Managing the disparity of opportunities between junior and senior roles while also improving retention

Subtitle
A case study on why juniors are on the bench lacking opportunities and how this can be improved

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**Abstract**

The purpose of this thesis is to investigate how the process delivery teams can better allocate their junior and senior engineers to client projects. The focus is particularly on improving allocation practices for junior engineers. The studied company has noticed an increase in the number of unallocated junior engineers, leading to a feeling of dissatisfaction as well as to a drop in motivation. Similarly, on the other side of the spectrum, there is the possibility for burnout among overworked senior engineers, which started as one of the main assumptions of this thesis.

The first issue identified is the inefficient use of human resources in assigning projects to engineers of different seniority levels. At the time of writing, senior engineers are often assigned most of the work, while junior engineers remain unassigned. The lack of planning and strategy when it comes to staffing newcomers leads to a sense of not contributing to the company's goals and dissatisfaction with their work. This, in turn, can lead to the loss of highly experienced talent. A better strategy for the allocation of the personnel might therefore be needed to maintain work-life balance and keep experienced talent in the company. The research objectives are to revise and collect information about current allocation practices, identify their barriers and blockers, assess employee perceptions and ideas, collect information about best practices, and about talent retention strategies and turnover avoidance. To achieve these goals, a preliminary literature review will be conducted, followed by interviews with the employees to collect their perceptions and ideas on the allocation problem. Finally, their input is requested for finding out possible solutions to the issues mentioned. The study will also collect information on best practices for efficiently allocating talent to client projects. Overall, the aim of this thesis is to provide a better understanding of how to efficiently allocate junior and senior engineers to client projects and to identify strategies for retaining talent and avoiding turnover in the company. By doing so, this research can potentially improve the allocation practices of the delivery team and contribute to the long-term success of the company.

**Keywords**  workforce planning, cross-training, talent management, junior engineer, senior engineers, staffing, workforce agility, workforce flexibility
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Definitions and Abbreviations

CA – cloud architect
CE – cloud engineer
SCA – senior cloud architect
SCE – senior cloud engineer
PM – project manager
LP – launchpad program
DL – delivery lead
SR – staffing responsible
TL – team leader – a person that oversees multiple engineers or project managers
UL – unit leader – a person that oversees multiple team leaders
NC - Nordcloud
Introduction

My interest in conducting this study was based on my passion for management and for seeing the people I manage, and mentor succeed. During my engineering studies I have had previous volunteering experience in managing people (teams ranging from 5 people to 20+) and it has always been my aim to help them achieve their goals and develop themselves. Through the internship with Nordcloud I worked extensively within the staffing team, and I had the chance of analyzing and improving their current talent pool assignment techniques.

Through this thesis I wanted to discover the current assignment strategies used within the company, analyze them, and point out their strengths and weakness. I plan to further develop this through the literature research and see how talent management contributes to people’s growth, and client project acquirement. All of this aims at a better assignment and management of junior resources, while at the same time keep a balance between work and life for the senior engineers involved.

Topic, significance, and background

In a growing company that hires new talent and gets assigned more and more projects from clients, there can be a mismatch between the number of experienced engineers and the number of projects that need to be completed. (Cappelli, 2008)

Effectively assigning employees with targeted skills to specific projects has been presented as a challenge for a long time in IT companies (Pruis, 2011). They depend on their resource pool to carry out the previously agreed promises by the sales team and sometimes fall short to deliver. For a company to be successful in a highly competitive market like IT, they need to have a strong grip on their allocative ability, being able to notice the changes in the market and appropriately reallocating, training or hiring their resources. (Lawler, 2008)

Efficient allocation of resources is highly dependent on the company’s ability to keep up with the never-ending changes in the market and to design a strong strategy for resource allocation and planning. As mentioned in (Cappelli, 2008), getting the number of new hires mismatched with the current demand costs money, while getting it right means having the right skills at the right time, therefore making money. Having the people available in the company at all times can bring money in for the company, but also lose them if the employee leaves or if they are not needed on any project and there is no plan in place for them.

It is often apparent that Talent Management has been around for a long time. Companies are supposed to be aware of best strategies and tactics and efficiently manage and assign their people at the right time to the right project. However, this is not the case (Eva Bostjancic, September 20018), many companies still lacking basic knowledge on the topic. Talent management is therefore tightly linked to the assignment strategy and management of both junior and senior resources, the precise issue Nordcloud was dealing with during my internship period.

While resources can be of various types, this thesis focuses on human resources as in the engineers working in IT and IT consulting companies that are the key element for carrying out the projects agreed upon between the sales department and the client. More specifically, the study presented in this thesis was done in a cloud service providing company, with a focus on
About the company

Nordcloud formerly started as SC5 back in 2006. The company was initially created by several people passionate about Cloud-Native Applications and Cloud Infrastructure that wanted to promote these services to the broad public.

In 2011 Nordcloud was kicked off to conquer the Cloud Infrastructure market. Since then, the company has seen a fast growth, aiming to delivers cloud infrastructure solutions and services. Through this they helped customers gain as much benefits as possible from the cloud. This includes agility, security, scalability, and overall increased cost savings.

It was interesting to discover that the company was supported by EIT Digital between 2014 and 2015, joining the EIT Digital Accelerator Future Cloud. EIT Digital helped the company secure a funding investment from Finnevr which helped the company expand its market further into the Netherlands, UK and Germany. (Digital, 2016)

At the end of 2020 the company has been acquired by IBM and it has seen exponential growth ever since. Today the company has more than 750 employees and has done more than 1000 deployments with almost 20 offices around Europe.

The company’s values are well imbedded in its culture and are often reminded and promoted amongst the employees:

- We move fast and get things done
- We push and respect each other to deliver great results
- We do what it takes to be the best in the world
- We disrupt old ways of working to change the game

The Launchpad Program

It is needed to explain and briefly describe what the Launchpad Program (previously known as TAP – Talent Acceleration Program) is as many of the new junior engineers joining the company go through this before getting assigned to client work.

Nordcloud Launchpad is the umbrella of accelerated training programmes providing an opportunity for passionate individuals to launch their career in the public cloud. These programmes are designed and organised for different target groups with unique outcomes for individuals. There are two main programmes offered:

1. **Launchpad Graduate Programme**
   The Graduate Programme is an entry level programme under the Nordcloud Launchpad umbrella, created especially for recent graduates with less than 2 years of industry experience. It is an 18 months long programme that provides a unique career development opportunity with full-time employment, in the most cutting-edge technology sector.
2. **Launchpad Advanced Programme**

The Advanced Programme is a programme created especially for mid to senior level industry experts with minimum 5 years of experience in IT. Here the participants fast track their careers into the cloud through a 4 months training and development programme.

Both programmes have different phases and milestones for the people accepted. However, describing them in great detail is beyond the purpose of this thesis. Nevertheless, both tracks benefit of interactive classes, mock projects, and self-study opportunities. Moreover, there are official courses and certifications for the chosen hyperscaler as well as a mentor to guide the new joiners through the learning process.

After finishing the Launchpad Program, the freshly graduated can start doing client work in a variety of roles: Cloud Engineer, Managed Cloud Engineer, Application Developer, Cloud Architect and more.

One last thing to note is that most of the times the freshly graduates, especially coming from the graduate program do not go straight to client project. Rather, they follow with a few weeks/months of shadowing work.

The shadowing process is meant for the freshly cloud specialists to actively assist a senior engineer on a current client project. They are onboarded alongside a mentor for an ongoing client project and are tasked with helping the senior (may it be engineer, architect or developer; from now on the term “engineer” will be referring to the whole umbrella of cloud technical roles present inside the company) in doing some of their smaller tasks. This offers the junior the opportunity of learning what it is like working on a real client project. They get hands-on practice, being continuously supervised by the senior in charge. Through this, they can earn the trust of the client so that after the shadowing program they will be fully onboarded to the respective project.

The shadowing program is not only useful to the juniors, but also to the potential client. The new joiner can help the senior engineers with their more tedious, lengthy, and repetitive tasks helping them focus rather on the more technically advanced work. Another advantage for the client is often either the reduced price of the junior or no cost at all until the juniors prove themselves and their knowledge.

At the time of writing the thesis, there was no well-defined strategy or concrete plan for the shadowing program in Finland. The engineers, PMs, and clients were not fully informed about the program, which could cause confusion, uncertainty, and issues when assigning people to it. During my internship, I personally experienced this and was encouraged by the Delivery Lead to include survey questions related to this topic in my research.

As this is one of the assignation strategies for engineers present in the company, the shadowing program proved to be of great importance during the assignation process especially for the junior engineers. I have therefore decided to also investigate this during the interviews and see how the client sees junior roles and what might be some of the problems within this specific process in Nordcloud.
The problem

The research problem has become an area of interest to the company when they noticed an increase in the number of junior engineers unallocated. The company has been growing exponentially after the IBM acquisition and the hiring process has ramped up accordingly. However, there seemed to be a discrepancy between the number of people hired and the number of engineers assigned, especially in the junior ranks.

One of the issues noticed with regards to the resource allocation is the disparity of projects between the extreme ends of seniority levels for the engineers. There is an inefficient use of the human resources in the assignment to client process delivery projects. This implies having the most experienced engineers doing most of the work while the novices are on the bench unassigned.

While the newcomers need to be trained the ins and outs of working in the company, the more experienced engineers get assigned most of the work. While the juniors need to be taught the technologies needed in order to work on a client project, the seniors are overbooked, being sought after by most of the project managers (PMs) to get enrolled for their own specific client.

The lack of strategy and planning when it comes to staffing those newcomers leads to dissatisfaction with one own’s work as well a sense of not contributing to the company’s goals. (Yang, 2006) Furthermore, the senior engineers also can suffer because of this, leading to potentially losing experienced talent. Maintaining work-life balance is a key element in Talent Management success as per (Deery, 2008). This can improve turnover rates and keep hardly earned talent. Therefore, overworked senior engineers might benefit from a better allocation strategy.
Purpose of statement

This paper will examine the different techniques and strategies for efficient resource allocation, with a focus on the two extremes of the seniority levels when it comes to the engineers (e.g., junior cloud engineer – senior cloud engineer). The focus however will be the junior engineers, as they seem to suffer the most from a lack of assignment opportunities as per the interviews and surveys conducted.

To construct this, the specific structure of the thesis needs to be mindfully decided. (Writing A Literature Review For An Applied Master's Degree, 2017, ss. 5-7)

<table>
<thead>
<tr>
<th>Research</th>
<th>Historical</th>
<th>Conceptual</th>
<th>Methodological</th>
<th>Applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examination of a practice or application – an evaluation of existing practices or assumptions</td>
<td>How has this practice or application been viewed, evaluated in the past?</td>
<td>On what theoretical and conceptual frame is this practice or application based?</td>
<td>What methodological approaches and methods have been used to examine this practice or application?</td>
<td>When was this practice first developed? How is this practice applied? How has this practice changed over time?</td>
</tr>
<tr>
<td>Examination of a practice from a historical perspective</td>
<td>When was this conceptual or theoretical framework first developed? How has this conceptual or theoretical framework changed over time?</td>
<td>What theoretical or conceptual frame is used to examine this issue? Have these theoretical and conceptual frames changed over time? If so, in what ways?</td>
<td>What methodological approaches and methods have been used to examine this practice? Have these methodological and conceptual frames changed over time? If so, in what ways?</td>
<td>What does the research indicate about this practice currently and over time?</td>
</tr>
<tr>
<td>Examination of a conceptual or theoretical framework.</td>
<td>When was this conceptual or theoretical framework first developed? How has this conceptual or theoretical framework changed over time?</td>
<td>What theoretical or conceptual frame is used to examine this issue? Have these theoretical and conceptual frames changed over time? If so, in what ways?</td>
<td>What methodological approaches and methods have been used to test these theoretical and conceptual frames? What has the research indicated?</td>
<td>What practices have grown out of these conceptual and theoretical frames?</td>
</tr>
<tr>
<td>Examination of a methodological issue or practice</td>
<td>When was this methodological issue or practice developed? What were the historical circumstances surrounding its development? How has this methodological issue or practice?</td>
<td>What conceptual and theoretical frames inform this methodological issue or practice?</td>
<td>How has this methodological issue or practice been applied? What are the results of these applications? Has this changed over time? If so, in what ways?</td>
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Going forward, the type of thesis will be centered around 2 main writing methodologies.

First, “Examination of a practice or application – an evaluation of existing practices or assumptions” – which aims to analyze the current practices inside Nordcloud and identify possible issues and weak points as well how the existing strategy is designed and constructed. This can help in further making suggestions based on the best practices and strategies identified through the literature research.

Secondly, “The examination of methodological issue or practice” – which focuses on discovering and analyzing the already existing and implemented best resource allocation solutions. These will be further compared and discussed and possibly based on this identify suitable solutions for Nordcloud.

Research Goals

This section is one of the base pillars of the study, given that everything that is about to follow during the literature research as well as during the interview will be based on the aim and objects defined in this chapter. (David Evans, 2011)

Aim:

This thesis aims to investigate how the process delivery teams can better and more efficiently allocate their junior and senior engineers to client projects. The focus is however on junior engineers.

Objectives:

1. Revise and collect information about the current allocation practices of the delivery team as well as the motivations and intentions behind them
2. Identify the barriers and blockers that lead to a lack of opportunities for the junior and senior engineers
3. Assess employees’ perceptions and ideas with regards to the allocation problem & possible solutions
4. Collect information about best practices in efficiently and effectively allocating junior and senior resources for client work
5. Collect information and possible solution on how to avoid the engineers from quitting the company and retaining them long-term
Research questions and sub-questions

The formulation of the research questions and sub-question can only be done after conducting a preliminary literature research. At the same time, while writing them, the main goals and objective of the thesis need to be considered as this will be the basis of both the literature research as well as of the company interviews. (Sharon M. Ravitch, 2017)

The research questions and sub-questions are as follow:

1. How are the employees usually managed for allocation and assigned to projects?
   1.1. What are the motivations behind allocating an employee to a specific project?

2. What are the barriers and facilitators of efficient allocation practices for junior and senior positions?
   2.1. What are the barriers in efficiently allocating talent?
   2.2. What are the best practices for efficiently allocating talent?

3. How to retain talent and avoid turnover?

Research framework

The framework presented in this chapter will highlight and link the concepts discussed during the literature review with the information gathered while working in the company and during the interviews and surveys conducted. The latter were specifically designed with the research questions in mind, aiming to concisely provide answers to them and to reach the aim of this case study.

The following section will introduce the topics further discussed during the literature research and corelate them with the research questions and the interviews and surveys conducted.

According to (Talent management in the new business world: How organizations can create the future and not be consumed by it., 2011) the most critical initiatives that determine if a company fails or succeeds are the acknowledgement of the need for a balanced number of talents as well as their efficient management. Without properly identifying the needs a company has for acquiring and retaining new talent they might lose in the face of competitors in the current competitive business environment.

