromise the good functioning of the entire Recruitment department and even the Operations department.

In Table 3.5, the same analysis but according to each Team is presented. It is possible to quickly understand that the split by Teams does not add any relevant information to the conclusions that were already previously taken, once the results for each team are very similar to each other.

Table 3.5 - Initial State Metrics (per Team).

		Lead Time (days)	Time to Attrition (days)	Attrition Turnover	Attrition Quantity (#)	Harver Match Score (%)	Harver Test Sample (#)	KPI Performance (%)
Team	SP&IT Team	32,2	50,9	33%	91	69,6	74	48,3
	FR Team	45,1	50,6	49%	68	70,7	16	52,3
	ROW Team	40,4	67,4	40%	137	70,7	77	49,8
	Porto Team	24,9	40,5	29%	47	67,8	48	48,5

However, certain conclusions can be taken from this table. Taking the example of the French Team, it is possible to see that the team that takes longer, in average, to recruit is the French Team. It is also the Team with the largest percentage of Attrition Turnover, and the Team that does less Harver Assessment Tests. It is however the Team that recruits people that obtain higher KPI Achievement scores. We can see that the Spanish and Italian Team is a very solid Team which has its metrics almost always in acceptable values. The Porto Team is also a very solid Team and presents itself as best performer in quite a few metrics. It is clearly the most efficient team at hiring and the one that generates less Attrition. The ROW team generates a lot of Attrition (40%) but is a team that hires for very difficult Markets who offer workers much better work conditions making the hiring procedure much more complex.

In Table 3.6 the split by Recruiter is done. Once again, due to GDPR policies no personal information about the Recruiters can be revealed. This analysis serves to shed light on

intricacies of the results amongst teams and amongst all Recruitment staffing. We can clearly see certain teams with very similar results amongst each Recruiter and some with big disparities amongst each other.

		Lead Time (days)	Time to Attrition (days)	Attrition Turnover	Attrition Quantity (#)	Harver Match Score (%)	Harver Test Sample (#)	KPI Performance (%)
Recruiter	Recruiter SP&IT 1	18,33	24,83	50%	6	75,40	5	41,95
	Recruiter SP&IT 2	39,30	35,67	31%	6	58,33	9	45,88
	Recruiter SP&IT 3	28,15	82,50	40%	19	70,50	6	52,33
	Recruiter SP&IT 4	31,47	36,95	35%	21	68,69	16	50,13
	Recruiter SP&IT 5	36,30	-	-	1	74,20	5	46,20
	Recruiter SP&IT 6	35,81	41,90	33%	10	73,45	11	42,02
	Recruiter SP&IT 7	23,54	60,70	25%	18	67,40	15	48,24
	Recruiter SP&IT 8	48,73	41,10	31%	10	76,14	7	50,09
	Recruiter FR 1	47,70	35,42	58%	12	73,00	5	53,84
	Recruiter FR 2	47,76	66,30	48%	23	58,40	5	55,30
	Recruiter FR 3	38,19	51,50	65%	21	79,00	6	51,47
	Recruiter FR 4	52,00	54,80	55%	5	-	-	38,52
	Recruiter FR 5	40,33	18,71	38%	7	-	-	53,47
	Recruiter ROW 1	31,11	46,50	32%	10	-	-	46,07
	Recruiter ROW 2	37,23	78,10	32%	29	69,91	11	59,23
	Recruiter ROW 3	30,86	75,90	35%	28	72,43	14	52,08
	Recruiter ROW 4	56,30	27,69	47%	13	69,28	18	41,08
	Recruiter ROW 5	62,21	69,90	51%	39	68,90	21	45,14
	Recruiter ROW 6	31,67	71,80	25%	18	74,15	13	50,19
	Recruiter Porto 1	18,43	59,60	19%	14	68,29	21	45,26
	Recruiter Porto 2	28,95	25,67	39%	6	70,80	10	51,50
	Recruiter Porto 3	24,61	43,24	43%	17	56,50	2	47,21
	Recruiter Porto 4	23,33	-	50%	1	77,00	4	-
	Recruiter Porto 5	36,69	19,11	33%	9	62,73	11	55,87

Table 3.6 - Initial State Metrics (per Recruiter).

The Team performing better in terms of Lead Time is clearly the Porto Team with all Recruiters taking approximately the same time. The same thing happens for the French Team but serve as the bad example to contrast with the Porto Team. While in both Teams, Recruiters take approximately the same time to hire, it is possible to conclude that the French Management's orders compared to the Porto's ones are highly less effective.

When addressing Attrition metrics, the French Team is once again the bottom performer while all others present homogeneous results.

Harver Score will not be addressed in this analysis there are plenty of Recruiters with little to no data of the sort.

KPI Achievement will also not be addressed, once the results are very similar between Recruiters and do not present any noticeable pattern within Teams.

3.1.5 Problem Identification

With the analytical analysis exposed in the previous Chapter and the information gathering accomplished in the side-by-side sessions explained in the 1st and 2nd Chapters, the improvement team now possesses a large amount of vital information about the process and is in a situation to make educated decision making, surfacing the several problems it has found until this point. A list with the problems encountered, by the improvement team, in the side-by-side sessions with the Recruiters will be presented.

Figure 3.10 presents the entire hiring procedure of CompanyOne and the symbols it presents are an attempt to graphically present the problems found by the improvement team in the Recruitment department/hiring procedure.

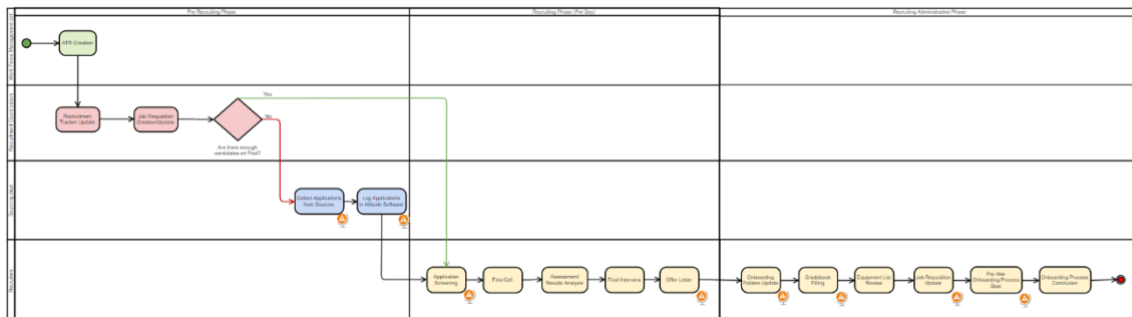


Figure 3.10 - BPMN identifying the several problems found in the process

The list that follows, enumerates the different problems, the improvement team found relevant when doing the side-by-side sessions with the Recruiters. More problems were found but after a Screening analysis, certain less relevant problems were eliminated from the analysis:

Problems Encountered

1. Recruiters contact every candidate from the applications they receive from the Sourcing department;
 2. Recruiters receive applications from people that were already let go from CompanyOne;
 3. Once the candidates are on Altitude pool with the status of "Validated" there is no way of prioritizing them;
 4. Recruiters call candidates from an Unknown number ID;
 5. Offer Letter and Job Overview documents are not standardized;
 6. Recruiters are not 100% sure what documents to ask for and which pieces of equipment are necessary to work from home for CompanyOne;
 7. Since the start of remote work, Recruiters do not know 100% the process of escalating a problem to their superior when an Outage occurs;
 8. There is no engagement between Recruitment department and Operations on a regular basis;
 9. Recruiters waste a big portion of time in ad hoc calls with the teams;
 10. Recruiters do not have visibility over the hired candidates' performance results;
 11. All Recruiters do every type of process activity in the hiring process;
- For the problems stated above, a quick description is in place for each one.

1. Recruiters contact every candidate from the applications they receive from the Sourcing department

The Sourcing department is responsible of doing a screening to the CVs that are made available to the Recruitment department, because several CVs are received by the Recruitment department which were done without judgement and are not in conditions to be sent to any company. These candidates should be automatically excluded by the Sourcing sub-department, but the improvement team noticed such does not happen as it should. This makes

the Recruiters waste more time in these cases in unnecessary actions and trouble (Extra Processing and Defects type of Waste can be found here). If the Recruiter has to waste time looking for the contact of the candidate or his details it is wasted time and should be avoided.

2. Recruiters receive applications from people who were already let go by CompanyOne

CompanyOne's Human Resources department has a list of people who left CompanyOne in bad terms with the company. These people are placed in the "Hello Kitty" List (which is pretty much a blacklist) and the Sourcing/Recruitment department should not accept applications from the people whose name shows up on the list under any circumstance. The reality of the company's daily habits is that this Hello Kitty List is not updated and is now redundant. No Recruitment or Human Resources worker works daily with this list in mind. This leads, as an example, to hiring mistakes of people being hired who were previously let go due to performance matters.

3. Once the candidates are on the Altitude pool with the status of "Validated" there is no way of prioritizing them

Once a candidate's profile is inserted in the Altitude platform, he/she will remain classified as "Validated" for days or weeks if no Recruiter contacts him/her. This leads to certain applicants not being contacted simply because they were overlooked and forgotten. There is no possibility of having a split by the time the candidate spent in the pool.

4. The Recruiters call candidates from an Unknown Number ID

The contact system the Recruiters use to contact the applicants was being received by many customers as an Unknown Number ID. This can reduce drastically the pick-up rate of the people that are being contacted.

5. Offer Letter and Job Overview are not Standardized

Every time a Recruiter required sending a Job Overview or Offer Letter to a candidate, he/she had to make several changes to the document, many times taking more than one minute to have it ready for sending. This can drastically increase the time of the hiring procedure (at least, the time that is directly dependent from the Recruiters). Besides, every time a new client joined CompanyOne the Recruiters had to build the Job Offer and Job Overview always from scratch

6. Recruiters are not 100% sure what documents to ask for and which pieces of equipment are necessary to work from home for CompanyOne

In the First Interview of the hiring procedure the Recruiters must ask for certain documents from the applicants (Visa, Authorization to Work in Portugal, Driver's License, etc...). At the time the improvement team did the side-by-side sessions with the Recruiters, the team noticed that the Recruiters were not 100% used to the documents they had to ask from the candidate and which pieces of equipment (software or hardware) the candidate had to possess in order to be able to work for CompanyOne from home without any problems. Lack of habit with the procedure can drastically increase the Lead Time of the process.

7. Since the start of post-pandemic remote work, Recruiters do not know 100% the process of escalating a problem to their superior when an Outage occurs

An escalation is the process of passing the matter in question/problem to a superior. An Outage is a period that, for any reason, the Recruiter is unable to connect with the rest of the team/applicants and is then, disabled from carrying on its normal daily work. At the time the improvement team did the side-by-side sessions, the Recruiters did not have memorized the correct escalation procedure to do in case of Outages, and were contacting random people trying to fix their problems. This problem can lead to increased wasted time during the daily work that could be used for other purposes, specifically contacting, and closing candidates' applications.

8. There is no engagement between Recruitment department and Operations on a regular basis

During the entire duration of the time the improvement team was with the Recruitment department, it did not witness any type of communication on a regular or irregular basis from the Recruitment department with the Operations or vice versa. This fragile relationship may result in less hiring quality and stagnation of the hiring requirements imposed by the Recruitment department. Besides, Increases dramatically the flow of the entire CompanyOne internal supply chain. In the case where a healthy symbiosis between the Recruitment department and Operations is achieved, there is unlimited potential to improvement of the hiring procedure and optimization of the characteristic profile looked for in the applicants.

9. Recruiters do not have visibility over the hired candidates' performance results

As a consequence of the lack of communication between the Recruitment department and the Operations department, after the Recruiters hire a candidate, they have no visibility at all about

the performance of the New Hire. This results in the Recruiters not having a clear notion about which applicants have a positive profile and which applicants have an alarming profile in terms of performance and behavior.

10. Recruiters waste a big portion of time in ad hoc calls with the teams

At the time the improvement team did the side-by-side sessions with the Recruiters, an alarming issue came to the surface. Recruiters spent a big portion of time doing calls with the entire team or certain teammates about issues that came up throughout the day. The calls were long and extensive sometimes taking up to two hours and sometimes more than once a day. If, during a day two hours are spent in a team conference call, 25% of the serviceable working schedule is wasted by lack of organization. This can lead to less time available to contact applicants and ultimately to Fill Rate (Ratio of hired people over available openings) gaps.

11. All Recruiters do every type of activity in the hiring process

Certain activities in the hiring procedure are purely administrative/bureaucratic and all Recruiters have the responsibility to do every type of activities regarding one single candidate. These bureaucratic activities are done faster if the candidates are grouped in batches of several applicants. If the Recruitment team is organized by jurisdiction in type of activity (Recruitment activities and Administrative activities) it is possible to group candidates making the Process Lead Time shorter and gaining efficiency and quality in each type of activity due to practice and repetition.

3.1.6 Solution Development

For each of the problems surfaced in the previous step, a measure must be put into place to nullify them. For this purpose, three Brainstorming sessions, one with the Gemba workers, Recruiters, another with the Administration, Continuous Improvement Director and Recruitment Manager and a last one with the Management, Recruitment Coordinators, were arranged.

In these Brainstorming sessions, several techniques to diversify the ideas formulated were used. In these sessions the problems were raised, opinions of each intervenient were heard and a solution was built to comply with the entire range of problems. Once again, the improvement team heard the input of both the Gemba workers and the Administration and that knowledge culminated in the development of eleven improvement solutions, forged with the help of the process Management, the Recruitment Coordinators.

For each problem presented in the previous step, a suitable solution was encountered and is now presented:

1. **(Problem)** Recruiters contact every candidate from the applications they receive from the Sourcing department
1. **(Solution)** Recruiters must do a quick initial analysis to the received CVs to understand if the necessary information is included. If it is not, the CV should be automatically excluded. The Sourcing department is responsible, as mentioned previously, for doing an initial screening of the CVs that reach CompanyOne with the purpose of the CVs that reach the Recruitment department being only acceptable CVs, but when the improvement team did the side-by-side sessions, plenty of CVs reached the Recruitment department with no applicant contact or without the necessary information (Level of English, address, among others).

To make sure no unusable applications are pursued, the improvement team along with the management, decided to implement a procedure of CV Screening in order to exclude all misfit applicant's CVs from being contacted. To make sure the CVs were being excluded (or not) according to one, and only one specific criteria, a procedure of audit and calibration was also put in place. With this auditing process, it is assured that all Recruiters are excluding (or not) candidates for the same reasons and no misfit application is left included or no fit application is left excluded, thus assuring a better quality of the applicants contacted. The auditing and calibration process is presented in detail in the next step.

2. **(Problem)** Recruiters receive applications from people who were already let go by CompanyOne
2. **(Solution)** Implement analysis of "Hello Kitty" List on a daily basis and have it updated both by the Recruitment department and Human Resources department

CompanyOne has a list, where the people who were let go from the company under circumstances of misconduct, low performance or legal issues are inserted, so they are not hired again. This list is currently not being strictly used, and certain applicants are hired and only after their re-hiring is it understood that they already worked for CompanyOne and were let go under negative circumstances.

The logical measure is to create conditions for the "Hello Kitty" List to be used again both by the Operations, the Human Resources and the Recruitment department. Another measure is to make sure the "Hello Kitty" List is at all times updated and that all work contract terminations, pass through the list, if necessary.

3. **(Problem)** Once the candidates are on the Altitude pool with the status of "Validated" there is no way of prioritizing them
3. **(Solution)** Create a candidate's bucketing system in the Altitude software according to urgency of contact

After the Sourcing department loads the candidates' applications on the Altitude software, the candidates are set under the "Validated" status. This "Validated" status means the application was already screened by the Sourcing department and the candidate is ready to be contacted by the Recruitment department. Once the candidates are placed under this status there is no way of prioritizing which is more urgent to be contacted (which is in that status at the longest time), and the candidates are presented according to a FIFO approach in the pool, so the candidates that the Recruiters look at first are the most recently inserted in Altitude.

The solution reached is to create a Service Level Agreement stating the time that a candidate is in the "Validated" status pool. The Service Level Agreement goal is to identify buckets of urgency and act towards minimizing or, if possible, eliminate the candidates in the pool marked as "Very Urgent". The SLA buckets were: From one to three days – "Not Urgent"; three days to seven days – "Priority"; more than seven days – "Very Urgent". The Recruitment department should aim to maintain the candidates marked as "Very Urgent" and "Priority" at the lowest value in the pool as possible.

4. **(Problem)** The Recruiters call candidates from an Unknown Number ID
4. **(Solution)** Avaya known number identification implementation

During the improvement team's stay with the Recruitment department this problem quickly jumped to the team's judgement. The Avaya Contact System is the platform under which the applicants are contacted by the Recruiters. After few days with the Recruiters, the improvement team quickly realized that the number from which the Recruiters were contacting the candidates was shown to the applicants as an Unknown Number ID. The fact that CompanyOne does not have a valid number identification is a significant reason for the 62% of the Recruiter's contacts are not answered.

This problem did not require much (or none) Brainstorming, with the obvious measure being to engage with the Avaya Point of Contact in CompanyOne and arrange for that problem to be solved, once the package of the tool includes known Number ID globally (CompanyOne contacts people in every continent and must have a valid identity whenever it is reaching an applicant).

5. (Problem) Job Overview and Offer Letter are not Standardized

5. (Solution) RPA Update and Auditing Cadence Definition for Job Overviews and Job Offers

Job Overviews are the documents sent to the candidate after the First Interview and is where the job details are exposed (Schedule, Salary, Work Location, etc.). Job Offers are the documents sent to the candidates after the Final Interview is completed and also states work details but are also documents that the applicants must sign in order to start the Onboarding process. These documents are sent in different moments of the hiring procedures but mainly they document the same information with certain different details. These documents are, each, always sent at least once (when there is no mistake in the sending of the document) per candidate. The problem with these documents was that the documents were not completely standardized according to each campaign and Recruiters had to do a bit of manual labor to have it just correct.

With the many automation tools available for free in the Internet, a big potential for the automatic change of the Job Overviews and Job Offers surges. The solution the improvement team formulated is to update and keep updated the documents using RPA tools that facilitate by a big margin the updating of the documents without having the necessity of repeating the necessary steps for all documents. Besides this measure, the improvement team also helped implementing an auditing cadence to make sure the Job Overview and Job Offer are always kept up to date. This auditing process will be detailed in the next step of this Chapter.

6. (Problem) Recruiters are not 100% sure what documents to ask for and which pieces of equipment are necessary to work from home for CompanyOne

6. (Solution) Training/Refreshment on Hiring Documentation and W@H Tech Requirements

For the problem in question, the Brainstorming procedure was relatively quick, and the only measure suitable to be put into practice would be refreshing the training for the Recruiters who did not have Work at Home and/or Hiring Documentation training in a long period of time. The implementation plan for this measure will be presented in the next step of this Chapter.

7. (Problem) Since the start of remote work, Recruiters do not know 100% the process of escalating a problem to their superior when an Outage occurs

7. (Solution) Training/Refreshment on Outages Escalation Procedures

As for the previous problem, the Brainstorming procedure was also relatively quick. The Management and the improvement team quickly reached the conclusion of implementing or

refreshing the training on the Procedures of Outage Escalations. The main issue with these procedures is that, although simple, as the remote way of working is a recent development in CompanyOne, the Recruiters were not completely accustomed to the procedures. For this reason, training was scheduled with every Coordinator to forward and give it to each of the Recruiters in their team. In the next step of this Chapter the implementation plan is presented.

- 8. **(Problem)** There is no engagement between Recruitment department and Operations on a regular basis
- 8. **(Solution)** Creation of a framework for the engagement of the Operations with the Recruitment department

To strengthen the relationship between the Recruitment and the Operations department, the improvement team along with the Management and Administration came up with the solution of implementing a bi-annual engagement framework for both departments. The engagement is supposed to consist in regular side by side sessions that unfold in two types of sessions. In the first type of session, the Recruitment department engages with the Operations to witness the day to day activity of the people working in the department. These meetings must consider two dimensions.

The Recruiters must go to the Gemba of the Operations to have a day of side by sides with the Team Managers of the campaigns for which each Recruiter hires for, and the Recruitment Coordinators must engage with the Operation Managers of the campaigns for which each Team hires for. These sessions should take at least one but ideally two days, depending on the availability and current workload of each department.

In the second type of session, the Operations department must engage with the Recruitment team in their Gemba, in order to understand furtherly, the daily job and main road blocks of the department. As with the previously described type of session, this one should also consider the second two dimensions of the Operations department structure, the Team Managers and Operation Managers. The Operation Managers must follow the Recruitment Coordinators in a day long side by side session in which the Operation Manager must assist every activity of the Coordinator's day. The Team Managers must engage with the Recruiters, also, in a day long side by side session, where they must witness everything the Recruiters do, both to form bonds between the company's employees, to facilitate communication and improve and optimize procedures to help thrive both departments. These sessions must be held at least twice a year to make sure the Operations department and the

Recruitment department strengthen their ties and work more closely together to achieve both final goals which is to deliver more, better and faster.

9. (Problem) Recruiters do not have visibility over the hired candidates' performance results

9. (Solution) Monthly share of new hires' results for the first 90 days in CompanyOne

As mentioned in the problem description in the previous step of this Chapter, one clear consequence of the weak relationship between the Operations department and the Recruitment department is the lack of visibility over the New Hires' performance results during the first months by the Recruiters (or the Recruitment department as a whole).

The measure formulated by the improvement team in order to try to mitigate the previously stated, was building a framework for the sharing of the performance and behavioral results of the New Hires. This sharing must be done monthly during the first three months of the applicant journey in CompanyOne.

This measure will result in a deeper understanding of the ideal candidate profile for each market/campaign. Recruiters will be able to look for certain positive or alarming characteristics that can then either help facilitate the hiring procedure or, in an early stage of the hiring procedure understand that the applicant is not suitable for the job. Either way, it helps increase the time of Added Value and reduce Non Value Added activities, streamlining the process and optimizing the procedure.

10. (Problem) Recruiters waste a big portion of time in ad hoc calls with the teams

10. (Solution) Alignment of the Recruiters through daily Stand Up meetings

Regarding this problem, the solution was quickly formulated by the improvement team. The main issue with this matter was that the Recruiters were losing several hours of the day with ad hoc calls with the team and certain team members.

One efficient measure, much acclaimed by the Lean philosophy, is the daily Stand Up or daily Scrum. The daily Stand Up is a measure to organize the team and keep every person focused on their daily goal. As such, the team can be more productive only focusing on their daily goal and overlooking other distractions that can come up during the day. These distractions (when necessary) should be noted by the Gemba workers and addressed in the daily Stand Up of the following day.

Giving the example of the solution presented for the Recruitment department, the implementation decision consisted in the following: The Recruitment Coordinators must gather every Recruiter of their team in a daily Stand Up meeting and address the problems/obstacles

/road blocks while understanding the unforeseen matters that surfaced to the Recruiters during the previous day. Besides that, the Coordinators must also address the goals of the current day of work and manage the expectations and necessities of the Recruiters.

One rule that must be taken as an unbreakable law in this implementation plan, is the fact that everything unforeseen that comes up during the day must only be addressed by the Recruiters with the Coordinators or the team members, during the daily Stand Up meeting. Usually, a Stand Up meeting is meant to be kept short, however, and because the Recruitment department is under a lot of pressure in terms of work load and timeline requirements, if a Stand Up meeting needs to be made longer, it is not a problem. The main thing to keep in mind here, is that at the beginning of the day, every problem in the team must be solved or escalated to the Coordinators. This way the Recruiters have a free schedule to contact and hire applicants at will, not having to waste time in parallel matters.

11. (Problem) All Recruiters do every type of activity in the hiring process

11. (Solution) Recruiter's Role Segmentation

Due to the fact that the entire hiring procedure can be divided in two different parts (Recruiting Phase and Administrative Phase), and the fact that every Recruiter handled both phases of the process, a big portion of time was being wasted due to the fact that the CRM SAP Success Factors insertions were not being made in batches.

The improvement team along with the Recruitment Coordinators came up with the measure of dividing the Recruiters in two types of roles: recruiters which only handle the candidates, that is, are only responsible for contacting them and hiring them; and Recruiters responsible of only administrative matters, such as logging the candidates in the SAP SF CRM.

3.2 Do

The Do phase of the PDCA cycle includes two steps according to methodology followed in this improvement project. These steps will be addressed and explained in detail and consist in: Solution Implementation Plan Execution and Solution Implementation.

3.2.1 Solution Implementation Plan Execution

Once the solutions are built, is then necessary to come up with the implementation plans to help guide the implementation of the measures and make sure the planned strategy is followed to the letter. The implementation plan of any measure must contemplate several elements:

The Key Performance Indicators impacted with the measure implemented must be clearly described.

The context in which the measure was formulated must be as detail as possible. The previously existing context must be comprehensively described. At the moment that someone reads the implementation plan, they must immediately understand the state of the process before the improvement. The problem that led to the implemented measure must be accurately characterized and explained and the solution found along with the reason for its deployment must also be accurately detailed. This document allows every stakeholder in the process to understand why the measure is being implemented, so a great level of detail in parallel with a great ability to summarize are in place.