However, the main reason for the importance of talent management is the successful attraction and retention of talent. (Mahan Poorhosseinzadeh, 2013) This is followed by the employees’ engagement in the company being directly impacted by the way they are being managed. The two main reasons according to (Hughes J., 2008) quickly became the main reasons for a company’s success or failure and it has soon transformed the concerns of organizations.

This topic is directly related to questions 2 and 3 as the aim is the discovery of using better talent management strategies. Nevertheless, the fact that the junior engineers are on the bench means that this topic should be further investigated, leading to a sub-theme of Talent Management, namely Workforce Planning. Workforce planning is the first step in creating a strong talent management strategy and therefore the main topic of this research.
A good workforce management is important due to the need for improvement in what regards the process planning and in creating a pipeline for future roles. (Byham, 2002) This is directly related to the growth opportunities presented for junior engineers discussed in this thesis. A proper management of the employees can lead to a higher number of proficient engineers that would feel the work gaps. It is also important to analyze the topic of workforce planning so that there is an improved retention and lower attrition rates. (McCartney, 2006)

This topic is related to the second and third research question and is complimentary to the first literature topic reviewed.

Having worked in this department for more than half of the internship, as well as having seen first-hand its implication in engineers’ allocation, the staffing management topic needs to also be discussed during the research. While we experience a shortage of skilled workers in Finland (Employment, 2022), the technology changes and evolves constantly creating more need for qualified talent. It is therefore the more important to have a good staffing strategy when dealing with junior and senior engineers so that the company can best match their skills to the demand at hand.

This topic is directly related to all three questions, and I aim through the literature research as well as through the interviews conducted with the staffing coordinators to discover both the blockers as well as possible solutions to the assignation issue.

As the assignation of engineers to projects is done in cooperation with the project managers, this should also represent one of the main topics studied during this research. It is important to also analyze their impact as well as their role and incentives in the assignation process. This is related to the first two questions of the research and will be done through the interviewing of the project managers as well as through investigating some of the best practices when it comes to staffing for PMs through the literature.

To conclude this chapter, the research questions will be correlated to the literature review as follows:

![Image of a diagram showing the correlation between workforce planning, workforce agility, workforce flexibility, cross-training, question 1, question 2, and question 3]

Figure 1: Literature review correlated to the research questions.
Research Assumptions

An assumption is something that a person accepts as true without question or proof. (Dictionary, n.d.) In the context of a thesis, the research assumptions are statements that are considered to be true by the writer of the thesis even though they have not yet been scientifically proven. They are generally based on pure logic reasons, without any proof or verification.

In order to build a foundation for the survey and the research itself, the writer need make the respective claims. “One most assume something to discover something” (Peligro, 2015). Once being tested, the assumptions help enhance the body of knowledge for future professionals.

Together with the research questions the assumptions form the basis of the surveys and interviews conducted in the thesis. Moreover, the literature research is also based on the two, leading to a better guided and more structured study.

All the assumptions are so called “common-sense assumptions” that have been constructed from personal observations and experience. The interview questions where the assumptions are tackled have been indicated between brackets. Some questions are directly related to the assumption presented, while others just slightly indicate or suggest potential correlations.

The research assumptions are the following:

1. The junior engineers face various problems in finding client work, spending a long time unassigned, “on the bench” (Q2, Q3, Q4, Q6, Q9, Q10)
2. The senior engineers are overbooked and have high stress levels because of it (Q5, Q6, Q13, Q14)
3. Project managers are mainly looking for senior engineers to assign to the projects (Q1, Q2, Q5, Q6, Q13)
4. The client doesn’t know or understand the benefits of having junior engineers (Q3, Q4, Q9)
5. There is a competition between project managers to get the best resources possible (Q1, Q2, Q5, Q6, Q7)
6. While assigning an engineer to a project the KPIs are based on time, cost & quality - SR and PM case (Q1, Q2, Q3, Q5, Q6, Q13)
7. There is a project allocation plan before the juniors graduate from LP (Q8, Q9)
8. There are communication issues within the company when it comes to the allocation of talent (Q11, Q12)
Limitations

This thesis research will not include the topic of forecasting and the reason why people were hired for the current positions neither the best strategies for finding and acquiring new talent. This is due to the personal interest of the company in solving their current staffing problems with the people they have right now.

Possible improvements to the future of the hiring process and its needs forecasting are taken into consideration by the employer but left to be decided in a future study.

Furthermore, the focus of the study is rather on the junior positions than on the senior ones. This is due to the employer’s goal of getting the juniors off the bench and avoiding attrition and hiring new batches of people. Nevertheless, the senior position topic will also be briefly discussed in the following chapters.
Review of Literature

Introduction

In engineering consulting firms, the most important assets for the firm are the people working there (e.g., engineers) and the outcome produced by them. The company is successful when the management can maximize the efficiency and productivity of their employees’ time (Nasreddin Elmezaini, 2015).

When the employee’s time is used efficiently and their productivity is maximized, then also their billability rate is increased, bring more revenue for the company. A lack of work in the company will lead to a lower billability rate due to the inadequate amount of work for the employees. (Nasreddin Elmezaini, 2015)

The mismatch of work opportunities with regards to the number of employees (Cappelli, 2008) has also a great impact on the engineers themselves. This can not only drive hardly acquired talent away from the company, but it can also demotivate and stall the ones that decide to stay. On the other hand, the most senior of the engineers can have too much work on their hands which might lead to burnout and too much stress. Such problems can often be solved through better managerial practices and strategies.

This literature research aims to review some of the best practices and strategies for efficiently managing the allocation for engineers in consultancy firms. Furthermore, it also aims to find other beneficial activities that could be complimentary to the allocation of engineers and would help avoid attrition. They could either compliment the allocation strategies or they could precede them, facilitating the possibility of being allocated sometime in the future.

Methodology

1. Keyword selection

To organize the literature research as well as find the sources needed for it, an initial preview has been done. Initially this was to better understand what the research in the area is and what topics and key words best describe my goals and subject of choice.

In order to structure and gather the information in an organized manner, the following keywords from different literature areas related to this thesis’ topic of interest have been investigated: “workforce planning”, “talent management”, “workforce training”, “workforce cross-training”, “talent pool management”, “staffing”, “workforce agility”, “task scheduling”, “task assigning”, “personnel assignment problem”, “S&OP”, “demand planning”, “operations management”, “forecasting management” and many more.

While defining the final topic of the thesis and deciding on the exact literature, some of the topics researched were excluded from the study. There was extensive literature research and reading done on S&OP strategies, Demand Supply and Forecasting Management, but after a few months of hands-on work in the company I was able to better identify the problem, the company was facing and its characteristics.

As the company is dealing with their people being on the bench either demotivated due to the lack of work or exhausted from the high amounts of assignments, the problem I will tackle
doesn’t involve any hiring process of the engineers. The preoccupation is with the employees already working for Nordcloud and solving the problems that they are facing at this moment in time. This led to the exclusion of the aforementioned topics as they do not serve the purpose of this thesis’ problem.

2. Gathering the data

While searching for the keywords and different literature relevant papers, I used various databases for journals, articles, and books. A few of those are Google Scholar, Aalto-Primo, EBSCO, JSTOR, EconLit and Inspec. These specific databases were chosen due to their variety of articles and relevant scientific papers.

3. Evaluation and selection of resources

While evaluating and selecting the resources for the literature review, I made sure that the articles used were credible, having a high citation count (e.g. Google Scholar). This count positions an article them amongst the most influential ones in the field, making it very relevant to my study.

Furthermore, while going through the different scientific papers it is difficult to cover everything and remember every piece of information needed. Therefore, the following questions were taken into consideration while picking the literature reviewed:

- What is the main problem the author is trying to solve?
- What is/are some of the main concepts presented and how are they defined?
- What are the key methods and theories used in the research?
- What are the results and conclusions of the study
- How is the article contributing to my thesis topic’s problem and understanding?

Finally, the practical review of the literature needs to be organized in such a way that the connections and relationships between the sources are made evident. Therefore, to make the arguments for the literature, I followed the different trends in theories and results, as well as the contradictions and debates between the various sources. The main themes or topics were also taken into consideration, checking for recurring questions across the literature, as well as for the gaps in it.

4. Structure of the literature review

The literature review part of the master’s thesis can be planned out and structured in a variety of ways. It can be organized in a theoretical, thematic, methodological, or chronological way (Robertson, 2022). However, in the case of this thesis I decided to organize the literature in a preponderantly thematic way.

The choice is due to the recurring central themes discovered and the personal interest in diving deeper in one specific subject and learning more about its utility to this thesis’ topic.
Talent Management and Workforce Planning

Managers need to face on a daily basis the planning tasks of their own workforce inside the company. This proves to be one of the most cumbersome issues a manager must deal with (Bruecker P, 2015). This problem is specifically aggravated by the rapid growth of the company and increase in the number of employees.

A similar point of view is also presented in (Cotten, 2009), which outlines the importance of having a strategy for the human capital inside the companies. (Cotten, 2009) argues that the human capital is “arguably the most important determinant of an organization’s ability to sustain long-term success”. The opinion is backed up by (Lavelle, 2007) which emphasizes that the employees of a company are an invaluable resource that can drive the company either up or down.

It is therefore agreed amongst the literature that the employees’ unique skillsets and their efficient management are the driver for a company’s success.

This begs the problem that a business model relying on human capital leads to an increasingly dynamic environment. Company managers are faced even more with the corresponding issue of efficiently staffing and planning their people (Bruecker P, 2015) efficiently inside the firm.

Introduction

The human capital working in a company is the main component driving the business goals. Without its proper management, the organization’s strategic intents will not be aligned with the key component that drives them. More precisely, “strategic intent” is defined as the plan that the leaders of a company have for that company’s growth (Robert M. Emmerichs, 2004). To keep a company’s goals on track and to align the human resources with the company’s goals, a planning of the workforce is needed.

Workforce planning is the key strategic activity that if done properly can help align the organization’s human capital with the business intents and goals (Cotten, 2009). This means that having the right people for the right job at the right time is a must for ensuring the company’s achievement of its goals and mission.

Having the right people for the right job is highly dependent on the person’s skills. Certain tasks require specific skills that only a small part of the employees possess. Moreover, the skill level might vary even more which makes the pool of talent even smaller to begin with. The quality, efficiency, and speed of work can be a few of the aspects a company tries to improve. These increase the difficulty of the problem even more, as people’s performance differs based both on the situation and on their skill levels.

(Bruecker P, 2015) argues that differently skilled employees may mean different costs for the company. He argues that the problem is the more difficult when considering the mixing of skills, team working or learning and cross-training effects. They can drive the company to either a negative or positive outcome, all depending on the quality and efficiency of the management involved in the process.

Workforce planning isn’t new to the world of management and economics. While the idea has been constructed early 1975, it has started being incorporated into human resource management
in the late 1990s (Doug Goodman, 2015). Numerous studies have indicated since the early beginnings of workforce planning that its execution was not done properly. It starts with the 1993 survey from the Society of Human Resource Management where it was found that 60% of the companies did not have any workforce planning process in place at all. At the same time, the 1994 study organized by the Public Management Association for Human Resources showed that only 37% of respondents had a workforce planning process in place.

Research shows that even decades later workforce planning is still not prioritized neither in local governments, nor in private businesses (E.H., 2007; W.S., 2009; Johnson G., 2004). This is agreed upon also in (Lavelle, 2007), which emphasized the underutilization of workforce planning while the need for strategic workforce planning and execution has reached a maximum high due to the turbulent and aggressive market.

The current market is fierce, businesses all over the world needing qualified talent. Therefore, when a firm manages to attract such talent, it is important to keep them and plan them strategically both for the company’s growth as well as the employee’s development and job satisfaction.

While (Lavelle, 2007) mentions that companies do not generally function on formal processes, but rather on heuristics that just mimic a stable process, (Tichy N., 2007) mentions that many of the decisions in a company are based on “judgement calls” rather than steady processes. To better explain this idea, an explanation is needed for the term “heuristics”. The (Dictionary C., 2022) defined heuristic as “a method of learning or solving problems that allows people to discover things and learn from their own experiences”.

Dealing with the day-to-day activities and planning in such a way is obviously an issue for any business that drives its growth from the human capital. There is a need for strategically planned processes and follow-up action.

Problem

In the literature there are multiple problems presented when it comes to workforce planning. However, in this review I will only focus on those related or tangential to professional services.

Critical players in the 21st century, professional service firms have become one of the main groups that shifted their model away from the manufacturing-based industry to the knowledge intensive industry (Vincent Hargarden, 2015). These firms involve unique and adaptable activities that are mostly based and dependent on the human resources. They “sell expertise” rather than a physical product itself.

Therefore, in the professional service firms, some of the organizational problems of workforce planning are:

1. Ability to adapt and react to changes appropriately and in a timely manner – it is important to take advantage of the benefits that come with change as well as avoid the downsides involved. Workforce agility is a concept presented in the literature that aims to solve this issue.
2. Training and cross-training strategies for the employees – when a person is not fit for a job or there are simply no opportunities at that specific moment in time, there is a need for finding a different solution. Training, mentoring, and cross-training of the
employees can be one of the solutions. However, this raises the problem: How do you plan this accordingly?

3. Lack of models and analytic tools for measuring – there is a need for a model to follow with well decided best practices and guidelines.

4. Personnel assignment problem – the staffing of a multiskilled workforce is not a straightforward issue to solve as it involves many variables that need to be taken into consideration such as skills, opportunities, personality, interests etc.

There are certainly more problems when it comes to workforce planning such as time management, initial staffing (e.g., employment) or forecasting, but in this literature research only the ones related to Nordcloud’s problem will be discussed.

Workforce Agility

As there are no sure markets anymore due to the global growth in competition, companies all over the world in nearly all sectors need to find a new model to improve their business strategies. This model must include multiple dimensions such as quality, delivery time, cost, variety of products as well as efficient operations tailored to the customer’s needs. (Wallace J. Hopp, 2010) calls this level of efficiency and flexibility combined with the achievement of company objectives “production agility”.

This can be divided in three different parts (Malecki, 1996): inter-firm relations, firm’s resources and infrastructure and workforce agility. The concern of this chapter is on the latter, as workforce agility includes both the permanent and temporary workers of a company, flexible working hours, overtime, training, knowledge, and the effective use of cross-trained workers (Narendar Sumukadas, 2002).

The lack of agility has been previously reported as one of the main reasons for a company to not be able to keep pace with the ever-changing business environment. Despite the growing need for agile workers and a workforce agile planning, there still seems to be little focus on this topic. (Somaieh Alavi, 2013) The research on the topic is narrow and the focus given to workforce agility planning inside companies is minimum.

According to (Somaieh Alavi, 2013; Chonko L., 2005) a cross-trained agile workforce shows two main important characteristics:

1. They have the capability of recognizing opportunities through change and take advantage of them to turn them into benefits for the company.
2. They can adapt and react to incoming changes appropriately and in a timely way.

While it seems that more and more of nowadays solutions are technology based, (Gunasekaran A, 2002) argues that for a workforce to be agile they cannot fully rely on technology. He argues that the employees of the company need to be trained to use the technology that would help to cope with the dynamic, ever-changing environment.