The literal implementation plan must also be accurately described. This plan should consist in a step-by-step formula of how to implement the measure formulated in the previous step of this Chapter. The measure must be broken down in the most thorough steps possible, making it effortless for someone who is not used to the process (what in theory, will not happen, because only the process/project stakeholders will be handling this measure implementation) to be able to implement or manage the implementation of the measure successfully.

The scheduling of the measure implementation planning must, as well, be clearly stated (due date and starting date). This scheduling must be followed with a very strict pulse and should not, under any circumstances, be missed. The failure to comply with this schedule determines that the measure was not successful.

The stakeholders of the process where the measure will be implemented must be showcased (in the case of the Recruitment project, the Stakeholders are going to be showcased in a RACI Matrix). – The RACI Matrix states the people Responsible (The one(s) who will carry out the task/measure), Accountable (The one(s) with the final authority over the process in which the measure), Consulted (The one(s) who must advise the people who will implement the measure in order for the measure to be successful) and Informed (the one(s) who must be updated with the task progress or completion) within this specific process.

During the length of this step, the implementation plans for the eleven measures to be put into practice, are presented from Figure 3.11 to Figure 3.21:

1. Recruiters must do a quick initial analysis to the received CVs to understand if the necessary information is included. If it is not, the CV should be automatically excluded

Procedure to KO CVs on Screening

Impacted KPI

KPI Achievement

Attrition %

Time to Attrition

Context

Recruiters don't do screening and when they do, they do it after the 1st call, to avoid wasting time if the candidate don't answer.

We don't do KO's based on CVs which might mean time and effort spent on CVs with low commitment and high attrition risks.

Suggestions of improvements:

- Establishing a criteria for KOing CVs – standardize it
- Define a cadence and criteria for audits to check if the recruiters are following the criteria (the CVs that are KOd go to a place, identify who KOd them, to audit later)

Implementation Plan

1. Establishing a criteria for KOing CVs with recruitment coordinators
2. Define a cadence and criteria for the audit and calibration of the KOing procedure

Dates

Starting Date: 25/01/2021

Due date:

Responsible	Accountable	Consulted	Informed
Recruitment Coordinators	Recruitment Manager	C.I. & Solutioning Team	C.I. & Solutioning Team

- Establishing a criteria for KOing CVs plan – 26/01/2021
- Define a cadence for audits – 29/01/2021

Figure 3.11 - Implementation Plan of "Procedure to KO CVs (...)" measure.

2. Implement analysis of "Hello Kitty" List on a daily basis and have it updated both by the Recruitment department and

Hello Kitty List Update

Impacted KPI

KPI Achievement

Context

When recruiters are finishing the process of hiring a candidate, they need to contact the Operations to make sure the candidate isn't in the Hello Kitty List. In the majority of times the Hello Kitty List isn't up to date leading to waiting times.

Besides the above mentioned, there might be potential Hello Kitty candidates not showing in any document/list.

Suggestions of improvements:

- Regarding the problem of the Hello Kitty List not being updated with the entirety of the candidates/agents not fit for hire, the CI & Solutioning team will help in the process of collecting information regarding the former employees unfit for hire, alongside with the Human Resources and Operations, completing both sources of information and trying to it maximum that the general Hello Kitty List is fully complete.
- Defining an owner for the process of keeping the Hello Kitty List always up to date and able to be analyzed by any recruiter in a moment of need.

Implementation Plan

1. CI & Solutioning team will liaise with the Human Resources and Operations to understand if there are any candidates/agents left out of the Hello Kitty List. This will be done by sending the names on the list, filtered by Operation, to have them cross checked by Ops Management, and fill in additional missing ones.
2. After the list is updated, the owner as well as the framework of this Implementation is going to be defined. This owner is going to be responsible for all the activity in the Hello Kitty List. The POC will be accountable for collecting/keeping track of information contained in the document, so that it stays updated and

Dates

Starting Date: 01/02/2021

Due Date: 05/02/2021

Responsible	Accountable	Consulted	Informed
H.R. Coordinators	H.R. Managers	Operations / Recruitment Manager	C.I. & Solutioning Team / Recruitment Manager

Figure 3.12 - Implementation Plan of "Hello Kitty List (...)" measure.

3. Create a candidate's bucketing system in the Altitude software according to urgency of contact

Candidate's Bucketing System Development

Impacted KPI

KPI Achievement

Context

4500 candidates on backlog pool that were not contacted. Although there were these many candidates on the backlog pool, there was still Head Count left to deliver to the Operations.

Suggestions of improvements:

- Separate the candidates through buckets in the Altitude platform, differentiating them by time in queue.
- Calculate a service level agreement, in which the probability of the candidate answering the call is maximum.

Implementation Plan

1. The CI & Solutioning team will carry an experiment on the Altitude backlog candidates in cooperation with the Recruitment team. This experiment will result in the redefinition or fine tuning of the buckets; the contact success rate of each bucket; ensure a 90% service level for the defined bucket.
2. Recruiters must prioritize the candidates within the service level.
3. In the start of the Implementation's implementation, the goal is to clear the backlog before implementing the SLA rationale.
4. In times of low application volumes, the entirety of the calls must be done within the service level, not allowing candidates to fall outside of it, thus maximizing the call answering success probability. In these periods, the backlog should always be empty.
5. The CI & Solutioning team will liaise with the Altitude team in order to allow recruiters to filter candidates by their application date.

Dates

Starting Date: 08/02/2021

Due Date: 19/02/2021

Responsible	Accountable	Consulted	Informed
C.I. & Solutioning Team	Continuous Improvement Director	Altitude Team / Recruitment Manager	Recruitment Manager

Figure 3.13 - Implementation Plan of "Candidate's Bucketing System (...)" measure.

4. Avaya known number identification implementation

Avaya ID Implementation

Impacted KPI

Lead Time

Context

By data analysis was found that approximately 62% of the calls were non-answers.

One problem found was that the calls deriving from the Avaya network appear to the candidates as NON ID calls, sometimes tagged as fraud/scam, when the recruiters first contact the candidates.

Problems derived from:

1. No answers due to the actual NON ID number
2. If the candidate misses the call and wants to phone back SITEL he can't.

Suggestions of improvements:

- Give a landline number to Recruitment calls on Avaya;
- Include other methods of candidate contact, WhatsApp, for instance.

Implementation Plan

1. Engage with SITEL telecommunication to understand why the problem of NON ID calls is happening and how to solve it – Range of solutions for it.
2. Ensure the problem is fixed – landline number for recruitment call assigned.
3. Come up with another method of contact - Check if WhatsApp method is viable and how it would be used amongst the team
4. Verify with the coordinators the current mobile phone problem in the team – how it's being used and in which situations
5. If WhatsApp is a success check out if there's an option for automatic responses in case of more standardized questions – e.g. Chatbot

Dates

Starting Date: 25/01/2021

Due Date:

Responsible	Accountable	Consulted	Informed
I.T. / Telecom. Team	Recruitment Manager	Recruitment Coordinators	C.I. & Solutioning Team

- ID number fixed – 29/01/2021

Figure 3.14 - Implementation Plan of "Avaya ID (...)" measure.

5. RPA Update and Auditing Cadence Definition for Job Overviews and Job Offers

RPA Update and Auditing Cadence Definition for Job Overviews and Job Offers

Impacted KPI

Attrition Turnover

Time to Attrition

Context

When recruiters want to send a Job Overview and Offer Letter to the candidates the Job Overview and Offer Letter that appears often has some incorrect information, mixed information of other projects and outdated information.

When they send Job Overviews and Offer Letter they don't receive a copy of that and they need it for an eventual revision and to put it in boost later.

Suggestions of improvements:

- Updated information in altitude for those matters
- Define a cadence for auditing the information to ensure it is always updated – the position is always advisor, can be changed too, instead of [Position].
- Receive a copy of the offer letter and put it automatically on BOOST

Implementation Plan

1. Engage with altitude team in order to update the information (and possibly the projects) of each project and to review the possibility of sending a copy to the recruiters and put automatically on BOOST
2. Define a audit cadence to verify the information – each quarter for example

Dates

Starting Date: 22/02/2021

Due date:

Responsible	Accountable	Consulted	Informed
Altitude Team / C.I. & Solutioning Team	Recruitment Manager	Operations	Recruitment Coordinators

- Update Job Overview and Offer Letter – 05/03/2021
- Defined cadence for auditing the info – 05/03/2021

Figure 3.15 - Implementation Plan of "Job Offer / Job Overview (...)" measure.

6. Training/Refreshment on Hiring Documentation and W@H Tech Requirements

Hiring documentation and W@H Training Schedule

Impacted KPI

Lead Time

Context

Some recruiters express great difficulties regarding W@H requirements and global hiring documentation, when engaging with candidates.

Often the recruiters have doubts regarding hiring documentation and have to ask HR. Usually the communication between HR and Recruitment is long and time consuming for both parties.

Suggestions of improvements:

- Specialized training to recruiters on those matters

Implementation Plan

1. Brief training by IT, for instance, on W@H requirements and possibly doubts the recruiters have
2. Brief training by HR on hiring documentation and specific questions about what to do or if a candidate is fit to work for SITEL or not (regarding VISA info, etc.)

Dates

Starting Date: 25/01/2021

Due date:

Responsible	Accountable	Consulted	Informed
Learning / H.R. / I.T.	Learning Specialist / Recruitment Manager	H.R. / I.T.	C.I. & Solutioning Team

- Training – 29/01/2021

Figure 3.16 - Implementation Plan of "Hiring Documentation and (...)" measure.

7. Training/Refreshment on Outages Escalation Procedures

Escalations Procedures on Outages Training Schedule

Impacted KPI

Lead Time

Context

Often when outages happen, the correct procedure is not followed which causes, in some cases, long-term outages.

Suggestions of improvements:

- Giving the recruiter coordinators training on how to follow the correct procedure in case of outages.

Implementation Plan

1. The CI & Solutioning team will explain the correct procedure to follow in case of outages.

Dates

Starting Date: 25/01/2021

Due Date:

- Training – 29/01/2021

Responsible	Accountable	Consulted	Informed
Continuous Improvement Director	Continuous Improvement Director	Recruitment Coordinators	Recruitment Manager

Figure 3.17 - Implementation Plan of "Outages (...)" measure.

8. Creation of a framework for the engagement of the Operations with the Recruitment department

Recruitment and Operations Engagement Framework Development and Deployment

Impacted KPI

Attrition Turnover

Time to Attrition

Context

There is great benefit in having an established development and training plan during recruitment off peak season.

Suggestions of improvements:

- Workshop refreshment trainings with Ops – Develop a training/improvement plan for the recruiters when in off peak season

Implementation Plan

1. Engage with learning and operations to see the opportunities for developing training/improvement plans for the recruiters when on off peak season – define what off peak season means in terms of recruitment, in practical terms

Dates

Starting Date: 01/02/2021

Due date:

Responsible	Accountable	Consulted	Informed
Learning Specialist	Learning Manager / Recruitment Manager	Operations	C.I. & Solutioning Team

- Develop and implement a training plan – 05/02/2021

Figure 3.18 - Implementation Plan of "Operations and Recruitment (...)" measure.

9. Monthly share of new hires' results for the first 90 days in CompanyOne

New Hires Performance Results Sharing

Impacted KPI

Attrition Turnover

Time to Attrition

Context

After the recruiters recruit the candidate they don't get any feedback about the new hire. They don't have visibility over the operational performance of the new hires

Suggestions of improvements:

- Sharing monthly performance results of the new hires with the recruiters during the first 90 days of life in CompanyOne.
- Bonus scheme linked to operational performance of new hires for designated time period.

Implementation Plan

1. Engage with Ops and Recruitment Coordinators to see a viable option to give monthly performance feedback to the recruiters (1st 30 days and 1st 90 days for example).
2. Associate 90 days attrition and performance with recruiter bonus

Dates

Starting Date: 01/02/2021

Due date:

Responsible	Accountable	Consulted	Informed
Operations	Operations / Recruitment Manager	Operations	C.I. & Solutioning Team

- Start giving feedback to the recruiters – 12/02/2021
- Accountability in recruiters bonus – TBD

Figure 3.19 - Implementation Plan of "New Hire Results Sharing (...)" measure.

10. Alignment of the Recruiters through daily Stand Up meetings

Recruiter Daily Stand Up Meetings Implementation

Impacted KPI

Lead Time

Context

Approximately 30% of the recruiter's working time was allocated to checking emails and on ad hoc calls.