Helping the employees transform from a traditional workstyle and mentality to a more agile, challenge resilient workforce is a complex process. This can not only prove time-consuming, but also costly for the company. To generate maximum competitive advantage in a dynamic environment, any changes require careful planning, communication, and cooperation with the employees.
Available theoretical foundation

While the need for a workforce agility strategy and planning is clear and evident, there is still a distinct need for research focused on the strategic management of workforce agility to drive the success and growth of an organization (Ruwen Qin, 2015). In the literature there are however a few existing theoretical foundations that have been summarized in (Ruwen Qin, 2015) based on the literature available until 2014.

In the following I will briefly mention some of the theoretical foundations existent on workforce agility only in the domains of interest for a human-capital dependent service firm.

1. Agile Manufacturing, Organizational Agility and Enterprise Agility: while agility has been a main focus in the manufacturing domain for over 25 years, the literature indicates multiple characteristics for an agile workforce. While (Gunasekaran, 1999) emphasizes a) IT skills; b) knowledge with advance manufacturing strategies and technologies; c) flexibility d) good teamwork and self-directed work and e) empowerment, in (Sharifi H, 1999), Zhang and Shafiri mention that agility is defined by competency, flexibility and responsiveness. They suggest that an agile worker is competent and efficient while also being able to respond fast to changes and adapt quickly to any new environments and situations. Others seem to also emphasize the need for good teamwork and cross-unit coordination, while also agreeing with the former authors mentioned.

2. Operations Management: The main interest with regards to workforce agility in operations management is directed to creating a flexible and collaborative environment. (Van Oyen, 2004) built a strategic assessment framework that highlights the importance of cross-training when building an agile workforce. Hopp and Van Oyen underline some of the benefit of cross-training as a) being a higher labor productivity which in return leads the company to achieve its objectives while also minimizing costs; b) by optimizing cross-training, the responsiveness and flexibility of the employees is increased leading to increased task speed, less congestion and less hand-off times; c) the improvement in match-making between the worker and the task also improves the quality of the work done; d) doing cross-training for a company’s workforce leads to a higher variability in opportunities for the employees as the task boundaries are extended and the workers’ flexibility is higher. Finally, Van Oyen and Hopp also mention that the efficiency of the training is important, as well as the measurement of the employee’s efficiency in performing the tasks themselves.

3. Human Resource Management: There are multiple similarities between operations management and human resource management related to workforce agility. However, while operations management focuses on the broader picture and the overall allocation of resources within the company, human resource management targets individuals and their behaviors (Ruwen Qin, 2015). Ruwen Qin reminds that some of the theoretical development in human resource management is due to the research in workforce agility. He mentions the work by Shafer and Dyer (Shafer R.A., 2003) where the two summarized the attributes of an agile workforce and identified 20 competencies that they grouped in five categories: a) Agile workers are proactive in identifying risks and opportunities; they deal with this by having the right resource in the right place at the right time; b) agile workers are willing to be assigned to other places when needed at the right times c) agile workers are great spontaneous collaborators; d) agile workers
are innovative and improve traditional solutions; e) agile workers are knowledge driven and learn new concepts quickly. Later, Dyer together with Ericksen (Dyer L., 2006) introduced a new term “workforce scalability”, defined as “the evolution of human resource configurations on four dimensions” (Ruwen Qin, 2015) as follows: a) worker hours; b) the employee’s skills and knowledge distribution through a matrix representation; c) pattern of workforce assignment; d) the value that the employee brings to the organization. Dyer and Ericksen further divide the workforce scalability in 2 main parts: a) workforce alignment which deals with having the right resources for the right project at the right time and b) workforce fluidity which deals with the speed of transitioning an employee from one project/configuration to another.

4. Information systems and technology: In the domain of information systems and technologies there were also studies with regards to the main characteristics of the agile workforce. Through Principal Component Analysis (Karin Breu, 2002) presents competence and intelligence as the two main characteristics of agile workforce. (Karin Breu, 2002) also presents innovation and exploitation of opportunities in changing environments to be of high importance in an agile workforce both in IT related topics as well as soft skills topics.

Finally, some other general literature researches categorized the workforce as agile when it possesses featured such as “growth mindset” and “change-embracing” (Steven L. Goldman, 1995), while others highlighted the importance of flexibility, speed, adaptability, proactivity, knowledge and innovation (among others) as main characteristics of agility (Gunasekaran A, 2002; A., 2010; Sarhadi M, 1999).

Attaining of work agility

Based on the literature it must be clear until now some of the main characteristics of an agile workforce. While they might differ from one domain of application to another, some common elements keep repeating among the papers researched such as “knowledge driven”, “innovative”, “change resilient and adaptive” and “proactive”. However, while now it is clear what the companies should strive for when organizing their workforce, the question remains as to “how to approach the attaining of workforce agility?”.

There are various approaches present in the literature. (Ruwen Qin, 2015) groups these approaches in 6 main categories which facilitate workforce agility either by reinforcing or creating agility. The six categories together with some of their enabling mechanism will further be presented.

1. Staffing: This mechanism is relevant to a company’s success both inside the company – by assigning the resource to the needed project and outside the company – by hiring the suitable candidate with an agile mindset. The most direct approach is to hire from the very beginning an agile workforce. This can be done by maximizing the previously mentioned agile characteristics while looking at a candidate’s personality. Responsiveness, adaptability, and competence are some of the key characteristics to look for (Plonka, 1998). Other solutions include using temporary workers, flexible working time or cross-trained workers and teams (David A. Nemhard, 2015). This is particularly interesting for Nordcloud too, as the cross-trained workers and a team approach to the junior-senior problem might beneficial. This work flexibility leverages the competence adaptability and responsiveness of the workforce, making it agile.
2. **Training:** The literature indicates that training a company’s employees is one of the most used practices in the current environment. This not only improves the knowledge of the employee, but also can assure that they keep interested and motivated while retaining the talent acquired. Training is viewed as an investment by service firms, often needing the employees to learn new skills depending on the external changes in the business environment (Ruwen Qin, 2015). This can contribute to creating an agile workforce both directly and indirectly. One type of training is called “cross-training”. This implies that the employee will “branch out” from their current skill set domain to a broader one, which encompasses a bigger variety of domains of expertise. While this can lower one worker’s efficiency (Ruwen Qin, 2015), cross-training also better positions an employee for collaboration within a company (Gunasekaran, 1999; Sharp J., 1999; Nijssen M., 2012). If done correctly it can even lead to an improvement in productivity, increased billability, and better resource utilization (Van Oyen, 2004). There are also some cost downsides with regards to cross-training as not all the skills that the employee has trained for will always be in demand. This training type is a so called “just-in-time delivery” strategy which only tackles the skill needed in a specific moment in time. Some studies also suggest that training helps improve employee motivation (Hosein Z., 2012), workforce involvement (Sumukadas N., 2004) and IT-skills (Gunasekaran, 1999; Overby E., 2006).

3. **Coordination:** Assigning workers to tasks or tasks to workers over a period of time is called worker coordination. (Van Oyen, 2004) organized the factors impacting coordination into two main categories: a) the workers’ efficiency of switching between task types, resources or entities, b) the worker’s ability to efficiently perform multi-tasking. If the changes are not predictable then also coordination cannot be predetermined. In the real environment when changes cannot be predicted, also the coordination policies become dynamic. This type of policies involves the transfer of workers among tasks (Ruwen Qin, 2015). The contribution to workforce agility comes from coordination allowing employees to continuously respond to the ever-changing requirements of the business environment. This means an increase in time utilization, faster service delivery time and responsiveness.

4. **Collaboration:** What differentiates collaboration from teamwork is having a set of common goals, but with or without coordination. Collaborative teams are defined by faster delivery times (Van Oyen, 2004). This is due to the possibility of the employees to work simultaneously on the same job. Furthermore, while dealing with a knowledge specific requirement from a job task, multi-functional teams can be formed with the goal of mixing the needed skills to form the workforce team that has all the needed capabilities of carrying out the task at hand. A multi-functional team can either be a group of multi-skilled employees or a group of experts that each brings a unique skill to the group. The former is mostly used in service systems where the employees through the help of cross-training can work on multiple tasks at the same time. The latter is suggested for when the skills are obtained through highly specialized education and there cannot be cross-training done to achieve a similar knowledge outcome. (Plonka, 1998) writes that such a team can produce a level of work quality that is difficult to attain by any particular individual. This is reinforced in (Specialization, teamwork, and production efficiency, 2000) where Powell argues that a multi-skilled individual has lower delivery time than specialized workers. However, at the team level, multi-functional teams can help improve billability and workforce utilization. This in turn
proves to be more resilient in face of change (Van Oyen, 2004). Another solution to collaborative teams can be ephemeral teams. They are temporarily formed teams formed of workers with desired skills and expertise that are tasked with taking advantage of short-lived opportunities or addressing unexpected problems and threats to the company.

5. Incentives: While it is good to think that the one’s company’s workforce would be willing to become “agile”, the reality might be quite different. It is highly possible that a type of incentive would be needed in order to encourage the employees to develop workforce agility characteristics. Some of the incentives can be monetary, skill or knowledge-based pay or even recognition and performance-based feedback. In their work, Ruwen Qin and David Nembhard mention that knowledge-based pay can contribute to workforce agility directly and indirectly through cross-training and collaboration while also increasing job satisfaction. Monetary incentives on the individual levels can foster a positive attitude towards adapting to change and innovating while also increase agility and flexibility. Team performance-based incentives further encourage the increase in collaboration.

6. Empowerment and involvement: In other words, empowerment is the delegation of decision making amongst the workforce. This allows for a faster decisions and quicker response times (Sharp J., 1999; Ruwen Qin, 2015). Responsiveness is also improved through empowerment as there is a greater transparency and understanding of the company’s plans and efforts. As a consequence, workers become also more motivated, productive and proactive when they have increased job autonomy (Sumukadas N., 2004).

While deciding whether a workforce agility plan would be suitable for one’s company, (Somaieh Alavi, 2013) came up with the following flowchart that aims to guide business leaders towards deciding if such a process is worth the investment.

![Figure 2: Framework for deciding workforce agility need (Somaieh Alavi, 2013)](image-url)
Workforce Flexibility

Complementary and interconnected to workforce agility, workforce flexibility cannot be excluded from this literature review. In this chapter some of the main characteristics of flexibility as well as a short comparison to workforce agility will be undergone.

(Ruwen Qin, 2015) presents workforce flexibility as the tool to manage the organization of labor capacities and capabilities in operations and processes. The approaches involved in workforce flexibility are rather internally directed, compared to workforce agility with is more outward oriented. To be more precise, workforce flexibility can be organized at the individual, group and organizational levels through the use of multiple approaches: flexible workdays, overtime, temporary workers and teams, teamwork and cross-training.

While both agility and flexibility aim to deal with an uncertain environment, there are clear distinctions between the two. While there are specific practices such as cross-training that impact both workforce flexibility and workforce agility, in their literature research Ruwen Qin and David Nembhard highlight the differences and similarities between the two concepts.

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Workforce Agility</th>
<th>Workforce Flexibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drivers</strong></td>
<td>• External sources that are rapid and highly unpredictable</td>
<td>• Internal sources of uncertainty</td>
</tr>
<tr>
<td></td>
<td>• Sudden situations</td>
<td>• Internal system fluctuations</td>
</tr>
<tr>
<td></td>
<td><strong>Underlying variables</strong></td>
<td>• More predictable external sources</td>
</tr>
<tr>
<td></td>
<td>• Unknown distribution or non-stationary probability</td>
<td>• Stationary probability variables</td>
</tr>
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<td></td>
<td>• Stochastic processes</td>
<td>• Stationary probability distributions</td>
</tr>
<tr>
<td><strong>Effectiveness</strong></td>
<td>• Frequent or radical updates of workforce configurations and policies</td>
<td>• Not so frequent updates of workforce configurations and policies</td>
</tr>
<tr>
<td><strong>lives</strong></td>
<td>• Shorter lives of employees’ knowledge and skills</td>
<td>• Longer lives of employees’ knowledge and skills</td>
</tr>
<tr>
<td><strong>Attributes</strong></td>
<td>• Higher dimension</td>
<td>• Lower dimension</td>
</tr>
<tr>
<td><strong>Human</strong></td>
<td>• Cognitive ability</td>
<td>• Cognitive ability</td>
</tr>
<tr>
<td><strong>elements</strong></td>
<td>• Physical ability</td>
<td>• Physical ability</td>
</tr>
<tr>
<td></td>
<td>• Motivation and attitude</td>
<td></td>
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<tr>
<td></td>
<td>• Behavior and emotion – when dealing with unexpected changes and new environments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and approaches</td>
<td></td>
</tr>
<tr>
<td><strong>Time</strong></td>
<td>• Generally, across multiple time horizons</td>
<td>• Generally, within a single time horizon</td>
</tr>
<tr>
<td><strong>horizons</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Approaches</strong></td>
<td>• Staffing – hiring, promoting, dismissing, adjusting</td>
<td>• Flexible working time – overtime, flexible workdays etc.</td>
</tr>
<tr>
<td></td>
<td>• Training</td>
<td>• Floaters</td>
</tr>
<tr>
<td></td>
<td>• Coordination</td>
<td>• Cross-training</td>
</tr>
<tr>
<td></td>
<td>• Collaboration</td>
<td>• Teamwork</td>
</tr>
<tr>
<td></td>
<td>• Incentive</td>
<td>• Temporary workers</td>
</tr>
<tr>
<td></td>
<td>• Empowerment and involvement</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Comparison workforce agility and workforce flexibility (Ruwen Qin, 2015)
While the two of them are important for a company’s growth and proper management of their workforce, in this literature workforce flexibility will not be fully developed as not all of its aspects directly impact the research questions of the study, nor the problem Nordcloud is facing.

It is important to note however that while workforce agility is used for mainly unpredictable, rapid changes coming from predominantly external sources, workforce flexibility deals more with the internal sources of uncertainty. This can involve internal system interruptions and fluctuations, workforce absence or more predictable uncertain situations that have lower consequences on the company. In contrast, workforce agility is better suited for more impactful consequences on the firm.

In the current working environment that is constantly changing, just using workforce flexibility might not be either useful nor cost effective, as companies need to look outwards towards the incoming changes in the market and the challenges posed by the competition. A better approach seems to be considering both models and investing in a workforce that is both more agile and more flexible. This will not only optimize the outward vision and strategy of the firm, but also the internal sudden changes and problems.

**Cross-training**

Amongst both workforce agility and flexibility, it seems that cross-training is the most common and most researched topic. In the ever-changing business world that one day requires one set of skills while the next day all the previous needs become obsolete, human-capital based firms would rather benefit from a cross-trained workforce. In simple terms, cross-training ensures that the employees are not over specialized and are capable to undergo more than one specific task in the company. They can cover a wider area of expertise, being more versatile and easier to switch from one task to another, as well as less difficult to integrate in different teams.

The idea of cross-training is not a new one, dating as far back as the 1998 paper from Treleven, companies have been bouncing back and forth with this idea ever since (Mann, 2010). Cross-trained employees can help both in uncertain times when companies need to downsize as well as during prosperous periods.