The following root causes were found:

1. Too many calls within the team
2. Too much time checking email received from the general recruiter's DL

Suggestions of improvements:

- Scheduled daily huddles for organizational subjects
- Dismantle the general DL into several Market/Team DLs

Implementation Plan

1. Coordinators of each team have to organize and schedule daily meetings and make sure recruiters comply and don't make extra unnecessary meetings. In case of an unpredicted subject rises, it should be saved either for the next day's huddle.
2. Create a DL for each team or market depending on what's more convenient – make sure that at the time of shifting from the general DL to the specific ones, there is no loss of information.

Dates

Starting Date: 25/01/2021

Due date:

Responsible	Accountable	Consulted	Informed
Recruitment Coordinators	Recruitment Manager	Recruiters	C.I. & Solutioning Team

- Scheduled daily meetings – 29/01/2021

Figure 3.20 - Implementation Plan of "Daily Stand Up Meetings (...)" measure.

11. Recruiter's Role Segmentation

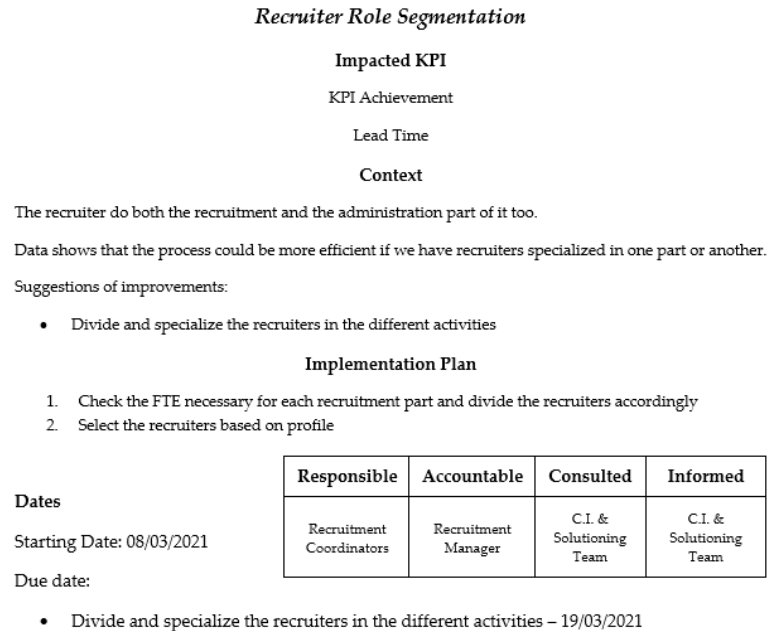


Figure 3.21 - Implementation Plan of "Recruiter's Role Segmentation" measure.

3.2.2 Solution Implementation

This step, along with the previous one, is also critical for the successful implementation of the improvement measures formulated in the previous steps of this Chapter. This is the step where the implementations will, in fact, be executed. The most pressing necessity in this step is to assure, not only, that the measures put into place remain active, after the improvement team leaves the department/process, but also, that they are implemented in the specified timelines and are adopted as they were planned.

The timely execution of the measures formulated, defines the success of the project. For a project to have 100% success rate, every element that is planned before-hand must be strictly abided in the defined moment in time. For this reason, it is essential to exist a stern planning of the implementations timeline and also a close follow up of the intervenient and responsible staff for the implementation of the measures.

To kick off this step, a meeting between every Stakeholder in this improvement project is in place. The Gemba workers (Recruiters), the Management (Recruitment Coordinators) and the Administration (Recruitment Manager and Continuous Improvement Director) must meet

with the Improvement Team to address the and profoundly understand the measures that are to be implemented, its motivations (the context in which they were formulated), enablers and road blocks, and most importantly the procedure of the implementation for each one.

Besides the regular meeting cadence that was defined in step 2 of this Chapter, this meeting must be had with everyone involved in the process, regardless of when the next meeting with the Stakeholders will be hosted. This meeting is essential, not only, to make the start of the improvement solutions implementation official, but also to communicate with all the Stakeholders the progress of the improvement project.

After the implementation's kick off meeting, the Stakeholders must be kept on the loop of the progress of each activity. The RACI Matrix comes into action, in this part of the step, to help find the points of contact and responsibilities for each action.

In Figure 3.22, the Gantt chart for the implementation of the improvement solutions is depicted. Here the eleven measures formulated are planned in time. The improvement team opted for an implementation procedure in which the quickest and simplest actions are executed first (actions that only need engagement with specific points of contact or punctual governance decisions) and the most data-heavy and time consuming actions are done in a second instance.

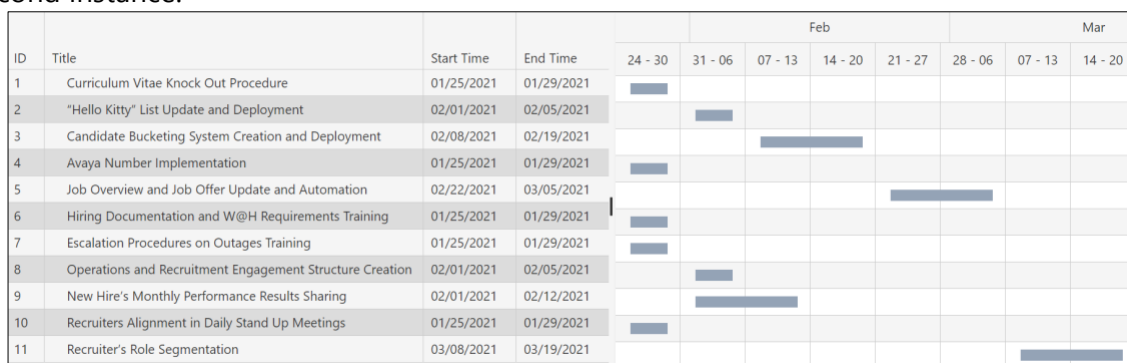


Figure 3.22 - Gantt Chart with the Solution Implementation Framework.

Explaining the timeline exposed in Figure 3.22: In the first week of implementations, five actions are going to be started, handled and executed. These actions are relatively simple and were planned to be executed by Friday of that same week.

The "Curriculum Vitae Knock Out Procedure", only requires the specific point of contact to define the Knock Out requirements for the unfit CVs; the "Avaya Number Implementation", only requires the engagement with the CompanyOne's Avaya Team to handle the number identification; the "Hiring Documentation and W@H Requirements Training" and "Escalation Procedures on Outages Training" also, only require that the specific point of contact establishes a framework for the training of the Recruiters; and the "Recruiters Alignment in Daily Stand Up

Meetings” which just requires the engagement with the Recruitment department’s Administration and Management to change the Recruitment team’s way of working, eliminating unnecessary ad hoc meetings in the Recruitment team.

These are measures that are easily implemented but if efficient control mechanisms are not put into place, the changes made can easily be undone and the process can return to its inefficient old state. The Control mechanisms (Audits and Calibrations) implemented for each measure will be presented in detail in step 12 of this Chapter. In the case of this study case the implementation of the measures formulated in the Improvement project were easily applied to the daily habits of the Gemba workers. In the case where such an adoption is not present, although the measures being simple and returning good results, the Management of the process is not going to adhere to the change, because of the force of habit and resistance to change.

In the second week of implementations two simple actions are put into place and executed, while one more complex measure is kicked off. The “Hello Kitty List Update” is started, in which engagement with the Operations and HR department is necessary to kick off the usage and continuous update of the list. The “Operations and Recruitment Engagement Structure Creation” is also a simple action, once it does only require to engage with the Operations department to understand the availability of the necessary people to meet bi-annually with the Recruitment department. This is also a measure that its success will largely depend on the control mechanisms put into place (Again, the control mechanisms for the measures will be presented in step 11 of this Chapter). The last measure kicked off in the second week of implementations is the “New Hire’s Monthly Performance Results Sharing” which is a bit more complex because of the fact, that requires new/updated tools to enable Recruiters to receive the Agents’ monthly performance results. This measure will take longer because the Reporting tool CompanyOne possesses is not yet up to date.

During the third week of implementations, the “New Hire’s Monthly Performance Results Sharing” action must be finished with the Recruiters receiving the Agent’s monthly performance results in a regular basis and with no setbacks. During this week and the fourth, the action “Candidate Bucketing System Creation and Deployment” must be started and fully executed. This action has a planned timeline of two weeks, so, it must be, under any circumstance be executed in that time frame. In this action, a Service Level Agreement must be done and that stratification must be incorporated in the Altitude Software tool by the I.T. team. During the fifth and sixth week the action that must be fulfilled is the “Job Overview and Job Offer Update and Automation” and it must be finished by the end of the sixth week of

implementations. This action will be executed resorting to the RPA tool, UIPath, which is an automation tool developed with the purpose of creating robots able to do repetitive tasks and help, because of that, eliminate Non-Value Added activities and there for optimizing processes and activities. In the case of this action, the UIPath tool was used to automate the procedure of continuously updating the Job Overview and Job Offer documents using CompanyOne's "Campaign Requirements" data base (The "Campaign Requirements" data base is an Excel based document which depicts every detail about every campaign in CompanyOne. It is the document that dictates how the Job Overviews and Job Offers must be filled.). The automation consisted in creating a robot that gets the Campaign details of the different clients and changed the Job Overviews and Job Offers accordingly, creating a Word and PDF version of the different documents and had them available at the distance of a click to the Recruiters.

In the last two weeks of implementations (seventh and eighth week), the improvement team handled the action "Recruiters Role Segmentation", in which the Recruitment team was divided taking into account the work load and time consumption of each task in the hiring procedure, optimizing the Recruitment team's entire Process Lead Time. During the first week, the calculations were performed and during the second week, political subjects and governance matters were discussed.

Once these measures are all implemented, a period of six months of data collection is in order. These period will enable the improvement team to take valid and sustained conclusions from the process data and, as a result, from the measures implemented, understanding which measures resulted in positive outcomes and which didn't.

3.3 Check

The Check phase of the PDCA cycle includes two steps according to the methodology followed in this improvement project. These steps will be addressed and explained in detail, and consist in: Final State and Implementation Results Discussion.

3.3.1 Final State

In the Final State, the process is analyzed after the improvements are implemented. In this specific project, the improvements were controlled and data was collected during the time span of six months counting from the time the last measure was implemented.

In this section of the methodology, the results of the metrics in scope are analyzed and the collected data is studied. As with the Initial State, the Industry, Market, Team and Recruiter splits were analyzed. The performance metrics studied were the Lead Time, the Time to Attrition, the Attrition Turnover, The Attrition Quantity and the KPI Achievement. During the first stage of the process the sample extracted from the Harver Assessment Test was very short, what demonstrated that staff was lacking adherence to the tool. After collecting the data from the post-implementations period, the Harver Assessment Test sample remained presenting very little prominence what lead the improvement team to remove the variables associated with this metric from the post-implementation study, once it lead to the conclusion of lack of adherence by the company to the tool. Without the team having found any relevance in that metric and with lack of adherence by the workers, the variable was excluded from the study.

In Table 3.7, it is presented the data analysis from the Industry split and it is possible to understand that the Industry that takes longer to hire is the Banking Industry followed by the e-Commerce and the Automotive Industry.

Table 3.7 - Final State Metrics (per Industry).

		Lead Time (days)	Time to Attrition (days)	Attrition Turnover	Attrition Quantity (#)	KPI Achievement (%)
Industry	Automotive	33,40	73,48	24%	52	58,30
	Aviation	22,68	44,34	25%	71	35,46
	Banking	40,63	77,73	31%	22	52,06
	Consumer Electronics	31,21	97,10	23%	10	43,60
	e-Commerce	36,77	64,77	41%	79	62,87
	HealthCare	24,50	62,45	26%	100	68,60
	Insurance	22,24	109,13	42%	16	92,59
	IT & Tech	20,96	72,71	44%	117	62,12
	Software	18,96	102,56	54%	36	66,89
	Streaming Services	22,43	65,50	21%	18	51,96
	Travel & Hospitality	24,78	67,82	23%	312	38,37

The Industry that has a faster hiring process is the Software Industry but there are several Industries that present similar very efficient Lead Times. The biggest conclusion to take here is that the Banking industry takes almost double the time to hire as pretty much any other Industry.

When analyzing attrition, the Industry that stands out immediately is the Travel & Hospitality Industry with an Attrition Quantity of more than half of the second and third runner ups combined. This can be explained because Travel & Hospitality Industry accounts for a considerable portion (the percentage cannot be disclosed due to GDPR issues) of the business of CompanyOne.

Regarding the Attrition Turnover the Travel & Hospitality Industry does not stand out as much and actually has one of the best scores of the bunch, along with the Streaming Services and Consumer Electronics industries. The industries that present the worst scores are the

Software Industry alongside the IT & Tech, the Insurance and e-Commerce industries. IT & Tech surges as a better point to focus attention, once not only it presents the biggest count of attrition and the hires do not compensate leaves and the Attrition Turnover is also very high. Regarding attrition IT & Tech appears to be a possible focus point of improvement.

When considering Time to Attrition, the industries with the highest timelines are the Insurance Industry along with the Software and e-Commerce industries. Although Software and Insurance industries present high Attrition Turnovers, the Time to Attrition is long, indicating that a lot of people leave the company during the course of the year but they stay for an above average period of time before leaving. On the opposite side of the coin, the Aviation Industry presents low Attrition Turnover, but the shortest Time to Attrition, meaning that the Agents working for this Industry leave in a small percentage compared to the people hired for the job but when they leave they leave as soon as possible. An Industry that seems to present itself as a focus point to watch for ideas of improvement for other Industries is the Consumer Electronics Industry. Consumer Electronics presents top of the board marks in every attrition metric. Lowest Attrition Quantity, second-lowest Attrition Turnover and third-longest Time to Attrition, this means that few people leave in global, the percentage of the ones who leave compared to the ones who are hired are also very short and the people that leave usually stay for a considerable and above average period of time before deciding to leave. In terms of performance, the Industry with the best KPI Achievement results is undoubtedly the Insurance Industry scoring an average of 92% of KPI achievement per Agent.

This Industry seems to be a focus point for improvement opportunity search with the aim of being Implemented in other Industries as they present one of the lowest Attrition Quantities of CompanyOne's Industries while scoring by far the best average KPI Achievement of all the Industries and having the longest Time to Attrition of all Industries. This means that the people that don't leave a lot of people from the Insurance Industry, the ones that leave, leave after the longest time out of all other Industries and the ones that stay achieve by far the best results of the entire company.

Regarding the Market split and the same metrics studied with the Industry split, the results presented in Table 3.8 are detailed.

Table 3.8 - Final State Metrics (per Market).

		Lead Time (days)	Time to Attrition (days)	Attrition Turnover	Attrition Quantity (#)	KPI Achievement (%)
Market	Arabic	23,00	-	0%	0	37,29
	Dutch	42,58	58,00	29%	16	66,55
	English	18,36	78,85	24%	109	44,63
	French	18,84	60,15	28%	216	49,97
	German	25,92	80,49	27%	70	51,08
	Italian	22,69	82,59	25%	152	58,55
	Polish	17,50	18,00	10%	1	66,56
	Portuguese	17,42	46,95	16%	39	41,33
	Russian	18,20	91,33	14%	3	43,18
	Spanish	16,02	64,79	33%	216	45,62

The Lead Times of all markets seem to be leveled around 15 to 25 days, with the only exception being the Dutch Market that presents almost double the time of all other Industries. Considering the attrition, the Markets with highest Attrition Quantity and Attrition Turnover are the French and Spanish Markets. What the data for these Markets points out is the not only a big chunk of the people that leave CompanyOne is Inserted in those Markets but also they present a high percentage of people that leave over people that is hired internally. Speaking of Time to Attrition both markets present regular averages. These are the worst performing Markets in terms of Attrition, and for that reason there is room for improvement and a further study on these Markets might present interesting results.

Considering a good example in terms of attrition, the Russian Market, presents very low Attrition Quantity and Turnover while revealing the longest Time to Attrition of all industries, meaning that there are very few Agents leaving and the ones that leave, leave after a very above average period of time.

In terms of KPI Achievement the Markets that clearly stand out is the Dutch and Polish Markets, while the rest of the Markets present mostly leveled and similar KPI Achievements. One thing worth noticing in this data, is that the averages for the Market split are considerably different from the averages for the Industry split. This means that a possibility for finding patterns and opportunities to improve may lay in this segmentation. CompanyOne has the method of arranging benchmarks for performance metrics with Market splits but they do not present any differentiation for Industry splits. Maybe something worth looking deeper into, is the possibility of starting having different goals for performance metrics depending on Industry and not just Market. Maybe patterns or trends may surge from the analysis of the data according to these splits that can enhance performance and diminish costs.

Regarding the Team split and the same metrics studied with the Industry and Market splits, the results presented in Table 3.9.

Table 3.9 - Final State Metrics (per Team).

		Lead Time (days)	Time to Attrition (days)	Attrition Turnover	Attrition Quantity (#)	KPI Achievement (%)
Team	FR Team	28,62	60,61	28%	158	50,40
	Porto Team	17,44	85,59	42%	167	49,23
	ROW Team	27,92	73,70	21%	166	45,54
	SP & IT Team	20,76	69,47	30%	225	52,72

Considering the Lead Time results for each Team the clear outlier is the French Team (although very close to the ROW Team) with the longest time to hire, while the Porto Team is the good performer (also very close to the Spanish Team) with the least time to hire.

Regarding the attrition the Attrition Quantity is quite leveled out amongst teams with the worst performer being the Spanish & Italian Team, but for a negligible margin. In terms of Attrition Turnover, the clear worst performer is the Porto Team with double the percentage of the best performer (the ROW Team). Regarding the Time to Attrition, the values are also quite similar, with the worst performer being the French Team and the best performer being the Porto Team.

In terms of KPI Achievement, all teams are quite even. The Improvement Team does not have anything to add with the analysis of these data. The analysis of the Team split, puts forward no valuable information.

Regarding the Recruiter split and the same metrics studied with the Industry, Market and Team splits, the results presented in Table 3.10 are detailed.

Table 3.10 - Final State Metrics (per Recruiter).

		Lead Time (days)	Time to Attrition (days)	Attrition Turnover	Attrition Quantity (#)	KPI Achievement (%)
Recruiter	Recruiter SP&IT 1	19,16	77,65	21%	23	59,45
	Recruiter SP&IT 2	17,65	116,43	21%	7	38,77
	Recruiter SP&IT 3	26,54	81,00	55%	18	64,97
	Recruiter SP&IT 4	15,80	47,78	28%	40	49,60
	Recruiter SP&IT 5	27,28	44,93	28%	28	44,69
	Recruiter SP&IT 6	20,49	61,78	31%	51	46,79
	Recruiter SP&IT 7	24,54	116,50	47%	14	71,31
	Recruiter SP&IT 8	18,94	82,27	32%	44	57,39
	Recruiter FR 1	23,98	70,44	36%	34	57,23
	Recruiter FR 2	32,17	63,21	26%	47	45,85
	Recruiter FR 3	24,07	52,46	39%	41	55,45
	Recruiter FR 4	26,05	54,19	18%	16	54,09
	Recruiter FR 5	30,71	59,60	23%	20	42,54
	Recruiter ROW 1	27,53	77,41	32%	39	47,31
	Recruiter ROW 2	29,63	73,81	17%	16	53,37
	Recruiter ROW 3	21,21	77,22	17%	27	40,16
	Recruiter ROW 4	33,45	62,82	21%	22	45,09
	Recruiter ROW 5	30,83	78,63	22%	46	44,07
	Recruiter ROW 6	29,42	59,38	21%	16	53,50
	Recruiter Porto 1	13,56	79,61	46%	77	46,33
	Recruiter Porto 2	15,12	77,58	39%	31	50,85
	Recruiter Porto 3	14,52	210,40	83%	5	91,47
	Recruiter Porto 4	16,76	87,15	37%	54	49,82

In terms of Lead Time, it is possible to take the conclusion that pretty much all Recruiters hire between 15 and 25 days, with clear outliers in the French and ROW Team with around or more than 30 days to hire. The French Team presents itself as being the worst performer once the hiring timelines for the Markets that the ROW Team recruits for are usually considerably higher than the French Market.

Regarding attrition, there are a few points worth noticing. Regarding Attrition Turnover and Quantity in the ROW Team, it is possible to say that all Recruiters are leveled out at around 20% Attrition Turnover with just Recruiter ROW 1 presenting 32%. Regarding the Time to Attrition, is also quite leveled out between 60 days and 80 days amongst all ROW Recruiters. Considering the French Team, it is possible to say that all Recruiters are also quite leveled in terms of Time to Attrition, all scoring between 50 and 70 days. Regarding the Attrition Turnover and Attrition Quantity is possible to say that there is not any type of levelling. The Recruiter with the best score is Recruiter FR 4 and has the third-best score out of all Recruiters and there are two clear bad performers in the French Team, Recruiter FR 1 and Recruiter FR 3 with almost 40% Attrition Turnover. In terms of Attrition Turnover and Quantity the clear worst performer in terms of Teams and, as it could be perceived from the analysis to Table 3.9, is the Porto Team, with all five Recruiters being between the six worst performers of all Recruiters. Although the Attrition Turnover is very high the Time to Attrition is also acceptably long, with all

Recruiters of the Porto Team being clearly above average and above both the ROW Team and the French Team (around 80 to 85 days).

Regarding the Spanish Team, there is no levelling whatsoever in any of the attrition metrics. In terms of Time to Attrition (on the contrary to other Teams who presented very similar times), the Spanish Team presents huge variation, presenting the two worst performers out of all Recruiters and the second and third best performers. In terms of Attrition Turnover and Quantity, there is also plenty of variation inside the Team. The Team features the second and third-worst Attrition Turnover scores (55% and 47%) but also presents Recruiters with scores aligned with the best performing scores of the bunch (21%). The Team seems to level out at around 30% Attrition Turnover which is very high compared to the ROW Team for example.

In terms of performance, all Recruiters seem to be quite leveled at around 50% to 60% of monthly performance bonus completion. There are a few outliers for good and for bad (Recruiter Porto 3 scored an average of almost 92% of KPI Achievement while the Recruiter SP & IT 2 scored a measly 39%). Although it may seem to be a big difference between Recruiters in terms of performance, no specific pattern or correlation was found for this metric.

3.3.2 Implementation Results Discussion

In this stage of the Improvement methodology, and after the results of the post implementation period were studied, a balance taking into consideration the initial state of the process and the final state of the process and the differences between both is performed. Throughout this sub-chapter's stage, tables presenting the differences between the initial state and the final state are presented.

In this stage of the methodology the five variables in study will be analyzed and the tables for the Industry, Market, Team and Recruiter splits are going to be studied. The metrics for each split will be analyzed (Lead Time, in days; Time to Attrition, in days; Attrition Turnover, in percentage; Attrition Quantity, in number amount; and KPI Achievement, in percentage), highlighting the metrics that were more deeply impacted by the measures implemented by the improvement team, either in a positive way or in a negative way.

The tables presented in this stage of the methodology, were built resorting to the difference of values of the metrics from the Final State and Initial State. The values presented, if they are negative, mean that the absolute value of the metric in scope was reduced, from the Initial State to the Final State. If the values are positive, it means that the metric in scope increased from the Initial State to the Final State. Depending on the metric in question this

increase or decrease can either be advantageous or harmful for CompanyOne. If the metric is rated as the bigger the better, an increase is positive, if it is the other way around, vice versa.

From this analysis it will be possible to take conclusions about the success of the measures implemented, understanding if they were, in fact, benefic for the company.

In Table 3.11, are presented the difference between values of the five studied metrics in the Initial State and in the Final State, with an Industry split. Analyzing the table it is possible to understand that out of the 55 individual values that were studied, 32 were in fact improved.

Table 3.11 - Metric Difference (from Initial State to Final State) (per Industry).

		Lead Time (days)	Time to Attrition (days)	Attrition Turnover (%)	Attrition Quantity (#)	KPI Achievement (%)
Industry	Automotive	-28,80	16,45	-8,00	-7,00	16,84
	Aviation	-19,45	-10,30	-41,00	-19,00	-2,55
	Banking	-96,47	25,09	-40,00	-50,00	9,41
	Consumer Electronics	7,12	-14,40	-10,00	-2,00	-19,52
	e-Commerce	2,19	-21,03	-6,00	39,00	-12,88
	HealthCare	-34,46	2,55	-12,00	49,00	-2,15
	Insurance	-11,89	52,73	16,00	8,00	19,48
	IT & Tech	-10,04	8,01	6,00	85,00	-5,94
	Software	-11,32	18,46	35,00	26,00	0,37
	Streaming Services	-10,51	-3,60	-2,00	5,00	24,56
	Travel & Hospitality	0,05	19,27	-5,00	25,00	-7,75
	Global	-19,42	8,47	-6,09	14,45	1,81

Regarding the Lead Time metric, a clear improvement is seen across the board. There are only a few exceptions to the rule and present no significance. An average 20 days is reduced in the global average with the split by Industry, and are achieved improvements of up to 96 days.