(Vee, 2009) highlights that during a downsizing, the employees who are trained to perform multiple different tasks, not only have a better chance of not losing their job, but also allow the company to faster adapt and reorganize to the new structure and new business environment. (Carmen Abrams, 2010) adds that cross-trained employees can further help the company retain their existent talent, without having them hire more people.

Furthermore, cross-trained workers can also help in difficult situations that do not necessarily involve tough times or downsizing of the companies. (Carmen Abrams, 2010) highlights the utility of a cross-trained workforce simply when some of the employees fall sick or cannot attend their daily duties. Abrams continues by adding that during normal working operations
this type of policies allows the business to maintain their normal productivity when the worker is not present.

**Benefits of cross-training**

The benefits of cross-training can be seen from a dual perspective: company targeted, and employee targeted.

1. **Benefits to the employees:** The literature indicates that a cross-trained workforce is one who acquires a higher variety of skills trained in the workplace, which in turn makes them happier and less prone to quitting their job and finding another work opportunity (Vee, 2009). Cross-trained employees also seem to have better flexibility inside the company, being able to switch both between multiple tasks as well as between departments with relative ease (Richardson, 2009), therefore if the employees look for a change, it is not necessary anymore to find a different job. Furthermore, Richardson adds that employees with a wider range of skills are more valuable to the company itself. This not only makes them less likely to get layed off, but also increases the possibility of promoting them inside the firm. Lastly, cross-trained workers are also able to contribute with more creative ideas and perspectives, due to their implication in multiple departments says (Lahouze, 2009). Working in different departments, therefore different teams also helps with the feeling of unity amongst the employees as they are more familiar with all the people and activities involved in driving the business forward.

2. **Benefits to the company:** In (Wallace J. Hopp, 2010), the authors have conducted literature research on workforce cross-learning and have constructed both a framework for it, as well as a “strategy matrix” which encompasses the benefits cross-training brings to the company’s strategic goals.

![Figure 3: Matrix template to identify the company benefits of cross-training (Wallace J. Hopp, 2010)](image-url)
They explain the strategic objectives together with their benefits as follows:

a) Cost: cross-trained employees can perform more work during the same amount time as a specialized employee due to the flexibility. This also permits a low cost on the company’s side and faster delivery amongst cross-trained teams. These improvements lead to cost saving such as labor cost, production costs while also driving the increase of the production volume.

b) Time: a cross-trained workforce can have a more reliable and quicker delivery. This is done by reducing the effective setup and handoff times, minimizing task time variation, and increasing task speed. Congestion is also avoided as the improved flexibility allows only a few employees to deal with a task, instead of needing to involve multiple people from different departments.

c) Quality: It is important to note that the quality might be only customer-perceived due to a lower yield loss or rework and reduction in the frequency of entity handoffs. However, as the employees are not specialized but rather have a broader knowledge a company should particularly pay attention to the quality of the services or products offered.

d) Variety: As the flexibility of the production inside an organization increases, also the delivery of a broader range of products or services is facilitated. As the workers have a larger skillset, they can perform a variety of tasks and also avoid redundancy (e.g. a co-worker is sick)

The indirect mechanisms presented in this paper are also of particular interest to this study, as it highlights the utility of cross-training in the employee retention.

**Downsides of cross-training**

However, while cross-training can seem to obviously aid in achieving one company’s goals and improve their business, there are also a few aspects that should be considered before cross-training the entire workforce.

(Carmen Abrams, 2010) points out that the cost versus return on investment of implementing a cross-training process might not always be worthwhile. Based on the study of (Hoyt J., 2001) it was suggested that in a high-tech organization the employees that have been cross-trained, having a multi-skill knowledge appear to not have a direct relationship to the financial performance of the company.

Furthermore, (Vee, 2009) suggests that on the employer’s side, there might exist concerns with regards to discovering the business framework to the employee through cross-training. There might be concerns about the employees opening a similar business with the knowledge acquired in the company. Moreover, while a cross-trained individual might cover more “terrain” during his job, the concern about the overall quality of work and productivity remains. Sometimes encouraging in-depth knowledge instead of branching out might be more beneficial to a company’s strategic goals.
Finally, the employees themselves might have various concerns about cross-training. Specialized workers might not be so receptive to discover and learn about new domains and might prefer deepening their knowledge in their selected field of interest. Making them undergo cross-training might lead to an increase fear and anxiety about their job security says (Vee, 2009).

It might therefore be wise for the leadership of a firm to approach the problem of cross-training from all the angles. Focus on the business goals, but also not forget about both their current employees and their concerns, as well as about their fellow leadership team and their worries in this regard.

**Cross-training frameworks**

To conclude this chapter, there is a wide variety of frameworks in the literature. However, analyzing and comparing them are way beyond the purpose of this thesis and there is already sufficient research done on this topic.

Two frameworks will be mentioned here. In (Wallace J. Hopp, 2010) as well as in (Van Oyen, 2004) et. al. two different cross-training frameworks are presented. Van Oyen built a framework based on workforce agility, skill patterns, coordination policy and team structure. In the following chapter, some cross-training characteristics and frameworks will be presented. On the other hand Wallace and Hop create a more general framework that enhances the company’s workforce agility. This is further detailed in their paper (Agile workforce evaluation: a framework for cross-training and coordination, 2010).

![Workforce Agility and Cross-Training Framework](Wallace J. Hopp, 2010)

Figure 4: Workforce agility and cross-training framework (Wallace J. Hopp, 2010)
Personnel assignment problem

This is a problem widely researched in the literature. Work allocation is of extreme importance in engineering management, and it has wide ramifications for an organization’s goal achievement and financial performance. This is especially true in engineering consulting firms as they base their entire business model on the human-capital (Brennan Linda L, 2000). This is typical for consulting organizations that sell services with the help of their employed engineers.

However, while few of the research done are of a management nature, most of them mathematical. Many researchers examine and propose various mathematical models that solve this problem.

As this thesis’ problem is rather focused on the managerial aspect and best practices, more information and literature research on the subject can be found in (Arash Niknafs, 2013), (Brennan Linda L, 2000), (Dirk G. Cattrysse, 1992) et. al.

Workforce planning best practices

Amongst the literature the main steps of organizing a workforce plan seem to be clear amongst the researchers. Most papers present similar strategies and action plans to take while identifying the needs for a company’s workforce plan. (Dan L. Ward, 2013), (Cotten, 2009) (Bruecker P, 2015) and others agree that the main steps of a proper workforce planning are the following:

- Understand the business needs and strategy.
- Assess the current capabilities of the company.
- Plan and model the future workforce.
- Identify current gaps and plan to mitigate them.
- Implement the strategy.
- Monitor and evaluate.
- Reiterate the last two steps if needed.

I will further introduce the framework presented in (Cotten, 2009). This is a framework for workforce planning that was developed and applied to two different cases – one federal and one state in The United States. Cotton emphasizes that few companies have accepted a human capital management model and presents their developed framework as having the following seven steps:

1. **Define the organization’s strategic direction**: a well-defined organization plan can help achieve the goals and business targets of the company. Setting the mission, vision, goals and objective has already been widely spread amongst companies, however financial and human resources have yet to be properly aligned into the strategic plan of the company. In this part the company needs to check and identify the core resources and competences needed for success.

2. **Scan the internal and external environments**: For a successful planning the company needs to look both inward and outward to create a complete picture of the business environment. At a macro level, the company should look outwards towards the trends, market requirements and changes happening in the larger business environment. This is meant to identify how the possible changes in the external market can impact the
company’s plan, as well as who are the clients and possible new employees to hire. On the micro level the company should check the spheres in which it operates such as the labor supply, available vendors, political leadership etc. More precisely, the company should know its organizational structure, culture and employee morale levels and implication. Furthermore, it should identify key leadership problems or changes and have a succession plan in place, or at least acknowledge the need for one.

3. Model the current workforce: The company needs to know how the workforce will change in the near future and what the needs will be on this side. The organization needs to keep in mind the permanent employees as well as the supplemental direct-hire employees (on company’s payroll but do not have regular hours) and contract workers (employees hired for a specific need or task). Furthermore, it would be good knowing the skills of the employees so that the organization can identify any gaps or possibilities for upskilling or cross-training.

4. Assess future workforce needs and project future workforce supply: The company can make a projection of future needs, skills and characteristics demanded from the workforce. Workforce supply and demand models can be easily formed by analyzing the current business trends or by using mathematical models as the ones presented in the “Personnel assignment problem” chapter.

5. Identify gaps and develop gap-closing strategies: This step is meant to identify the surplus or deficit in the workforce supply and the workforce demand. This way the company can identify where they need more employees, different skill sets, or need to redesign and replan some of their products. Gap analysis aims to identify and point out the critical professions or skill sets where the firm might have shortcoming and for which it should create a plan and improve upon.

The development of gap-closing strategies is of particular interest, as it involves retaining the needed talent, further developing it and reducing overstaffing.

   a. Retaining needed employees: (Cotten, 2009) highlights that the two main reasons for losing needed talent are retirement and switching to a “better” company. The retirement problem can be solved either with better retirement benefits, or even by allowing some of the highly skilled talent to work part-time instead of retiring completely. On the other side, for those that look for a better job there are multiple strategies that seem to work in avoiding attrition: better work-life balance policies, childcare centers and assistance, subsidized transportation, retention bonuses, certifications and education offered by the company.

   b. Strategies for developing employees: cross-training is again highlighted in this framework as being one of the most popular strategies used in companies around the U.S. However, there seems to also be added benefit from job rotation, assignments, and shadowing.

   c. Overstaffing: When an employee’s skills have become obsolete it is important to retrain them or rotate them to a different position or department. This is also why it is important to have a thorough internal assessment of the company’s workforce so that the leadership team knows when such actions should be taken.
6. **Implement gap-closing strategies**: After having developed a strong strategy for the company, their implementation can take even more time, resources and effort. Good leadership, communication and supporting resources are of utmost importance for the successful implementation of the strategies.

   a. Leaders are critical to the implementation of novel strategies that defy the norm. They need to challenge current practices and push the bounds of flexibilities allowed and together with the personnel identify creative solutions to the presenting workforce challenges. Later through the use of the needed resources, new ideas and processes can be implemented that will solve the current challenges.

   b. Communication is another critical element of successful implementation of change. Communication between the leadership, team managers and team members must be facilitated. This is especially important when the company aims to improve their workforce planning effort. All the members of the company, from employees to managers need to know and understand their role in the workforce planning process. Furthermore, employees should understand their rights and how the changes will impact them. All the question coming in about the change should be answered and attended to.

   c. The stakeholders also have important impact on the planning of the strategy. They might provide invaluable insights about the business and the employees that can facilitate the efficient strategy development and implementation steps.

   d. HR managers in the end need to be very judicious in deciding the needed strategies to implement amongst the workforce. They are the closest to the employees and should look at the strategy from all directions, communicating their views with the leadership in charge.

7. **Evaluate the effectiveness of gap-closing strategies and revise strategies as needed**: This is the last step of the model presented in (Cotten, 2009). This highlights the importance of monitoring the implementation of the strategy and of evaluating the end results. Dan Ward and Rob Tripp in their book (Positioned: Strategic Workforce Planning that gets the right person in the right job, 2013), also emphasize the need for a through monitoring so that the strategies and being implemented the way they were planned. It is important to always keep in mind the results intended and evaluate them after each cycle. If the implementation of the strategy is on track, then the company can evaluate its outcomes. If the implementation is not on track, then adjustments need to be made so that the desired outcomes are observed during the next evaluation. There need to be chosen specific metrics for properly evaluating the outcomes of the implementation. Depending on the goal, some examples of metrics can be workforce demographics, retention rates, employee feedback, measures of gaps in the workforces, attrition rates etc.

   Nevertheless, it is important to realize that “there is no one size fits all” as a workforce plan should be tailored specifically towards the needs of each company. Good workforce planning is based on the specific situations and processes a company finds itself in. It is important to assess and look both internally and externally to the business environment before moving forward with any workforce planning process.
Design & Methods

To better analyze the topic, a research structure and methodology have to be created for proper planning the thesis case study. This will be the basis for my gathering of data that will validate and further develop the problem and the details around it of which my thesis is concerned.

The main research questions are formulated in an “why” and “how” way, and the purpose is to generalize ideas and situations based on a sample from the population being studied. For this reason, the main strategy will be using a case study to gather the data. (Fink, 2003) Furthermore, this case study will be based on (Mark Saunders, 2009) onion layers which underpin all the stages needed to be considered when building the strategy for the research.

The layers are as follows:

1. Research philosophy – positivism, interpretivism, pragmatism
2. Research approach – inductive, deductive
3. Research strategy – experimental research, action research, case study research, grounded theory, ethnography, archival research
4. Choices – mono, mixed, multi-method
5. Time horizon – cross-sectional, longitudinal
6. Techniques and procedures

Research philosophy

For this research the “interpretivist” philosophy was applied. While I believe that the knowledge can either be true, false, or irrelevant, it is important to note that while assessing the problem through the qualitative study, people’s opinions and ideas will be relevant in both identifying the issues and in finding out solutions for them. However, a small part of the quantitative study will be leaning towards the positivist side as there will be a few numerical considerations that need to be considered. Furthermore, the standard practices and strategies applied in Nordcloud will also consist of a positivist philosophy type of research as they are not subject to any personal views and opinions, but rather the reality as it is.

Positivism constructs the idea that knowledge exists outside of what is being studied and if the desired results are to be relevant, they should be objective, with no personal viewpoints from the researcher. (Holden, 2004) The empirical research, based on measurement and observation will be quantitative, number-based, but will consist of a smaller part of the study, mostly illustrating the groups of people interviewed and their joining dates in the company.

The “interpretivist” approach constructs the idea that the social and cultural factors can have a great influence on the people interviewed. Therefore, their thoughts, ideas and views of the world and the problem at hand have a deep socio-cultural involvement. (Hammersley, 1993) While the cultural and social aspect nor their effect on the answers will not be investigated in this thesis, they are important to acknowledge. This will represent the bigger part of the study, being the main philosophy for the qualitative type of surveys.
Research approach

I am planning to use both inductive and deductive approaches for this research, as presented in (Mark Saunders, 2009). The former will be used for the qualitative study in order to distinguish the pattern and the theory of the problem that Nordcloud is facing. Later, for the quantitative data gathering I will use a deductive approach where I form hypotheses and assumptions with the aim of proving or disproving them through observations and data.

For the inductive approach I will be generating theories from research. This entails that through several qualitative interviews from the leads of the delivery department I will formulate the problem the thesis is aiming to study. The theory will therefore be formed and the assumptions or hypotheses for the literature research will be hence formulated. (Charles Vanover, 2021)

For the deductive approach, the hypothesis will constitute the grounds for the quantitative study. This aims to confirm/infirm the main theory and to further investigate how the situation is developing at a micro level. The focus will be on the numerical data gathered from the interviewed subjects. (Mark Balnaves, 2001)

Research strategy

The objective of my research strategy is to gain an in-depth understanding of the context of the study. I aim to get a detailed view of the situation and the problem’s development in Nordcloud, trying to discover how, when and why issues arise and sketching out possible solutions.