Regarding the Time to Attrition metric, there is also evidence of improvement. An overall eight days were added to the average time an Agent took to abandon CompanyOne. While some industries obtained a difference of up to 52 days, showing incredible positive change, there were however others that decrease of the Time to Attrition metric of up to 20 days. In terms of proportion 64% of industries showed improved Time to Attrition. In conclusion it is possible to say that Time to Attrition shows evidence of improvement.

Regarding the Attrition Turnover metric, results also seem to point in a positive way. 73% of industries show lower averages in the Final State than in the Initial State. Certain Industries show improvements of up to 40% Attrition Turnover reduction. Although the majority of industries present expressive improvements of at least 10% contrasting with the previous analysis, there are certain Industries which present Attrition Turnover Increases of up to 35%. Here, as with every other consideration withdrawable from this project, external factors may be an influencing factor in the abrupt or unexplainable changes visible in the project's

data. Besides these factors, one can state that the measures implemented did not affect the Attrition Turnover, might even having helped to improve it.

Regarding the Attrition Quantity metric, visible deterioration of the metric is evident. This is due to the fact that this metric is only usable as a distinguishable feature of two groups, once it does not allow solid conclusions and progressive decision making on its own. This deterioration of the metric is simply explainable. CompanyOne, during the period of the implementation of the measures had a spike in demand from its Clients, which resulted in an overload of the Recruitment department. CompanyOne's hires increased drastically from the period of the data collection of the Initial State, to the data collection period of the Final State. With more hires comes more abandonments by the employees, in sheer amount alone. This is why this metric cannot be addressed alone.

Regarding the KPI Achievement metric, no concrete or conclusive improvement evidence is found in the existent dataset. While some industries present improvements of up to almost 25% others present decreases of up to 20%. Although the average difference is positive, no conclusive takeaway can be extracted regarding the impact of the implemented measures in the KPI Achievement metric.

By analyzing the differences between metrics of the Initial and Final States, it is possible to conclude that the Lead Time improved drastically, the Time to Attrition and Attrition Turnover also showed signs of improvement and the KPI Achievement was not impacted by the measures implemented. The Attrition Quantity increased but only due to increased and unexpected staffing necessities by the company as a whole.

In Table 3.12, the implementation results according to a Market split are displayed. The five performance metrics are compared amongst the several main Markets in which CompanyOne acts in. Analyzing the table, out of the 47 individual values that were studied, 34

Table 3.12 - Metric Difference (from Initial State to Final State) (per Market).

		Lead Time (days)	Time to Attrition (days)	Attrition Turnover (%)	Attrition Quantity (#)	KPI Achievement (%)
Market	Arabic	-45,90	-	-	-	-6,18
	Dutch	-1,12	-41,00	-43,00	-10,00	-5,79
	English	-4,99	32,93	-5,00	-3,00	-5,75
	French	-16,71	2,24	-17,00	32,00	-1,97
	German	-41,73	15,37	-17,00	-33,00	5,09
	Italian	-7,75	12,82	-6,00	69,00	6,86
	Polish	-13,70	-53,10	-25,00	-6,00	22,26
	Portuguese	1,89	7,87	-11,00	-10,00	-4,83
	Russian	-26,65	45,43	-12,00	-22,00	0,76
	Spanish	-19,22	21,75	5,00	135,00	-5,09
	Global	-17,59	4,92	-14,56	16,89	0,54

were in fact improved. This split seems to present better results than the Industry split.

This split once again shows that the Lead Time is drastically improved, with all industries presenting better results than in the Initial State.

Regarding the Time to Attrition metric, although the dataset possesses two clear outliers, which present significant reductions of the average Time to Attrition (40 and 50 days), the vast majority of industries present Time to Attrition improvement.

Regarding the Attrition Turnover metric, expressive positive results are withdrawn from this data split. All but one industry witnessed conclusive decrease in its results. One thing worth noticing is the difference between results taking into consideration the Market split and the Industry split. In the Market split Attrition Turnover was clearly decreased across the board, while with the Industry split some Industries present Attrition Turnover increase. This may be due to the fact that for this specific metric, improvement opportunities may surge with higher frequency if differences between Industries are considered instead of differences between Markets. Some type of information may be camouflaged by the segregation of Agents in buckets of Market, while being highlighted when Agents are included in buckets of Industry.

Regarding the Attrition Quantity, it is once again witnessed that the metric has deteriorated. However, and as said before, this metric cannot be analyzed on its own. The variation between the Initial State and Final State is negative. Although 66% of Markets present positive results there are clear outliers, which have increased the amount of people who abandoned CompanyOne. These outliers are significant enough to overshadow the positive Influence of the majority of Markets and the average global Attrition Quantity has increased from the Initial State to the Final State. Although this is a result which is contrary to what was expected by the improvement team, it can be explained by external factors, such as the increase in the hire volume of CompanyOne.

Once again, regarding the metric KPI Achievement, no concrete or conclusive improvement or deterioration evidence is found in the existent dataset. Some Markets present better results other worse. No evidence-based takeaways can be extracted from this dataset. This Market split analysis indicates improvement evidence, as did the Industry split. The Lead Time was drastically improved. The Time to Attrition and Attrition Turnover also show evidence of improvement. The Attrition Quantity presents signs of deterioration and the KPI Achievement does not present any relevant difference between Initial and Final State.

In Table 3.13, the implementation results according to a Team split are displayed. The five performance metrics are compared amongst the several Teams operating in CompanyOne. Out of the 20 individual values that were studied, 13 show evidence of improvement.

Table 3.13 - Metric Difference (from Initial State to Final State) (per Team).

		Lead Time (days)	Time to Attrition (days)	Attrition Turnover (%)	Attrition Quantity (#)	KPI Achievement (%)
Team	SP & IT Team	-11,44	18,57	-3,00	134,00	4,42
	FR Team	-16,48	10,01	-21,00	90,00	-1,90
	ROW Team	-12,48	6,30	-19,00	29,00	-4,26
	Porto Team	-7,46	45,09	13,00	120,00	0,73
	Global	-11,97	19,99	-7,50	93,25	-0,25

Regarding the Lead Time metric, all Teams show sign of improvement, however the Teams that showed better results were the French Team and the ROW Team, which is predictable, once these were the Teams with worse Lead Time scores at the time of the Initial State measuring. Besides the improvements presented in the Industry, Market and Team splits in terms of Lead Time, the fact that the Teams that most improved their Lead Time scores were the Teams that initially had the worst results, sheds light on the takeaway that the measures implemented by the improvement team in the "Do" sub-chapter, in fact improved the Lead Time metric

Regarding the Time to Attrition metric, a clear improvement is also presented by all Teams. Improvements from 10% up to 100% of the initial value were accomplished.

Regarding the Attrition Turnover, there are signs of improvement in all Teams but one. Porto Team presents 10% more Attrition Turnover than what it presented at the Initial State. The worst scored Teams in terms of Attrition Turnover were the ones who achieved the best scores in the Final State, going from being the worst two, to being the best two.

Regarding the Attrition Quantity metric, clear signs of deterioration are visible. All Teams have presented worse results in the Final State than the ones they did in the Initial State. Besides the Porto Team, all other Teams showed evidence of improvement in the Attrition Turnover, and the fact that the Attrition Quantity deteriorated in all Teams, means that although more people left CompanyOne, when considering the ratio of people that left the company for people that were hired actually improved. This is due to a big hiring volume by part of the Recruitment department.

On the other side of the coin is the Porto Team, which besides having increased the volume of Attrition Quantity, also increased Attrition Turnover, which means something is not right with the Porto Team. One reason for these results is that as the Porto Team did not have personal interaction with the improvement team, the Team did not develop engagement with the improvement team. Another reason for this is that Porto's Team hiring operation is internally managed, on the contrary of all other Teams which report to the same "direct" manager.

In terms of KPI Achievement, no takeaways are possible to be taken once the variation between States is very short and no tendency is shown.

In Table 3.14, the implementation results according to a Recruiter split are displayed. The five performance metrics are compared amongst the several Recruiters employed by CompanyOne (at the start of the project and that remained in CompanyOne until the production of this paper).

Table 3.14 - Metric Difference (from Initial State to Final State) (per Recruiter)

		Lead Time (days)	Time to Attrition (days)	Attrition Turnover (%)	Attrition Quantity (#)	KPI Achievement (%)
Recruiter	Recruiter SP&IT 1	0,83	52,82	-29,00	17,00	17,50
	Recruiter SP&IT 2	-21,65	80,76	-10,00	1,00	-7,11
	Recruiter SP&IT 3	-1,61	-1,50	15,00	-1,00	12,64
	Recruiter SP&IT 4	-15,67	10,83	-7,00	19,00	-0,53
	Recruiter SP&IT 5	-9,02	-	-	27,00	-1,51
	Recruiter SP&IT 6	-15,32	19,88	-2,00	41,00	4,77
	Recruiter SP&IT 7	1,00	55,80	22,00	-4,00	23,07
	Recruiter SP&IT 8	-29,79	41,17	1,00	34,00	7,30
	Recruiter FR 1	-23,72	35,02	-22,00	22,00	3,39
	Recruiter FR 2	-15,59	-3,09	-22,00	24,00	-9,45
	Recruiter FR 3	-14,12	0,96	-26,00	20,00	3,98
	Recruiter FR 4	-25,95	-0,61	-37,00	11,00	15,57
	Recruiter FR 5	-9,62	40,89	-15,00	13,00	-10,93
	Recruiter ROW 1	-3,58	30,91	-	29,00	1,24
	Recruiter ROW 2	-7,60	-4,29	-15,00	-13,00	-5,86
	Recruiter ROW 3	-9,65	1,32	-18,00	-1,00	-11,92
	Recruiter ROW 4	-22,85	35,13	-26,00	9,00	4,01
	Recruiter ROW 5	-31,38	8,73	-29,00	7,00	-1,07
	Recruiter ROW 6	-2,25	-12,43	-4,00	-2,00	3,31
	Recruiter Porto 1	-4,87	20,01	27,00	63,00	1,07
	Recruiter Porto 2	-13,83	51,91	-	25,00	-0,65
	Recruiter Porto 3	-10,09	167,16	40,00	-12,00	44,26
	Recruiter Porto 4	-19,93	68,04	4,00	45,00	-6,05

Out of the 111 individual values that were studied, 71 were seemingly improved.

Regarding Lead Time and as with all other splits, Lead Time was improved drastically from the Initial State until the Final State. Considering the Time to Attrition metric, it is possible to say that it improved in almost all Recruiters across the board. There were some exceptions to the rule but with no real impact or significance.

Regarding the Attrition Turnover metric, the improvements were also expressive in the majority of Recruiters. There are a few negative outliers, which are inserted in the Porto Team, which was already addressed in the previous split. The dataset shows that an impressive 20% decrease was found in several Recruiters.

The Attrition Quantity metric, will not be addressed in this analysis once it will not add any purpose or information to the conclusions to be taken in this project.

Regarding the KPI Achievement, although the dataset is still very scattered and patterns are not immediately visible, there are some peculiarities worth mentioning. Recruiter Porto 3 achieved an improvement of 44% in the average scores regarding monthly bonuses that he/she achieves. This can be explained by a change in Market of operation, or other external factors.

However for the purpose of studying the influence of the measures implemented on the KPI Achievement score, it can be said that it presents no influence.

In conclusion, the final takeaway worth withdrawing from this project is that the Lead Time was drastically impacted in a positive way by the measures put into practice. Once the Lean philosophy's main implementation objective is the reduction of process time, it is possible to say that this is a success indicator of the Recruitment improvement project. Regarding the Attrition Turnover and Time to Attrition, considerable evidence of improvement is also present, what leads the improvement team to say that these metrics were also positively impacted by the measures that resulted from the project. Regarding the KPI Achievement, no significant change was witnessed in the data, so the improvement team assumes the measures had no impact on this metric.

The metric Harver Assessment Score was eliminated from the analysis due to lack of adherence to the tool by the Recruiters and Management. This may indicate that more a suitable tool could be of use. The metric Attrition Quantity was not analyzed by itself, only being used as secondary way of comparing split granularity. Besides this, the metric showed signs of deterioration, but it was due to external factors (in this case, increased staffing necessities).

3.4 Act

The Act phase of the PDCA cycle includes three steps according to the methodology followed in this improvement project. These steps will be addressed and explained in detail, and consist in: Control Mechanisms, Company-Wide Roll Out and Documentation Hands Off.

3.4.1 Control Mechanisms

After understanding that the measures selected to be implemented in the Recruitment department impacted the performance metrics in study in a positive way (globally), is necessary to formulate the controlling mechanisms to make sure the changes made with the measures that were implemented are not lost after the improvement team leaves the process.

The implemented measures were divided in two groups. Measures that had as KPI, the Lead Time, Attrition Turnover and Time to Attrition metrics, and measures that had as KPI, the Attrition Quantity and the KPI Achievement metrics.