A case study strategy involves more of an inductive approach, as well as a more interpretivist approach which is based on social and cultural factors. (Mark Saunders, 2009)
Choices

Before starting the creation of the survey, I need to decide on the type of data I want to use. For this thesis I will use a multi-method strategy which includes a wider range of approaches that involves both quantitative and qualitative data.

However, the difference from the mixed method is that I will use two types of qualitative analysis in my study – thematic analysis and content analysis – and two types of quantitative analysis – descriptive statistics and inferential statistics. (David Phair PhD, 2021) These will help better understand and categorize the data and patterns observed, as well as better summarize the data and generalize its outcomes over a larger number of people. (Mark Saunders, 2009)

Time Horizon

As the problem focuses on the current situation happening in the company, the time horizon chosen for the research will be cross-sectional. This aims to collect the data during a certain point in time, taking advantage of the mix of qualitative and quantitative type of data collected. (David Phair PhD, 2021)
Techniques and Procedures - summary

To summarize the techniques that are used in the thesis research the following approaches will be used:

The data gathering techniques are:

1. Qualitative research methods:
   a. Observations – recording what I have seen, heard, or encountered in detailed notes during my internship in the company
   b. Surveys – using open-ended questions in the questionnaires
   c. Interviews – having one to one conversation and asking people for details personally
2. Quantitative research methods:
   a. Surveys – using rating scales in the questionnaires

The data analysis techniques used are:

1. Qualitative analysis methods:
   a. Thematic analysis – patterns and themes are identified and interpreted (Ashley Castleberry, 2018)
   b. Content analysis – words, phrases and ideas are categorized and described (Satu Elo, 2008)
2. Quantitative analysis methods:
   a. Descriptive statistics – to summarize the data and measure averages and variability (Wetcher-Hendricks, 2011)
   b. Inferential statistics – to make predictions and generalizations based on the retrieved data (Wetcher-Hendricks, 2011)

As for the sampling type, there will be a convenience type of sampling that includes the people responsible of the specific roles that are in direct contact or have some influence on the problem at hand.
Survey questions & sub-questions analysis - qualitative

In this sub-chapter I aim to detail the relevance of the questions used in the qualitative survey and what their significance is with regards to the literature research and to the suggestion’s construction. Because the aim was to tackle the issue from different perspective, interviewing varying positions inside the company, some of the questions are the same for some of the different respondents’ roles. In the explanations presented here, those questions will be explained only once and will be considered independent of the interviewed person’s role.

**Q1: How do you choose the right person for a project?**
*Type: Interpretative*
*Roles interviewed: PMs, SRs*

This question is intended to check the reasoning behind choosing a specific engineer for working on a given project. It leaves the freedom to mention any of the possible reasons one might have for picking a specific person over another one.

**Q1. a: What are your incentives when choosing a person?**
*Type: Interpretative, Leading*
*Roles interviewed: PMs, SRs*

The purpose of this question is to lead the person interviewed towards a more precise answer. It aims to gather a specific response in the case that the person was not explicit enough previously.

**Q1. b: Do you prefer senior, experienced engineers or would you also assign juniors for client work?**
*Type: Provocative*
*Roles interviewed: PMs, SRs*

This question aims to explicitly put the interviewee under the spot-light, questioning their morals for choosing a specific engineer level and facing them with the actual issue this thesis is aiming to investigate. This question identifies if the assumption of PMs or SR having a preference for senior engineers is true, or if there are other factors influencing the assignation of talent.

**Q2: How do you handle the assignation of junior engineers to projects? Are there any difficulties?**
*Type: Interpretative*
*Roles interviewed: PMs, SRs*

The purpose of this question is to tackle the precise problem of the thesis. It aims at discovering firstly how the process of assignation of jr. engineers is done while also emphasizing the possible problems and difficulties present. This question lays the grounds for where the literature research should be directed, and which topics should be researched, and which ignored.

**Q3: What already existing strategies or activities do you think work well in the assignation of junior engineers to client work?**
*Type: Interpretative*
Roles interviewed: PMs, SRs

The question aims to identify already existing strategies that work as well as giving the freedom to the interviewee to speak up their mind and present their own ideas forward. This will confirm the possible literature research topics as well as further indicate what possible strategies should be further investigated.

Q4: What do you think about the shadowing program for the junior engineers?
Type: Interpretative
Roles interviewed: PMs, SRs, LP Coordinator, TLs

The aim of this question is to discover more information about the current training strategy for cloud junior engineers inside the company.

Q4 a: How do you think the organization of the program is done?
Type: Interpretative, Leading
Roles interviewed: PMs, SRs, LP Coordinator, TLs

The aim of the question is to check the interviewee’s knowledge about the strategy used and see what should be improved in terms of knowledge and transparency about the program. It also aims at discovering possible internal problems with the program from the perspective and experience of the interviewee. This leads to providing further improvements to the current processes present in the company.

Q4 b: How is the shadowing process viewed by the client?
Type: Interpretative, Leading
Roles interviewed: PMs, SRs, LP Coordinator, TLs

This question aims at approaching the program from another perspective, the one of the clients. The interviewee is basing their opinion on their own experience with NC clients and try to point out what the impressions and possible problems are from the client’s perspective.

Q5: What do you think about assigning senior engineers to client work?
Type: Interpretative
Roles interviewed: PMs, SRs, LP Coordinator, TLs, SCAs

The purpose of this question is to tackle the second problem of the thesis. It aims at discovering firstly how the process of assignment of senior engineers is done while also emphasizing the possible problems and difficulties present. This question lays the grounds for where the literature research should be directed, and which topics should be researched, and which ignored.

Q6: Do you think the projects are balanced, having people with similar levels on average – both seniors and juniors? If not, what would be some suggestions to it?
Type: Leading, Multiple
Roles interviewed: PMs, SRs, SCAs

The focus of this question is to confirm of infirm the assumption of projects having mostly senior engineers working, while the juniors are underutilised. It also helps further structure the literature study, as in the case of infirming the question, there is no need for discussing that
specific thematic in the literature research. This question also gives the freedom to the interviewee to speak up their mind and mention some of their own ideas and solutions to the possible problem presented.

**Q7: Do you think there is a competition between PMs to get the best, most experienced, and cheapest resource for their project?**  
*Type: Leading*  
*Roles interviewed: PMs, SRs, SCAs*

This question’s focus is to confirm or infirm the assumption of project managers being in constant competition with each other for specific engineers. The question is also complimentary to Q1, confirming once again the actual incentives PMs have while choosing people to work on client projects. This also helps lead the literature research towards the solving of specific project management problems.

**Q8: What plan do you have for the people after LP ends?**  
*Type: Interpretative*  
*Roles interviewed: LP Coordinator*

The focus of this question is to check how the junior engineers are planned before finishing their launchpad program. This aims to see what happens before the juniors enter the delivery department and how this affects the delivery of services itself. Through this question it can be indicated if the problems of assigning juniors originate only in the delivery department, or if there are also other company parties involved in the potential issues.

**Q9: What are the difficulties involved in getting the junior engineers off the bench?**  
*Type: Leading, Interpretative*  
*Roles interviewed: LP Coordinator, SRs, PMs, TLs*

The purpose of this question is to tackle the precise problem of the thesis. It aims at discovering the possible problems involved in the assignation of junior engineers. This question lays the grounds for where the literature research should be directed, and which topics should be researched, and which ignored. This question also gives the freedom to the interviewee to speak up their mind and mention some of their own ideas and solutions to the possible problems presented.

**Q10: How is the situation with the junior engineers you are responsible for?**  
*Type: Interpretative*  
*Roles Interviewed: TLs*

The aim of this question is to investigate the current situation involving the juniors in the company from the perspective of their own mentors. It aims at discovering the possible difficulties faced directly by the juniors as well as lay the ground for the literature research and suggestion formulation. This question also gives the freedom to the interviewee to speak up their mind and mention some of their own ideas and solutions to the possible problems presented.
Q11: Are there any inconveniences between TLs, LP and delivery?
Type: Leading
Roles: TLs

The purpose of this question is to see how the communication between the departments is done and what complaints and wishes are expressed in this regard. This question aims to see how the interviewee sees the communication’s importance while dealing with the information about the juniors.

Q12: What do you think about the possibility of a bi-weekly meeting where the situation is communicated between TLs, LP and Delivery?
Type: Leading
Roles interviewed: TLs

The aim of this question is to validate a suggestion given by one of the delivery leads while discussing the communication issues within the company. This question will not constitute a main point for the thesis, although it might be confirmed through the literature research that bi-weekly meetings can be beneficial.

Q13: What do you think works well in assigning senior engineers to client work?
Type: Interpretative
Roles interviewed: SCAs

This question aims at discovering what the senior engineers’ opinion is about assignation best practices. This aims at confirming or infirming if current assignation strategies for senior engineers inside the company are congruent with the seniors’ opinions themselves.

Q14: What should be improved about the allocation of senior engineers to projects?
Type: Leading
Roles interviewed: SCAs

This question leads the senior engineers to identify the problems with the assignation for their own positions and to suggest possible improvements. This question lays the grounds for where the literature research should be directed, and which topics should be researched, and which ignored.

Q15: How can your team leader and your manager better support you in getting client work? Do you have any suggestions?

This question helps clear out even further possible barriers for finding client work amongst juniors. Moreover, this also indicates possible wishes and ideas suggested by the people directly affected by the assignation issue.

Survey questions & sub-questions analysis – quantitative

In order to create a more complete image of the questions formulated and of the answered being studied, each individual quantitative question together with their qualitative sub-questions providing more explanations have been justified in the Results and findings chapter. This allows for a continuation and cohesion of the paper and an easier understanding and reading of the findings.
Results and findings

This chapter is focused on the results of the quantitative and qualitative survey questions. The two methods were used as a way of analysing and identifying the problems from different angles, looking for the possible suggestions and different opinions given by people working in different roles in Nordcloud.

In order to validate the main issue around which the thesis is constructed, as well as identify the internal practices and strategies within the company multiple interviews need to be conducted. They will be targeting the various departments involved in the management and training of the engineers. This helps at constructing a more complex and complete image.

The interviews were also conducted so that the literature review and the subsequent suggestions could be based on the current problems the company faces. This aims to improve the current processes and to draw awareness towards the best practices discovered through the literature that apply to the company’s unique case.

The interviews are made from qualitative and quantitative questions, with a strong focus on 30-minute qualitative interviews. Their purpose is to get an insight into working styles, strategies, and problems from various company positions while interacting with junior and senior engineers.

The quantitative questions aim to gather a more general overview, specifically from the junior engineers themselves, creating an overview of their opinions, struggles and current situation. These will be finally compared to the managerial perspective of their leaders and will validate if the management is aware of the actual situation in which the juniors are situated.

The positions interviewed for this study were project managers, staffing responsible, delivery leads, team leads, Launchpad Program (LP) responsible, senior and junior engineers (CA, CE, SCA, SCE etc.)
Quantitative research survey

For the quantitative study, I have focused on the two main research groups: junior and senior engineers.

The quantitative questions are accompanied by qualitative ones that aim at justified some of the previous received quantitative responses. All the qualitative questions have been explained in Survey questions & sub-questions analysis - qualitative chapter and will not be reiterated here.

Junior Engineer – interview results

Question 1: What is your role in the company?

Eight out of the ten people surveyed are working as “Junior Cloud Engineer. The two remaining ones work as “Cloud Engineer” and “Senior Cloud Software Engineer” respectively.

Question 2: For how long have you been working in this role?

![Figure 6: Experience in the company amongst junior engineers](image)

Question 3: For how long have you been working in Nordcloud?

The answers to this question were the same as for the previous one. All the people surveyed started on their current position inside Nordcloud.
Question 4: Are you currently in the Launchpad Program (TAP)?

The purpose of this question is to check how many of the juniors interviewed started with the LP Program. This is in order to see how prepared they feel by the end of it and how the situation is seen through the eyes of the people that went through this program.

Figure 7: Launchpad Program attendance amongst the respondents

The results indicate that all the people interviewed have been through the Launchpad Program. This is a good sign, as the company’s assignation problem seem to mostly involve LP graduates.

Question 5: How confident do you feel in your skills to take on client work?

The purpose of this question is to assess the perceived level of preparation of the juniors for working on a client project. This will facilitate knowing where they need help and if their motivation or technical skills need more support.

Figure 8: Confidence levels amongst the junior engineers

Question 6: Do you think you have enough opportunities to grow professionally?

The company provides ample opportunities for all their employees, including junior engineers, and are committed to understanding their perceptions and experiences within the company. The purpose of this question is to gather their feedback through a question designed to capture their honest insights. By valuing their perspective, Nordcloud can better address any challenges and
ensure that all their employees can grow and thrive within our organization.

Contrary to the expectations over 80% of them seem to find the opportunities coming in either as normal or as always available.

Based on the responses we have received, it is possible that the challenge of securing client work lies outside of the factors previously considered. To gain a deeper understanding of the situation, we will be exploring the underlying reasons in more detail through the following qualitative questions. By doing so, we can uncover new insights and opportunities to improve our processes and ultimately achieve greater success in obtaining projects for our clients.

**Question 7: What do you think are the barriers in finding client work?**

While analyzing the answers for key words and specific topics that are repeated amongst the respondents, it was observed that 50% of the people surveyed consider the language barrier and nationality one of the main issues in getting client work. It seems that the respondents feel that many tasks also need an additional security clearance which might takes weeks to be granted. One of the respondents mentioned that Security clearances are often required for client work, making it difficult to assign small tasks to junior engineers as obtaining clearance can take weeks. However, these tasks are important for juniors to gain experience and familiarize themselves with the company's processes.

However, half of the interviewees expressed their belief that experienced engineers have more opportunities available than juniors. Four of the respondents attributed this to the client's preference for professionals with more experience, while the remaining respondent mentioned the company's rapid expansion as the reason. The respondent explained that the company is currently focused on fulfilling its existing commitments and achieving its financial targets, which can make it challenging to allocate resources towards developing new recruits. Although the respondent acknowledged that the company can be fast-paced, they did not view this as a negative characteristic.

**The problems summarized:**

- Finnish language or Finnish citizenship requirements
- Security screening taking too long. Juniors can do small tasks that takes little time, but the screening makes this process longer and less advantageous for the client
- Not enough experience to get client work. The client prefers more experienced people
Question 8: What do you think works well in finding client work?

While two of the respondents mentioned that upskilling and keeping an updated CV is a solution, six of the respondents mentioned networking as the key to getting work. They consider that “Inside nordcloud you have to be active. You have to find work like you are finding a new job. Reaching out to people as much as you can.” Some of them suggest always networking to the people from the company, or even knowing the manager on a project or the client themselves in order to get client work.

The last two respondents either reiterated the previous barriers or didn’t have any specific solutions as one of them has been looking for client work for the past 18 months.

Question 9: How can your team leader and your manager better support you in getting client work? Do you have any suggestions?

The answers to this question were almost all the same. 80% of the participants answered that the manager should try harder to find work for them. Amongst the answers the respondents suggested that the manager asks from the client to take more juniors on their projects, take the time to look for opportunities for the juniors or even have a plan after the LP Program to do shadowing work.

The engagement of the managers and team leaders seems to be seen as an issue by the junior engineers. They would like to be more motivated and updated more often on the situation regarding their work opportunities.

Furthermore 7 out of the 10 participants mentioned that their team leaders or managers should have a plan for their upskilling. They would want to know what skills are needed to learn in order to get better work opportunities.

Suggestions from the juniors:
- More engagement and proactivity from the TL and manager on finding client work for the juniors
- An upskill plan provided by the TL/manager with the technologies that would benefit the juniors in finding client work
- More updates on the situation regarding the work opportunities

Question 10: What do you think about the shadowing program?

Some possible answers might include details about:
a) The organisation of the program and how you think it is done
b) How the client views the shadowing program
c) What works well in the program
d) What does not work well in the program and would need improvement

The respondents mentioned various pros and cons to the shadowing program.

Advantages:
- Good to enhance one’s skills and learn how to deliver a project (if done well)
- Helps to understand the customer and the customer’s work for the future
- The client likes having juniors work on their project, considering that they don’t pay for them.
- Relaxed pace of training and good familiarization of engineers with the client work.

Problems:

For Shadowing:
- No pre-planning projects for shadowing before finishing the LP training. There should be a list with shadowing projects before finishing LP.
- Not enough time to arrange shadowing sessions. The person that shadows needs to be briefed in and this takes a lot of time.
- Difficult to shadow someone way more advanced than the junior.
- The structure of the shadowing process can be improved, the focus need on practical processes.

For managers:
- The managers should be more proactive in pushing the people into existing projects.
- There should be an upskill plan if there is no shadowing project yet.
- The managers should follow up with the juniors on their studies and certifications. They should give them “real world” advice.
- The managers should follow up what is happening with the juniors on their shadowing process.

For Launchpad:
- There should be an increase in the shadowing projects. Examples are preparing a landing zone, making proposals, deploying SAPs, monitoring and estimating costs etc.

Suggestions and analysis for junior engineers

After analyzing the qualitative questions and comparing them to the quantitative ones it seems that there is a discrepancy between the answers given to Question 5 and the qualitative answers. While in the beginning most of the people agreed that there are enough, or more than enough opportunities, when detailing their opinion more it would seem that there are a few barriers stopping them from getting project work. This is in concordance with the assumptions of the thesis, proving that there are indeed points to be improved within the assignation of the junior engineers to client work. These issues however might not necessarily be due only due to assignation strategy problems, but also the language spoken, or the citizenship of the junior seem to be a determinant in many cases.

Based on the survey answers it seems that there is a need for either a change in strategy within Nordcloud or rather a more cumbersome change in client policy. The former regards the assignation of juniors to client work as part of a team as previously suggested by the roles interviewed, while the latter, a more complicated issue - changing the client requirements for language skills or security clearance.

Furthermore, the importance of the Talent Management and Pool Management topics is the more emphasized by the answers presented in the survey. As presented previously, most of the respondents seem to want a better implication of their managers and team leaders. This is
specifically related to their personal growth plans as well as to the client work preparations and planning.

For this reason, the two topics will be further investigated through the literature. Finally, the staffing coordinator topic as well as the project management one are also related to the issues presented by the junior engineers. Through the literature research there can be discovered new ways of assigning the juniors in teams, or of better identifying projects for them given their particular skills.
Senior Engineer – interview results

**Question 1: What is your role in the company?**

All of the people interviewed are working as “Senior Cloud Architects”, all of them being team leaders and being in charge of a group of junior as well as mid-level engineers.

**Question 2: For how long have you been working in this role?**

This question’s purpose is to check how the years of experience in the senior role might influence the preference of choosing one senior engineer over another.

As it can be seen, the answers to this question are quite varied.

**Question 3: For how long have you been working in Nordcloud?**

The purpose of this question was to gather data about their experience and to see if it has anything to do with the amount of client work, they get. This is to check if the people with more years of experience receive more work opportunities than those with fewer.
Similar to the previous questions, here the answers differed greatly too. It was a balanced study with people with different years of experience in the company.

While looking at both answers from question 2 and 3, it seems that the skill-project-fit is more important than the actual years of experience when someone reaches the senior level. It can be assumed that a more experienced senior engineer has a broader skill set, which might be why the years of experience also determine the amount of work.

**Question 4: How many client projects are you working on currently?**

The purpose of this question was to check how the amount of client projects that the seniors work on impacts their stress levels as well as their perception of the amount of work they have.

After analysing the data, it was observed that seniors work on average between 1 and 2 projects.

**Question 5: How would you rate your workload at the moment?**

The purpose of this question is to analyse the amount of work senior engineers get in general and to make a comparison with the years of experience they have. The reason for this is to check if the people with more years of experience receive more work opportunities than those with fewer.

![Figure 12: Number of projects the seniors are working on](image)

It would seem that the amount of work looks similar to a bell curve, however having a tendency towards “more than average” work. To make an educated opinion, this study should be extended to more senior engineers in the company.

While comparing Figure 13 with Figure 14 from question 4 it is not necessarily the amount of client projects that deem the work too little or too much, but rather what happens on the project itself. The assumption that many client projects make the senior engineers overworked should
be reviewed. The future path should be also considering the actual work happening on those projects, topic which was not discussed during this thesis.

**Question 6: What is the reason for this amount of work?**

This question aims to develop the results of Question 5, aiming for a more detailed explanation for the amount of work received by the senior. This helps at understanding what are the blockers or facilitators in getting work for the senior engineers are.

Despite the initial assumptions of this study, it would seem that all four senior engineers agree that the amount of work is balanced. One of them mentioned “The work is pretty much balanced. Keep the customer happy and delegating work. UL and supervision is about talking to people and do the venting.”

**Question 7: How would you rate your stress level due to client work?**

The purpose of this question, together with Question 8 is to identify the stress levels of the senior engineers and to underpin the possible reasons behind it. This helps understand what the precise stressors for a SCA are and helps confirm or infirm the assumptions regarding the amount of client work being the main stressor.

![Bar chart showing stress levels](image)

The four seniors interviewed seem to have normal to more than normal amount of stress when it comes to their work. Based on this graph and the one from question 5 it looks like if the work increases more than average, then also the stress augments closely after.

**Question 8: What do you think are the reasons for these stress levels?**
Out of the 4 interviewees two mentioned that doing a team leader’s job along one’s own senior engineer tasks can be more demanding and adding more work that they deem useless: “It is stressful when you do repetitive, low value tasks.”

On the other hand, client work seem to increase one respondent’s stress levels: “The client is a big client, maybe the biggest in the company and they are very demanding. Not the easiest position. Of course I still need to do the TL work. This takes time.”

**Question 9: What do you think works well in finding and allocating senior engineers to client work?**

While new senior engineers seem to expect getting work immediately – which is not always possible due to induction trainings – there were 2 main points were raised by the respondents:
- Seniors have the advantage of picking up faster new skills, so they can also work on new technologies. It is therefore easier to find work for seniors than for the juniors.
- Interesting and challenging work is the key when finding work for senior engineers

**Question 10: What should be improved about the allocation of senior engineers to projects?**

There were four main problems identified:

1. There are few projects that uncommon skillsets
2. Lack of visibility when assigning senior engineers to projects. There should be more communication with the engineer before assigning them to work.
3. The planning could be improved while working for the client and the engineers must do also sometimes PM work: “Many times the seniors need to do many of the things, being the advisor and the project manager at the same time, but we should still have a team whenever get a new client.”

**Question 11: Do you think the projects are balanced, having the people with similar levels on average – both seniors and juniors? If not, what would be some suggestions to it?**

All four senior engineers interviewed mentioned that the projects could be a little bit more balanced. They mentioned that there are mostly seniors, which also sometimes work alone leading to a feeling of isolation. “On the other hand, I have people in my team that feel lonely, so they are the only seniors in the project, for them I believe the situation could be improved.”

Only one of the respondents had some suggestions to this issue. The respondent recommended breaking up old teams of seniors and switching them between projects and teams so that other seniors get the chance to get more experience.

**Question 12: Do you think there is a competition between PMs to get the best, most experienced, and cheapest resource for their own project?**

While one of the respondents hasn’t encountered any competition between PMs, the three others believe that all PMs want the best resource for their projects and all four agreed that PMs might have their own favorites.
It is important to note that based on the senior engineers’ answers, they do not see a fierce competition but rather a preference for the best resource that can do the highest quality of work.

**Conclusions for literature research regarding senior engineers**

After undergoing the interviews with the senior engineers, it would seem that at least for the people included in this study the problem of overbooking is not yet present in Finland. While this might be the case for other countries, it has resulted both from talking to the seniors as well as the SRs and PMs that overbooking is not much of an issue. Instead, it seems that the imbalance and the preference for senior engineers is more of a concern.

Therefore, in the literature research of this study, when talking about senior engineers’ assignment, I will be mainly focusing on ways of balancing the number of senior engineers with respect to junior ones, instead of mitigating their overwork. Furthermore, it is important to be noted that due to the interview suggestions and results, as well as due to the time constraints and limitations for this internship the primary focus will lay on the junior engineers while writing the thesis and conducting the literature review.
Qualitative research survey

Through the qualitative research method, I try to underpin the importance of the interviewees’ in-depth knowledge and put it into perspective. Their input and feedback on the topic of junior engineers is gathered through months, sometimes years of dealing with their own departments in Nordcloud. This will provide a solid base for the research, being able to link the research questions to the interview results and the literature.

The qualitative research aims to “illuminate” the experiences and subjective meanings of the participants and develop a good understanding of their experiences and problems encountered. (Ellie Fossey, 2002)

The target group for the qualitative survey consisted of 15 participants from different roles in the company, mainly team leading and management roles.

The interview method of choice was video meetings that lasted between 20 and 30 minutes, giving the freedom to the participants to freely express their thoughts and suggestions in a wide enough timeframe. Also, the chosen length of the interviews proved to be just right, having 5 minutes of small talk, and briefing in the beginning for each of the participants.
Results – qualitative survey

The questions aimed at gathering as much information as possible from the interviewees without influencing them with personal opinions or potential answers.

Important to note is that these qualitative interviews were accompanied of a few backgrounds quantitative questions whose purpose is presented in the following section.

Project Manager – interview results

Question 1: For how long have you been working as a project manager?

Purpose: The purpose of this question was to know the background of the PMs interviewed and see how their experience played a role in their views and competitiveness experienced in the company.

Answer: The respondents’ experience was between 10 and 30 years, two of them having a 10-year experience as a PM while only one being in this position for over 30 years.

Question 2: For how long have you been working for Nordcloud?

Purpose: The purpose of this question is to know the background of the PMs interviewed and their actual experience in the company this research is based on. This impacts the validity and relevance of their views on the subject matter.

Answer: The respondents’ background with Nordcloud was 5 months, 2 years and 2 and half years respectively. They all have been working on the same position ever since starting their journey with Nordcloud.

Question 3: How do you choose the right person for a project?

There were different approaches when it comes to this general question, all proving different sides of the staffing process and practices. While some PMs worked closely with the staffing responsible people, others go straight to the CV of the person and try to best match them to the project. One team member mentioned that collaboration with staffing helps to determine the appropriate level of seniority required for a task, ensuring that the most cost-effective resources are utilized. Another team member stated that they consider a candidate's skills and experience when matching them to a project, and in some cases, HR recommendations are also taken into account.

One respondent raised concerns about the importance of billing rates when it comes to hiring engineers, stating that it mainly comes from the customer side and that competence is crucial. Another respondent highlighted the challenge of finding project managers with the right skills, noting that they often have to provide whoever is available due to a lack of resources. Despite these challenges, both respondents emphasized the importance of matching personnel with the required skills and experience for a particular project.
Question 3: a) What are your incentives when choosing a person?

As it can already be deduced from the main question, the PMs mainly value the skills and competence of the people with the billable rate running on a close second. One respondent also mentioned the motivation and learning opportunities of the people as an important factor in getting client work: “Incentive for the employee to join is also important - most usually is learning some new skills. This matches them 75% but the 25% I would like to learn so everyone is happy.”

Question 3: b) Do you prefer senior, experienced engineer or would you also assign juniors for client work? Why?

All three survey participants agree that having a senior engineer on a project is preferable, as junior engineers can be inexperienced and time-consuming for clients.

One participant believes a mix of experience levels is ideal but emphasizes the need for a senior to supervise the project. Another participant argues that clients tend to prefer seniors due to bad experiences with unskilled junior engineers. However, they acknowledge that some junior engineers are proactive and willing to learn, which can be an advantage over bored senior engineers.

The project managers agree that motivation and proactivity are important traits for engineers to have, and that attitude is key when considering a junior engineer for a project.

Question 4: How do you handle the assignation of junior engineers to projects? Are there any difficulties?

The answers to this question highlight the importance of technical proficiency for the job, while acknowledging that identifying the skills of a junior engineer may be more challenging compared to a senior engineer. However, some interviewees suggested shadowing or investing in training programs to help juniors build their skills. One PM even suggested offering juniors to the client for free during a learning period. The possibility of giving juniors technical tasks to prove their skills was also suggested.

Overall, the interviewees demonstrated a positive attitude towards junior engineers and expressed a willingness to invest in their development.

Question 5: What already existing strategies or activities do you think work well in the assignation of junior engineers to client work?

While one of the respondents weren’t aware of any specific strategies taking place inside the company, two of the more veteran ones in the company both agreed on the benefits of bundling people up together. More specifically they emphasized (as well as in future answers) the importance of having seniors and juniors working together as a team. One of the respondents said: “When we get a TAP person we pair them with a senior person for the first weeks/months so they can shadow a project going on.”

Question 6: What do you think about the shadowing program for the junior engineers?
This question was followed by a more specific clarification intended to check how the program is being presented and how knowledgeable the project managers are when it comes to its structuring.

**Question 6: a) How do you think the organization of the shadowing program is done?**

Despite some uncertainty and concerns, there is optimism around the shadowing program among the project managers. One PM shared their experience of bringing a person into a role to observe and participate in meetings, while another expressed support for the program as a great help for junior engineers. Even the PM who expressed concerns about billing for non-billable hours acknowledged that higher management is discussing the issue and that there is a need to justify the decision. Overall, the project managers seem open to the idea of the shadowing program and willing to work through any challenges to make it successful.

**Question 6: b) How is the shadowing process viewed by the client?**

An important issue that was raised was the learning curve for less experienced engineers and the challenge of billing hours during the learning period. It seems that there is a lack of clear guidelines for the shadowing program, which is not fully understood by the client. One project manager expressed concern that the client is only willing to pay for one CA and may not understand that the learning process can take several months. Another project manager pointed out that the client prioritizes the "triangle" of price, scheduled time, and quality. However, all three project managers agreed that the client is generally open to having junior engineers work on their projects as long as their work is supervised. Suggestions were made to improve the shadowing program by providing more information and guidelines and increasing client awareness, as well as deploying more juniors alongside senior engineers.