The measures that had as KPI, the Lead Time, Attrition Turnover and Time to Attrition are going to be grouped and a Control Procedure for each was developed. Those Control

Procedures are going to be presented in this stage of the methodology. The measures that have as KPI the Attrition Quantity and KPI Achievement will be left alone in this part of the methodology.

The measures that had as KPI the Lead Time, Time to Attrition and Attrition Turnover were:

1. Curriculum Vitae KO Procedure
4. Avaya Number Implementation
5. Job Overview and Job Offer Update and Automation
6. Hiring Documentation and W@H Requirements Training
7. Escalation Procedures on Outages Training
8. Operations and Recruitment Engagement Structure Creation
9. New Hire's Monthly Performance Results Sharing
10. Recruiters Alignment in Daily Stand-Up Meetings
11. Recruiter's Role Segmentation**

**Although the measure number 11 impacted KPI Achievement, the improvement team chose to specify a control mechanism for it nonetheless, once it also impacted Lead Time, which was the metric that showed bigger signs of improvement.

When understanding who should be left responsible for making sure the project does not slide back to its previous State in the different dimensions required, the RACI matrixes built for every measure in the stage "Solution Implementation Plan Execution" should be revisited in order to nominate points of contact for each measure. The control procedures for each measure are now detailed.

1. Curriculum Vitae KO Procedure

For this measure, the improvement team produced a document stating the criteria for the knocking out of a Curriculum Vitae and the due exceptions to be made. Along with the criteria of exclusion, the improvement team added in that document the auditing and calibration procedure for the measure. These audit and calibration procedures allow the improvement team to be certain that after the process is left on its own, the Management of the department/Team will be held accountable if unfit CVs are hired or contacted by the Recruiters, or if fit CVs are KO'ed with no reason.

The auditing and calibration process consists in a verification procedure of the knowledge that the Recruiters have about the KO'ing criteria of the CVs, while allowing the Manager to act immediately and supply training if any Recruiter slacks on those criteria. The

auditing and calibration procedure also allow the Recruiters to be working in the same standardized way.

The auditing process consists in a simple practice in which the Manager must choose a sample of ten CVs of each Recruiter (of his/her Team), and evaluate the way the Recruiter acted upon the specific CV. If the Manager evaluates the CV in another way that the Recruiter did, training must be scheduled and lectured by the Manager to the Recruiter.

The calibration process consists in a similar procedure, only this time to understand if the standard for KOing CVs is set inside the team and if everyone in the team rate the CVs accordingly. In the calibration the Manager must choose a sample of five unrated CVs and rate them him/herself. After classifying the CVs as KO or not KO the Manager must send the same CVs to the whole Team of Recruiters and have them classify the CVs. If opposite classifications than the one given by the Managers are given by the Recruiters, the requirements for the KOing of CVs must be revised. This procedure must also be done at least quarterly.

Both these procedures must be done at least once every quarter.

4. Avaya Number Implementation

This is a simple measure which requires a simple mechanism of control as well. For the maintenance of this measure and according to the RACI matrix built in the stage 7 of the improvement methodology, the Management of the process was left in charge of understanding quarterly if the number the Recruiters are using is in its correct form.

The confirmation procedure consists in the manager using the Recruiter's phone to call his/her own service phone to understand the form in which the Recruiter's number is appearing to the candidates. If the number by any chance appears differently than what is normal and expected the Management should act immediately. The responsibility of always maintaining a fit calling number belongs entirely to the Management. The format the improvement team decided to use to control this measure was an Excel sheet that just had one column (Phone Y/N) and the rows corresponded to the dates of the confirmation procedure throughout the different quarters.

5. Job Overview and Job Offer Update and Automation

This measure also requires a considerably simple control mechanism. In this measure, all Job Overview and Job Offer documents were standardized and its sending was automatized to some extent (when the candidate was inserted in a specific status in the Altitude platform, the

program sent the document automatically). The responsible person for the maintenance of the Job Overviews and Job Offers updated was the Management of the department.

For the controlling of this measure the Altitude Team was in charge of creating new and updating existing Job Overviews and Job Offers when necessary. Seldom will this necessity rise and for that reason, when it does the Human Resources were notified to warn the Altitude team every time a new client is closed or every time different administrative politics are implemented and salaries are changed. When that happens the Altitude simply has to change or add a few details in the program and it will automatically generate the desired documents, making the process much more efficient.

6. Hiring Documentation and W@H Requirements Training

The control mechanism for this measure is included in the control mechanism of measure 7 so it will be addressed along with it.

7. Escalation Procedures on Outages Training

Both this measure and measure 6 were a punctual event hosted due to necessity of the Recruiters. The control mechanism that the improvement team came up with to make sure that not only the positive changes witnessed in the process are not washed away and eliminated, but also to make sure the process keeps evolving and improving, the Administration of the department along with the improvement team decided to implement an annual agenda for the training of the Recruiters.

This agenda includes topics like the ones in measure 6 (Hiring Documentation and Work at Home Requirements) and measure 7 (Escalation Procedures on Outages), and also topics chosen by the Administration and Management of the process, like language refreshment training, accounting and financial training, fiscal training, amongst others. The records of these training sessions must be saved in an Excel sheet that was created for the purpose, in which it states, the topic of the training, who gave the training, for how long did he/she give the training and to whom, amongst other details. This sessions must be had at least once every year.

8. Operations and Recruitment Engagement Structure Creation

For the control of this measure, a protocol was made between the Operations department and the Recruitment department for the engagement of both departments during two distinct weeks throughout the year.

This engagement has the Administration buy-in so it will not fade out with the passing of time, however the control mechanism was still defined by the improvement team. The control mechanism for this measure consists in the development of the engagement structure, including defined venue, dates, topics to be addressed and participants at the beginning of each year. This scheduling is made through the official CRM software of CompanyOne to make sure the schedule is followed.

During the project, the planning of this year's engagement session (to be hosted in December, due to lack of other mutual availability) was performed and in January of next year the planning for the engagement of the summer of 2022 will be executed. Every January from this point on will be characterized for the month where the inter-department engagement framework is defined. The information about these measure will be hosted in CRM SAP Success Factors.

9. New Hire's Monthly Performance Results Sharing

This measure was put to practice by the reporting team of CompanyOne. The reporting team of CompanyOne made a development for the automatic extraction of the results of the New Hires during their first three months of work, and the sending of those results monthly to the Recruiters which hired the specific Agents.

To control this measure the improvement team decided to ask the reporting team if they could introduce an email trigger to send a notification stating that the results were sent to the correct Recruiters about the correct Agents. This way the process can be controlled and in case of some type of error, there is an external platform with the previous data. Like this, the Recruitment Manager (Administration of the process), by tip of the improvement team, created a new folder for this matter and the reporting team implemented the email trigger and as of the time of implementation, the Recruitment Manager receives monthly a report stating which Recruiter received the performance data of which Agent and what that score was. The Recruitment Manager does not handle this process daily but if a problem occurs he/she has accelerate access to the information.

10. Recruiters Alignment in Daily Stand-Up Meetings

This measure presents a simple but very effective control procedure. In the Initial State, the Recruitment Teams hosted too many ad-hoc calls for discussing the widest variety of matters.

The improvement team implemented the measure of having those calls eliminated and daily morning calls being arranged so there is not such a waste of time. The control mechanism implemented for this measure is that in each daily meeting someone random on the team (and a different person every day), documents what is discussed in the meeting. The document was predefined by the improvement team, and features, the topic(s) discussed in the meeting, the progress on the work of all team members, the responsibilities and duties for the day that is starting, the obstacles and road blocks encountered on the last day of work, the global expectations for the entire Recruitment department and what the individual role of each Recruiter is for this purpose, amongst other required and sporadic elements.

11. Recruiter's Role Segmentation**

This measure, although complex, presents a quite simple controlling procedure. When the Recruiters were divided into Teams, the Improvement team along with the Management of the process came up with two distinct metric system for impacting the monthly performance bonus of the Recruiters according to the two different job roles they are assigned. The metrics were developed and deployed taking into consideration work productivity, motivation and morale boosting techniques, while maximizing CompanyOne's objectives. Due to GDPR limitations, the metric system will not be addressed any further.

After the creation of the control procedure of the implemented measures is done, the ownership and responsibility of the measures and the process in its whole returns/is given to the Manager/Director of the process/department.

One annotation worth stating is: During the development of the control procedures presented previously, the improvement team decided that the best way to make sure the changes effectuated in the process are kept after leaving the process is by implementing evaluation metrics and targets for the Management of the process, once they are the people that are left responsible for the largest amount of control activities. This metric system should make sure that the Management's monthly performance evaluation is aligned with the maintenance requirements of the measures implemented.

Thought out evaluation metrics, if put in place correctly, are extremely efficient tools to guarantee process quality and effort by the employees. Although the improvement team considered the creation of these performance metrics critical to the success of the project, there was no buy-in to this idea by the improvement department's administration (with only the exception of measure number 11). For this reason, no controlling metrics linked with the monthly performance bonus of the staff were put in place for this project.

3.4.2 Company-Wide Roll Out

This is a step that normally does not figure in the PDCA methodology, but the improvement team decided to present it here due to the fact that, when speaking about big corporations a key differentiator from the competition is efficiency and thus, cost saving capacity. In big corporations one simple action can generate big returns or big penalties. That is why every implementation must be maximized in every aspect.

After conducting an improvement project on a specific activity/process/department, a company must reflect on, whether or not, there are other areas of the business that might benefit from the projects' resulting actions. There is always a possibility that certain departments/processes may present similar problems to the ones handled by the improvement team, but due to lack of visibility over the procedure undergone by the improvement team and the project's resulting actions, those departments/processes will remain unchanged. This highlights the benefit of a company-wide roll out of the project. Normally, when a company improves certain aspects of the business, departments/processes which were not subject to the improvement project are also impacted in a positive way, as a consequence of the implemented actions. One scenario where it is possible to say that an improvement project is not successful is when the actions implemented, impact other departments/processes in a negative way.

One thought every improvement team must have is to never implement measures that harm the normal functioning of other departments/processes. This is a clear indicator on the ability of the improvement team to find actual process improvement measures. Besides thinking about the positive aspect of the improvement implementation, the improvement team and the company must also reflect on whether or not the measures implemented in one department/process will affect others, both in a positive way and in a negative way. The company wide roll out is important to address exactly these aspects besides serving to give visibility over the project to other departments/people who did not have it at first.

A company-wide roll out of the improvement project encompasses several aspects that are benefic for the company as a whole. If every department has visibility over the improvement project, they can benefit from the measures implemented without the time loss of having to come up with the solution themselves. If a technological tool is implemented and can serve more than one purpose in one specific department, or amongst different departments, it

should be quickly leverage and capitalized by whichever other department has need for it. This helps reducing setup costs and maximizing return on investment.

For these reasons, doing a full scale roll out of the improvement project is almost always benefic and lucrative for the company in question. Although it seems easily accomplishable, it is not simple doing a successful roll out of a project as there are numerous rabbit holes a company can fall in. If the other departments do not have enough visibility on the motivations behind the processual changes in the department subject to the improvement project; if the other departments do have visibility over the implemented measures and its motivations but are carrying a big work load at the moment and are not able to give enough credit to the solutions; if they do understand everything and want to scale the solutions but do not have enough man power for the change, amongst other problems that one can face when Implementing this roll out.

For the many possible scenarios in which running a company-wide roll out of the project could go wrong, a company must be aware that one thing that can separate a procedure like this to go according to plan or not, is every employee having the notion that the things that are being changed are a positive change for everyone. For a well-managed Lean-oriented company, when costs are reduced and profit is increased, the employees must be impacted positively as well, as they are the people running the actual daily change. If they are not equally impacted for the changes they make daily, they will lose strive and motivation. The changes implemented will eventually lead to failure. However if they are fairly compensated, they will work motivated and proud. This are the single most important influencers in the performance of a company. Motivation generates good performance which in turn generates more motivation which generates even better performance. The people that do the daily work, make the company. Keep them motivated.

Employees must know that when coming forward with a problem in their department/process they are not going to be met with hostility and judgement but with understanding and will to do better and help. Employees are the key to successful continuous process improvement. If companies are able to capitalize their improvement projects and their employees, profit is purely a consequence.

The improvement team's way to do this roll out was the usage of an internal social network, a type of CompanyOne's own Facebook, to advertise the improvement initiatives ongoing in the company and the resulting actions in a practical and detailed way. This step of improvement methodology is aimed at exposing the project and, above everything else, its resulting outputs, so other departments of the company can analyze the study and learn from

it. For the case of the Recruitment department's study, the post was published in CompanyOne's social network, but to date no engagements were made, what goes to show the lack of adherence to these type of procedures inside a regular Portuguese company.