**Question 7: What do you think about assigning senior engineers to client work?**

The respondents’ answers were precisely matching each other, all of them agreeing on the fact that most seniors are overbooked, taking on various projects and helping multiple other colleagues at the same time.

**Risks identified:**
- Seniors are asked to know all the tools and attend all the meetings
- Senior resources are scarce and the few remaining need to help multiple accounts at the same time as well as less experienced colleagues
- Sometimes the PMs need to compromise and have mid-level engineers work for a senior level project instead
- Some of the best seniors get all the opportunities and are requested by most of the projects. This runs the risk of not completing their tasks
Question 8: Do you think the projects are balanced, having the people with similar levels on average – both seniors and juniors? If not, what would be some suggestions to it?

Out of the three interviewees only one of them mentioned that their team is balanced, and they attributed this to having a smaller project required less budget. On the other hand, the other two agreed that there tends to be a preference for senior people on the client projects leading to an imbalance of seniority levels.

One suggestion mentioned was leaving the virtual involvement when introducing new talent to the client and having more face-to-face interaction, especially when involving the junior engineers: “There should be more collaboration with customers so that see face to face each other. We had a customer where we could go to the office with juniors and it was good for everyone to meet f2f so then they do not think that "oh we do not want junior guys."

To facilitate this, the same PM suggests that it is rather the sales department’s responsibility to take care of the introductions, suggesting that some workshops might help facilitate this.

Question 9: Do you think there is a competition between PMs to get the best, most experienced and cheapest resource for their own project?

While this was one of this thesis’ initial assumptions, it seems that all three PMs agree that there is no blatant competition happening. They have generally a good communication and coordination within the department, “We have weekly meetings and communicate with our team and then everyone is thinking what is best.” and try to manage it together.

However, regardless the lack of official competition, they all also agreed on the fact that most PMs have their own favorite engineers which they know that they are highly competent and try to assign them every time to their own project: “I can see that some PMs have their preferred technicians, I also have mine.” Nevertheless, this doesn’t seem to always be possible, as many times the team composition is directly decided by the staffing department. The problems appear when there is a need for replacing a resource “They don't fight but if they need to change or borrow, that's when the competition happens. Otherwise the people are already there.”

One suggestion regards the fast growth of the company and client projects. The PM advises on also increasing the number of senior engineers, otherwise the fighting over resources might intensify: “...staff it is tough balancing especially that we have many sales and not enough resources available. They should keep growing, if it lags a bit behind it tends to be more competition for those resources.”

Nonetheless, for the moment, from a project management perspective, there is not a big problem regarding the competition inside the department. This disproves one of the assumptions of this thesis and it is at the same time an encouraging discovery for the company itself.
Suggestions from the project managers:

- The interviewees highlighted the client's request for cheaper senior resources, limiting the pool of candidates to countries like Poland, Ukraine, or Romania, and suggested more flexibility in choosing the region for Contract Associates (CAs).
- The interviewees recommended greater flexibility in transferring and allocating engineers between different teams and accounts, as the current process is too restrictive.
- The interviewees proposed a more even distribution of senior engineers across projects to allow them to focus on their specific tasks and avoid unnecessary meetings.
- The interviewees stressed the importance of good project management practices, including selecting the right team members for meetings and ensuring adequate representation of senior engineers.

LP coordinator – interview results

The Launchpad coordinator is the person responsible for the organization and training of the junior CE and CA joining Nordcloud. This person is in charge with organizing the teaching track for them, making sure they are prepared for the client work once they finish the program.

In order to better understand how the ending of the program is planned, as well as how the juniors are being prepared and what is expected of them, I conducted one interview with 1 of the 2 LP coordinators. Unfortunately, due to work constraints, the second coordinator was not available for the interview.

Question 1: What is your role as Launchpad program coordinator?

The main responsibility for the interviewee was the clearing of the bench from the LP trainees as well as taking care of the people finishing the program. In the program there are both fresh graduates, as well as more versed IT professionals, but who have little to no experience in the cloud domain. The respondent takes care of trying to find work for them as soon as the program has been finished.

Question 2: What plan do you have for the people after LP ends?

The respondent admitted that it is a slow process finding work for the LP graduates, as he has to run through many hoops before finding work for them. His main duty is to keep track of who they had in the program and if they are already working for a client or not.

The main problem identified however is the lack of visibility he has about what is the situation with the graduates on the bench: “...the issue here is that I cannot put anyone to work for a project, so I have to ask their TLs and PMs and DL, if there are any plans for the people on the bench and everyone says that they are working on it. Slow process.”

Adding to this issue, the respondent mentioned that everyone spends 1 or 2 months on the bench after finishing the LP program. There seems to have been a mismatch between the demand and offer, NC having a lot of available talent, while the demand for it seems to be on the lower side at the moment of this study: “We thought that there is demand, and we didn’t
even consider the project problem until we saw it. We have to activate everyone at each step to get that ball rolling.”

Question 3: What are the difficulties involved in getting the junior engineers off the bench?

The respondent was very clear when it came to the problems and specifically mentioned 2 of them:

1. Visibility – It seems that other departments have more visibility and know better the situation about the juniors, their demand and the assignation to client work. Delivery leads, sales and project managers seem to know more than the LP team. This leads to a communication problem, as per the interviewee’s addition, all the parts do not share information and lack communication about the juniors. LP organizers seem to view the situation as a mismatch in demand and offer. They get no information about the demand, but only the numbers of people that are about to join their program.

2. Selling of juniors – The respondent seems to have a similar opinion as most of the people interviewed. The selling of the people for a client seems to be done on a person-by-person basis – what would be called “CV selling” instead of on a team basis. The interviewee acknowledges the over usage of seniors while the juniors remain unallocated and raises the possibility of selling teams rather than individuals. This might help juniors gain some experience, while also being helped by the more senior.

Question 4: What do you think about the shadowing program for the junior engineers?

There is room for improvement in terms of communication and clarity regarding the process of placing juniors in projects. While there may be some uncertainty about who is responsible for this, there is an opportunity to improve communication channels and ensure that all stakeholders are aware of the demand for these junior resources.

Question 4: a) How do you think the organization of the shadowing program is done?

Although there may not be a set-in-stone framework for handling this program, there are project managers and team leads who are enthusiastic about pushing it forward. The lack of established processes provides an opportunity to create new and innovative solutions that can ultimately benefit everyone involved in the program.

Question 4: b) How is the shadowing process viewed by the client?

The answer to this question reflects the response for Question 3. The interviewee reiterated the usefulness of having teams being sold to the client, rather than individuals. They also indicated the possibility of having the juniors work for free in the beginning until they learn more about working in their specific role.
Suggestions from LP coordinator:

- Have 1 or 2 juniors in every project, selling a team instead of CVs.
- Having the most juniors one for free, at least in the beginning
- Incentivize delivery leads, PMs, or the person responsible of the assignment to put several juniors to the projects. The person that reaches the target would receive a bonus.
Question 1: For how long have you been working as a staffing coordinator? - The purpose of this question was to know the background of the staffing coordinators interviewed and see how their experience played a role in their views and strategies for assigning engineers.

The respondents’ experience was 7 months, 1 year and 7 months and 3 years.

Question 2: For how long have you been working for Nordcloud? - The purpose of this question is to know the background of the staffing coordinators interviewed and their actual experience in the company this research is based on. This impacts the validity and relevance of their views on the subject matter.

The respondents’ background with Nordcloud was 4 months, 7 months and 1 year and 7 months respectively. They all have been working on the same position ever since starting their journey with Nordcloud.

Question 3: How do you choose the right person for a project?

Compared to the project managers, all three staffing coordinators had the same answer when it comes to choosing the right person for a project. They all based their choice on the person’s CV, trying to match as best as possible the request’s needs to the person’s skills and interests. One respondent also added that soft skills are important when it comes to more leading positions, therefore they generally find out these skills from their daily conversations and relationship building calls with the engineers on bench. Finally the availability of the person is decisive when assigning someone.

Question 3: a) What are your incentives when choosing a person?

As it can already by deduced from the main question, the staffing coordinators value the skills and competence of the people, trying to match the skill to the specific project. One respondent mentioned that the pricing is not an incentive, but it depends on the client from where the person for the job can be selected.

Question 3: b) Do you prefer senior, experienced engineer or would you also assign juniors for client work? Why?

All three of the respondents agreed that the preference goes rather towards more senior positions. This is sometimes justified when there is a leading position, although this could also be staffed by a mid-level engineer mentions one of the interviewees. It would seem that a lot has to do with just the title (e.g., Junior) of the engineer rather its actual experience and skills. The clients seem to trust more engineers whose title “indicate” their competence and vast experience.

On a positive note, the local teams appear to work well together and have an easier time finding shadowing or mentoring opportunities for junior engineers. However, globally, the company faces challenges as most requests from staffing coordinators are focused on finding senior engineers who meet client requirements, leaving little room for flexibility.
Question 4: How do you handle the assignation of junior engineers to projects?

A common answer between 2 of the three respondents included the constant communication and teamwork involving other project managers and delivery leads: “I work closely together with the lead for junior engineers in my region - when the juniors are ready, we sell them by their skills, and not by their junior level...”

It also seems that pricing is a good selling point as the client might be more receptive to getting onboarded new talent.

Question 4: b) Are there any difficulties in getting junior engineers off the bench?

One of the global staffing coordinators provided valuable insights into the company's staffing process. They explained that most of the companies are mostly focused on filling positions for senior engineers, as junior engineers are often deemed to have a lack of experience and skills. However, the company recognizes the importance of soft skills such as leadership, client communication, and negotiation.

Although skills are deemed the most critical factor in the staffing process, another interviewee identified three issues that have been encountered in the process.

1. Generally, clients want someone that has a wide range of skills, having experience in various fields.

2. There hasn’t been a long time since getting certified for a specific technology.

3. Having the junior title, although the person has many years of experience in IT, even though not in the cloud technologies.

Question 5: What do you think about assigning senior engineers to client work?

All three interviewees seem to agree that the main challenge is the shortage of senior engineers, with one mentioning that there may be too many opportunities leading to some seniors having to work outside their comfort zone. Communication with PMs, delivery leads, and DEXs is seen as important by two of the interviewees to find a balance for the seniors, while the third emphasizes the seniors' ability to manage their own workload. It is noteworthy that none of the interviewees reported assigning seniors to multiple projects, as this is not in line with the company's playbook.

Question 6: Do you think the projects are balanced, having the people with similar levels on average – both seniors and juniors? If not, what would be some suggestions to it?

On the local level it seems that all three respondents agree with the fact that it mostly depends on the client. “The smaller ones and the growing ones it is mostly seniors because we try to get our footprint into door.”, mentioned one of the interviewees.

To conclude this question, two of the interviewees reiterated the importance of selling teams rather than CVs and the need for a skill-project match rather than the title-project match. The
latter suggests a more open approach to mid-level and junior engineers as long as they have the skills needed for the project.

On the global level the situation seems to be more in the favor of seniors, as there are few urgent requests for junior positions.

Suggestions from Staffing Coordinators:

1. **Junior Engineers**

   - Not show the “junior” title to the client when proposing an engineer, but rather present the skills. Explain that the engineers are only beginning with cloud, however they have years, sometimes tens of years of experience in the IT sector.
   - Sell teams of people rather than individuals. Have the juniors for free for a trial period. Build a billability plan for them afterwards.
   - Juniors should have a well put together CV, even more important than for the seniors. They should not overload it, and only have the skills they know by heart.
   - Create a list with highly sought-after skills and organise trainings for the engineers for those specific highly requested skills.
   - Those that are unassigned could use internal projects to improve their skills and get them hands-on work, even if only for a month

2. **Senior Engineers**

   - Overbooking while not happening at the moment, it could be a problem if the staffing coordinators are not allowed to assign people 15% or 20% of their time.
   - The seniors should always speak if they are overbooked
   - Communication with PMs, delivery DEXs and the seniors themselves I key in preventing overwork
Team Leader – interview results

For these interviews I have contacted both TLs as well as ULs which have a better overview of the situation. There were 2 unit leaders and 3 team leaders interviewed.

**Question 1: How is the situation with the junior engineers you are responsible for?**

The responses from the three TLs were diverse. One TL reported that there were no issues with client work for their Azure technology team. However, another TL mentioned that their mentees lacked confidence in their skills and that clients rather prefer senior engineers, particularly with AWS.

On the unit leader side, it appears that both leaders agree that there are not enough projects for all juniors, leading to some being idle on the bench. The strategy is to help them learn new skills, but the demand for their services is still low. One unit leader acknowledged that there was a problem with the hiring strategy, saying, "Last year, we made a mistake in hiring LP people. We thought there were imminent projects, but in the end, there were none. When we finally found projects for these individuals, they left. We need to hire more strategically."

**Question 2: Are there any difficulties in getting the junior engineers off the bench?**

One of the interviewees highlighted that there may be a mismatch between the juniors’ skills and the projects offered. However, they also emphasized that it may not entirely be the juniors' fault. Instead, they suggested that the sales team could improve their strategy while negotiating with clients.

The interviewee believes that the current strategy of selling based on CVs is not effective and that the company should focus on selling teams instead. They suggest offering clients discounts and explaining how the company grows its employees. However, the interviewee also acknowledges that the company faces challenges in selling teams in Finland, where they primarily work with old customers who are used to hiring based on CVs.

Despite this, the interviewee remains optimistic that the company can adjust its sales strategy to better support the growth and development of its employees.

**Question 3: What already existing strategies do you think work well in assigning junior engineers to client work?**

While asked this question, 3 out of the 5 interviewees reiterated the problem of CV selling and of CV data accuracy. They also added that offering discounts for getting junior engineers on shadowing active projects might help the client be more open to such roles.

**Question 4: What do you think about the shadowing program for the junior engineers?**

This question was followed by a more specific clarification intended to check how the program is being presented and how knowledgeable the team leaders are when it comes to its structuring.

**Question 4: a) How do you think the organization of the shadowing program is done?**
All 5 interviewees expressed their enthusiasm for the idea of more shadowing opportunities for juniors, but acknowledged a lack of clarity on how the process should be formalized. One interviewee noted that the organization is currently lacking a clear development path for juniors and expressed a desire for a strict plan to be put in place.

Another interviewee highlighted the challenges of implementing a shadowing program due to client consent and NDA requirements, but did not discount the benefits of such a program. Finally, one interviewee emphasized the need for a formalized shadowing program with clear guidelines and expectations for both the company and the juniors.

Overall, the interviewees were passionate about improving the development opportunities for juniors and recognized the importance of a structured program for achieving this.

**Question 4: b) How is the shadowing process viewed by the client?**

Four out of the five interviewees agree that the client doesn’t know much about the shadowing program. Some clients think that they need to pay for the TAP guys that are shadowing or that the, suggesting a lack of proper, accurate presentation of the advantages of the program to them. There seem to be expectation mismatches between what the rest of the team expects the junior people to do/know and what the juniors themselves expect to be taught by the seniors.