3.4.3 Project Documentation Hands Off

In this step of the improvement methodology, the practical part of the project is completed and the only thing left to do, is the categorical passing of the briefcase to the responsible people. The people addressed in the implementation plans and in the control procedures as responsible for the actions implemented, must one last time be mentored so the improvement team can move on to another project and the changes made during the improvement team's stay in the process are not lost or minimized.

During the Stakeholder Engagement Plan stage of the methodology, specific intervenients of the project were designated. These were the Stakeholders that had any type of input to add that might aid in the problem identification and solution development. These Stakeholders must be gathered all together one last time to give official closure to the project. In this session, the project must be summed up so every intervenient has complete visibility of all the actions and procedures undergone in the project. In this session it must also be addressed the implementation results of the measures chosen to be put into practice and the controlling procedures defined by the improvement team, not forgetting the way the changes will impact other departments or processes.

After identifying problems and developing solutions, the general Stakeholders defined in the Engagement Plan were then, more closely identified and Points of Contact were defined for the several different improvement measures. These are the Stakeholders that were responsible for the implementation of these measures and in a later stage for the control of its performance and suitability to the predefined standards.

These are the Points of Contact that will be responsible for maintaining the changes after the improvement team leaves the process. These Stakeholders must be evaluated by the ability to make the measures and changes from there resulting, last over time, through closely developed performance metrics. During this project, and by lack of CompanyOne's willingness to formulate and put into place these type of metrics, the improvement team did not implement any.

The three main takeaways in this stage of the methodology are: The entire Stakeholder workforce must be once again reunited so the process is officially closed, giving space for final

debate and feedback and for possible suggestions on future projects, while revisiting the entirety of the project; The people left responsible for the actions implemented must be evaluated on the maintenance of the processes as were defined by the improvement team at the end of the project, so the changes implemented are not lost; The improvement team must hand over all relevant documentation to the Project Owner at the end of the project, so he/she has visibility over every procedure undertaken by the improvement team to reach the conclusions.

CONCLUSION

This dissertation documents the usage of the Plan Do Check Act cycle in the Recruitment department of a Contact Center company. The implementation of the PDCA cycle was performed through an official 13 step project. The project had four distinct stages counting in total with thirteen corresponding sub-stages (Plan: 1 - Project Characterization, 2 - Stakeholder Engagement Plan, 3 - Process Characterization, 4 - Initial State, 5 - Problem Identification, 6 - Solution Development; Do: 7 - Solution Implementation Plan Execution, 8 - Solution Implementation; Check: 9 - Final State, 10 - Implementation Results Discussion; Act: 11 - Control Procedure, 12 - Company-Wide Roll Out, 13 - POC Hands Off).

This project had as initial goal of deeply studying and understanding the hiring procedures of CompanyOne, surfacing process flaws and problems, developing suitable and profitable solutions, creating sustained and realistic implementation plans and effectively implementing those solutions alongside mechanisms to control the behavior of the process along the way. For this purpose the improvement team decided to study data from the year 2020 and the year 2021. During this period two rounds of data collection were done; one for the pre-implementations State of the process and another for the post-implementations State of the process. For this study, the relevant splits of the data collected chosen to better depict the process situation were Industry (sector of business activity that the Agent which is hired will work for), Market (Language in which the Agent will operate in), Team (Recruitment Team the Recruiter belongs) and Recruiter.

The performance metrics chosen to evaluate the success of the project were Lead Time (Time a Recruiter takes to hire an Agent), Time to Attrition (Since the date the Agent starts working for CompanyOne until the day he eventually leaves), Attrition Turnover (Ratio of people that leave CompanyOne for people that are hired during the same time period), Attrition Quantity (Sheer amount of people that generate attrition) and KPI Achievement (Weighted score of monthly performance of the Agent that is hired during the first three months of work).

Following the structure of the improvement methodology, after defining the scope and boundaries of the project, creating an engagement structure for all Stakeholders, deeply understanding the process (resorting to side by side interviews with the Gemba workers (Recruiters) and Management of the process and also mapping tools to better grasp the process flow) and measuring the current situation in quantitative and hard data, the improvement team selected 11 problems as being the priority to be handled. Resorting to brainstorming sessions with the Management of the process 11 solution propositions were formulated. Implementation plans were built for every proposed solution and the solutions were implemented. After the implementation of the measures formulated by the improvement team, a time period of six months was given to understand how the process would react to the changes implemented. After collecting data during the duration of those six months, the data was analyzed. Impressive results were obtained.

Out of the five metrics in scope of the project three were undoubtedly improved (Lead Time, Time to Attrition and Attrition Turnover), one was not impacted in meaningfully enough way for conclusions to be taken (KPI Achievement), and one of the metrics was actually impacted in a negative way (Attrition Quantity), although it was also found that the reason behind this were external factors, specifically an hiring volume boost by CompanyOne, which originated more hires and eventually resulted in unfit hires and thus resulting in short-term attrition (Type of attrition in which CompanyOne cannot profit from the Agent).

After understanding that the metrics in study were impacted in a positive way by the measures implemented by the improvement team, the measures that had as a predefined KPI the improved metrics (Lead Time, Time to Attrition and Attrition Turnover), were selected and control mechanisms were put in place so the changes effectuated in this project are not lost after the improvement team leaves the Recruitment department. After defined the control mechanisms for the successful solutions, a company scale program was performed.

The Recruitment project was promoted across the company, in a short presentation with the highlights of the project (Problems, Solutions, and Results) to understand if there are any other areas of the company in which the same measures can be introduced. This procedure is what really maximizes an improvement project, by allowing the people that share problems to save time in identifying solutions for them. After the full scale roll out of the project, the project documentation and ownership was passed on to the responsible personnel.

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GANTT CHART OF THE RECRUITMENT PROCESS

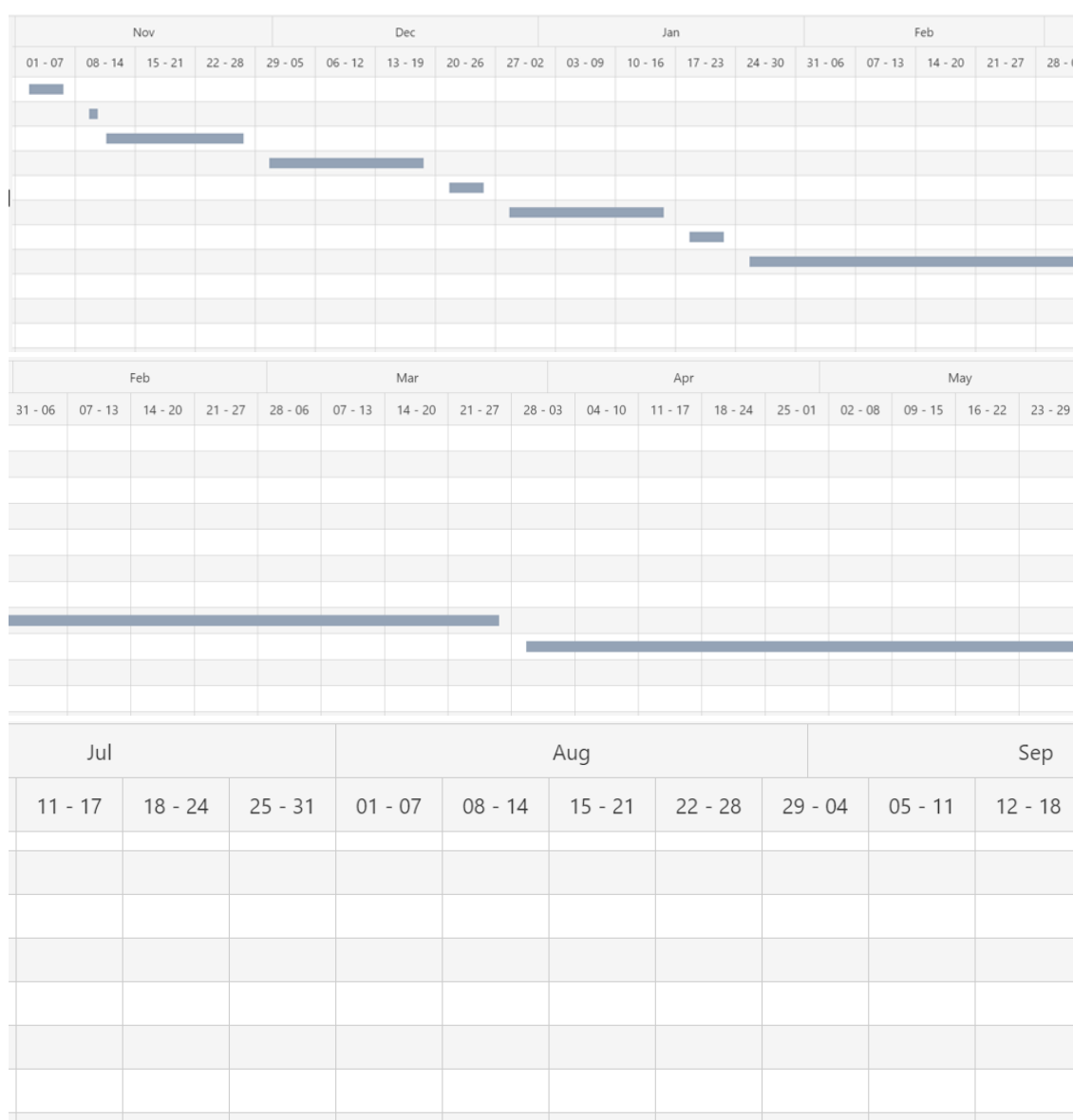


Figure A. 1 - Gantt chart of the recruitment process

BPMN OF THE RECRUITMENT PROCESS

SIPOC OF THE RECRUITMENT PROJECT

SIPOC				
Process Name: Recruitment hiring procedure			Project Name: Darwin	
Process Owner: Recruitment Manager				
Suppliers (Provider of the Input)	Inputs (Necessity of the Process)	Process (The description of the specific procedure)	Output (Result of the Process)	Customers (Receiver of the Output)
WFM	HC Requirement from Operations	ATR Creation	ATR Excel File	Site Director Talent Acquisition Recruitment department
Recruitment Coordinators Excel file	ATR Information	Recruitment Tracker Update	Recruitment Tracker Excel File	Sourcing Recruitment department Ops
Recruitment Coordinators SAP Success Factors	Details from ATR/Recruitment Tracker	Job Requisition Creation	Requisition ID Number of all existing open Job Requisitions	HR Recruitment department
Sourcing department	Available Applications from all Sources (BAF, Agencies, Job Boards, Internal, etc...)	Collect Applications from Sources	Job Applications ready for use by the Recruitment department	Sourcing department Recruitment department
Sourcing department Altitude	Job Applications ready for use by the Recruitment department	Log Applications in Altitude Software	Available Candidates in Altitude software	Recruiters
Recruiters Altitude Avaya	Pool of candidates from CV Screening	First Call	Decision to move to next phase	Recruitment department Sourcing department (in case of Agencies)
Recruiters Altitude Avaya Harver	Candidate doing the tests	Assessments + Job Overview + W@H Test	Decision to move to next phase Outbound call schedule Final Interview schedule	Recruitment department Sourcing department (in case of Agencies)

Recruiters Altitude Avaya	Pool of candidates from Assessments	Final Interview	Decision to move to next phase Necessary candidate information	Recruitment department Sourcing department (in case of Agencies) Candidates
Recruiters Altitude	Candidate sending the Offer Letter signed	Offer Letter	Outbound call with update to Candidate Email with Formal Offer to Candidate	Candidates Recruitment department
Recruiters Microsoft Shared Folder	Personal Documentation and CV NH Checklist Document Potential Bonus Docs	Onboarding Folders Update	Onboarding Info in the Recruitment folders	HR Welcome department Onboarding department
Recruiters Excel file	Basic Information from NH	Gradebook Filling	Excel File with updated information	Learning department Ops Onboarding HR Facilities
Recruiters Excel file	Technical Information from W@H Test (Assessment) & Information obtained in Final Interview	Equipment List Review	Excel File with updated information	Ops Onboarding Facilities
Recruiters SAP Success Factors	Associate NH with SAP SF Requisition ID	Job Requisition Update	Offer Accepted Status for NH	Recruiters Recruitment Coordinators
Recruiters	Select "Initiate Onboarding" in Boost	Pre-Hire Onboarding Process Start	Email to candidate with link to Onboarding Portal	Candidate
Recruiters	Email with instructions to complete Onboarding	Onboarding Process Conclusion	Finalized product. New Hire profile is created and sent to HR	Candidate



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