The fifth respondent emphasized other issues involving the money and the seniority level in Finland. The interviewee mentioned that it is difficult to get Finnish people to client work when they are juniors due to the high-cost rates. The clients would much rather have someone from Poland, India or Germany as they cost less. This seems to be the reason why in Finland, NC mostly provides seniors rather than junior engineers.

A “double problem” as the team leader called it represents the German speaking market. Finnish junior engineers cannot be proposed there due to both high costs and a lack of German language skills which restricts even more the opportunities available.

**Question 5: Are there any inconveniences in the communication between TLs, LP and Delivery?**

All 5 TLs agree that there is room for improvement in communication between the three departments. They suggest that more information should be shared openly between them, and each person's responsibilities should be clearly defined when trying to find work for junior staff. “It would be helpful to know the LP guys' skill levels, what they learned, and how they succeeded in their training before they are assigned to my team. In one case, I had to let someone go because their skill level did not match what we needed, but I did not receive any input from the LP team. This is an area that needs improvement.”

Another team leader mentioned that networking can be challenging, particularly when staff can work from anywhere in the world. The respondent pointed out that there are “bubbles” in the company where people from the delivery department “…just call the guys that they know”. The interviewee also acknowledged that networking with delivery managers and colleagues is critical to securing projects in a consultancy setting.
Question 6: What do you think about the possibility of a bi-weekly meeting where the situation is communicated between TLs, LP and Delivery?

All respondents agreed that this might be beneficial if the time is used properly. The suggestion was to not only have a meeting just for the sake of having it, but rather have everyone attending it be involved in it and share all the information needed.

One important suggestion came from one of the ULs. They mentioned that it would be beneficial to include PMs and Sales in this meeting as they are essential in addressing the current situation between TLs, LP, and Delivery. While we already have the necessary personnel, it is imperative that we work together with PMs and Sales to effectively utilize our resources. Instead of sending a casual Slack message, we should arrange a meeting to thoroughly discuss the situation and explore ways to optimize our team's capabilities.

Problems identified:

- The hiring process could have been better planned as there was a mismatch between the number of work opportunities and the number of people hired.
- There was a lack of visibility about the people being hired.
- There should have been more planning on getting the new hires client projects.
- Selling individual CVs rather than teams to clients can be a problem.
- The clients are mostly interested in senior resources and are not very open to junior resources.
- The visibility on sales for the delivery department can be improved.
- Some juniors overestimate their skills in their CVs, which leads to disappointment when their skills don't meet expectations.

Suggestions proposed:

- Provide LP trainees with broad training so that they can handle a wide range of projects.
- Ensure TLs receive timely and comprehensive information about new hires.
- Evaluate and improve the hiring process.
- Enhance the skills and knowledge of junior engineers.
- Provide more shadowing opportunities to help juniors gain confidence and learn important skills.
- Establish a standardized process for finding specialists for client work instead of relying on personal connections.
- Avoid going behind an engineer's back when discussing projects and make efforts to communicate effectively and respectfully.
- Share relevant information about new hires, such as the number of people, skills, and plan after LP, with the TLs.
- Develop a well-defined plan for LP graduates after completing the program.
- Clearly define the responsibilities of TLs and ULs in staffing engineers.
- Involve TLs and ULs in the hiring process to provide valuable input.
- Provide shadowing projects for LP trainees as soon as possible.
- Establish a clear and effective structure for the LP program.
- Streamline the onboarding process for juniors by reducing the time and inefficiencies associated with NDAs and access.
- Develop a "sales presentation map" for shadowing projects that outlines details such as advantages, prices, time, and implications.
- Create a channel for direct communication with clients about the standardized shadowing process.
- Ensure that all PMs and CSMs are aware of the junior engineer problem and the details of the shadowing program.
- Plan client work for juniors ahead of time to avoid bench time after LP graduation.
- Hold bi-weekly meetings that involve sales and PMs to keep everyone informed and coordinated.
- Focus on selling teams rather than just individual CVs.
- Consider offering client discounts for including juniors on projects.
- Encourage junior engineers to be honest and only list skills they are proficient in on their CVs.

**Analysis:**

The suggestions provided in the previous response are focused on identifying and addressing problems related to the hiring and training processes of the company, as well as improving communication between team members and between the company and its clients.

Some of the key issues identified include a lack of planning and visibility in the hiring process, a mismatch between the number of people hired and available work opportunities, and a tendency to sell individual resumes rather than cohesive teams. Additionally, there are concerns about the skills and confidence levels of junior engineers, as well as the need for a standardized process for finding specialists for client work.

To address these issues, the suggestions propose a range of solutions, such as broadening the training program to prepare engineers for a variety of projects, providing more information about new hires to team leaders, upskilling and broadening the skill level of junior engineers, and implementing a standardized process for finding specialists. The suggestions also advocate for better communication between team members, including more shadowing and bi-weekly meetings that include sales and project managers.

Overall, the suggestions reflect a desire to create a more cohesive and efficient team, with better planning and communication, in order to provide better service to clients and ensure that all team members are fully utilized and supported.
Measurement concepts

To evaluate the validity and credibility of the research undergone, measurement concepts regarding both the qualitative and the quantitative data must be provided and explained regarding the current study. It is important to discuss the reliability and validity of the study presented in the thesis so that the quality of the information obtained can be assessed. (Rafael J. Engel, 2014) If the measurement concepts have been carefully analyzed and taken into consideration while also carefully constructing the questions and procedures used, the survey will also be on the right track.

However, all of this must be properly evaluated before having much confidence in the data presented. The questions I am trying to answer are:

1. Is the data consistent and stable throughout the interviews, as well as amongst all the roles interviewed? More precisely, are the answers reliable?
2. Are the chosen operations for measuring the concepts presented properly measuring the already mentioned concepts? More precisely, are the answers valid?
3. How is the truthfulness of the answers guaranteed and the security of the participants in the face of aversion preserved? More precisely, are the answers biased?

Measurement Reliability

A measurement procedure applied in a situation or phenomenon that is not changing must yield similar answers or consistent results in order to be reliable. This way the measurement is affected less by random error or variation. (Rafael J. Engel, 2014) Furthermore, in order to measure and validate any study, the data gathered needs first to be consistent, therefore reliable. Thus, reliability must be proven before discussing other measurements such as validity.

During this research the reliability is achieved through conducting multiple interviews with people on various positions inside the company that must deal with junior and senior engineers. There were six different roles interviewed during the study: staffing responsible, team leader, senior cloud architect (senior engineer), project manager, junior engineer, launchpad program coordinator. All the people interviewed were briefed on the purpose of the study and aim of the thesis prior to the interview as well as during the interview day during the first 5 minutes of the discussion.

As a result, the answers received are not only similar and consistent amongst the same position interviewed but are also equivalent to the answers received from the other different roles interviewed. The responses therefore justify the data as reliable.

To further support the reliability of the data, personal opinions and experience was left out of the research.

Measurement Validity

When the indicators measure what they were chosen for to measure, that is when the data can be considered valid. As presented in (Brewer, 1989) a measure that is closely related to other
apparently valid measures, to the known or supposed correlates of the concepts presented and it is not related to measures of unrelated concepts, then that measure is considered valid.

In the present study, the validity can be guaranteed by proving that the answers can be generalized. This can be recognized in the data gathered by the repetition of answers amongst the different responders. Furthermore, the validity of the gathered data is also backed by the relevance of the group selected for the interviews. All the respondents currently working or having worked recently with junior engineers and senior engineers.

Finally, the explanation and emphasis of the question relevance with respect to the study as well as to the literature research further backs the validity of both the qualitative and quantitative research.

Ethical considerations

While conducting surveys and interviews with current employees of a company on current matters that can impact both the respondent and their work it is important to take into consideration the ethical matters. (Mark Saunders, 2009)

There are three matters considered for this study:

1. **Purpose of the thesis and of the study**: all participants were informed of the thesis’ purpose before as well as during the interview day. All questions and concerns were welcomed and answered accordingly

2. **Anonymity**: All respondents were given the choice of remaining anonymous or disclosing their names in the eventuality of possible follow-up on their answers. This was assured to both interviewees and survey responders

3. **Confidentiality**: All the data collected, and the information gathered were decided to be confidential and no data was to be shared without the respondent’s consent.
Conclusion & Suggestions

In this final chapter, some of the main suggestions and outcomes of the study will be reiterated, making reference to the relevant chapters within the document that can provide more support and information on the steps Nordcloud can take in improving their current processes. The research questions will also be presented, offering final conclusions and links between the questions, the literature and the surveys conducted.

Suggestions

In this paper I have presented a variety of suggestions for junior engineers, senior engineers as well as for the management in charge of them. The suggestions are not only part of both the surveys and interviews conducted, but also of the literature researched and summarized. For a better understanding of the suggestions and their contextual relevance it is important to check their sources (e.g., literature, staffing coordinators, team leaders etc.) and read the dedicated chapter.

As final suggestions, there are a few points that seem to repeat both in the surveys conducted from the various departments within the company, as well as in the literature. They also answer and provide solutions to the research questions presented initially.

1. **Train and cross-train the employees:** The second and third research questions can be answered through the training and cross-training of the workforce. In order to mitigate the lack of opportunities for junior engineers, it is important to have the people on the bench constantly developing themselves. This not only keeps the engineers motivated and engaged in their job, but also helps the company have employees with a diverse skillset. This is useful to Nordcloud due to the flexibility these engineers offer, being able to be transferred and switched to the most needed projects at the right time. Furthermore, this also increases the chances of the engineers to find client work, as their skill pool is larger. Finally, the literature proves that cross-training also improves retention as it leads to more happiness and satisfaction on the job.

2. **Selling teams, not CVs:** One aspect that can answer the first two questions of this research is the different planning of the selling strategy inside Nordcloud. While at the moment the model seems to be selling individuals, both the surveys as well as the literature indicate the usefulness of selling teams to the customers. While the literature highlights the benefits collaboration and coordination brings to the employees, the surveys based on personal experiences of the NC employees in different roles also indicate the benefit of matching juniors and seniors in teams and then proposing them to the client. This will facilitate knowledge transfer, future development of the junior engineers, as well as less redundant work for the senior engineers. This will lead to more motivated juniors that are continuously developing and building relationships with the clients while also avoid the overworking of the senior engineers. Consequently, attrition rates will decrease and retention of hardly earned talent will increase.

3. **Shadowing:** This suggestion can answer to all three questions, as it impacts both the current process, the possible barriers and suggestions as well as the retention problem. Thie shadowing strategy for bettering the skills of the new-joiners and taking off some of the workload from the senior ones might make the difference inside the company if
done right. The workforce planning literature seems to indicate that this might be one good strategy for promoting employee development. On the other hand, Nordcloud already has in place such a development model, however there should be thorough planning and standardization done for it to be successful in the future. This should be strategized from 4 perspectives: the person that shadows, the person who is shadowed, the client and the financial constraints. It is important to have a strong strategy on how the shadowing program will benefit both the junior and the senior involved. This needs to precisely develop the gains for the two roles, as well as what is expected from them during this process. Furthermore, the client might be the decisive factor, as they are the only ones that can approve such a problem during their project. The importance of a strong strategy and process is the more useful in this case, as everything needs to be properly defined before proposing it to a potential client. Finally, the costs of the shadowing program should also be standardized. It is important to know how much the entire process will cost both NC, as well as the client themselves and how the cost will evolve with the time.

4. Workforce plan: Questions two and three can be clearly explained through the workforce planning literature chapter. Having a thorough workforce plan in place seems to be essential for the successful development, retention and engagement of the company’s workforce. There are various resources and frameworks available that indicate how to do this. However, it is important to first have an analysis of the company’s goals and objectives with regards to their workforce before starting any process. This is just the first step of a workforce plan, but arguably the most important one when building the basis for a successful workforce strategy.

5. Communication and transparency: The first two questions are answered through this, as the current communication and transparency practices in NC are still to be improved. It is important facilitating communication channels between the juniors, seniors, and the team leaders within the company, as well as between the TLs and ULs and the upper management. This will facilitate both the hiring of new talent, its development through new opportunities and a better planning of the workforce. One of the solutions would be bi-weekly meetings between delivery, sales and the team leaders. Finally, a better communication and transparency is also needed from the hiring process and the sales needs. While unit leaders need to know and be consulted on who is getting hired, the delivery representatives must know the sales needs and client proposals so that they can better staff the incoming projects.

6. Monitor and evaluate: One of the barriers that might answer the second question is the lack of proper monitoring and evaluation techniques. When a workforce or talent management plan is implemented, there needs to be constant tracking and evaluation of its implementation. Without knowing if the strategy is accurately being followed or if the results are the ones intended, there cannot be proper assessments done about the company’s situation, nor beneficial steps taken in the direction of solving current problems. The literature clearly indicates in the chapter Workforce planning best practices the benefits of a proper monitoring and evaluation strategy.
Conclusion

Much of the literature available on workforce planning as first step in building an effective talent management strategy is widely available. The literature proposes both managerial strategic solutions as well as various mathematical models. Such solutions have been implemented in practice in countries across the world with a varying degree of results. What is clear however, is that most company will benefit from a strong workforce planning strategy in the current ever-changing business environment. (Bruecker P, 2015)

This thesis provides an overview of the first pillar in building a successful talent management strategy by reviewing the literature available on workforce planning. Furthermore, the literature is complemented by a 25-person survey and interviews analysing the current junior and senior management situation in Nordcloud. The thesis points out the advantages and disadvantages of various talent management techniques both from the literature and from Nordcloud’s current practices. They are further linked together for the formulation of proper suggestions and future steps for the company.

To return to our original research questions asked at the beginning of this paper. The question that asked how the employees are usually managed for allocation and assigned to projects has been thoroughly investigated through the 15 interviews and the 10 survey results. The former has proved that most important for a rapid allocation is having a good expertise in a broad range of fields, rather than being specialized in one single area. On the other hand, the latter highlighted the situation as seen through the eyes of the juniors themselves pointing out to problems such as language skills or lack of confidence which the management might not have previously been aware of.

It looks however that after the research inside the company was conducted, the work-life balance proved to be rather prioritized. The senior engineers interviewed didn’t report being overworked, or much more stressed than their less busy counterparts. This is a positive outcome for the company, as the initial assumptions predicted otherwise.

Nevertheless, the interviews and surveys did suggest a lack of opportunities for the junior engineers. The reasons vary from one case to another, ranging from a lack of skills or self-confidence to a lack of projects during this specific period of time for the previously needed skillsets. All the employees interviewed have also presented a range of suggestions that will certainly help make a change in the company, should the leadership decide to implement them.

Furthermore, the question that asked what the barriers and facilitators of efficient allocation practices for junior and senior positions were has been thoroughly answered during the Review of Literature. There, various frameworks and techniques have been presented that will not only help understaffed employees find new work opportunities, but also increase their job satisfaction and avoid an increase in attrition rates. The literature clearly indicates that having a workforce plan in place helps retain the talent, while also improving the company’s business and stability. A well-trained workforce is not only more satisfied and prepared for any challenges, but also offers the company more flexibility in task assignment. Furthermore, some of the barriers and facilitators have also been indicated through the surveys conducted. From the perspective of the team leaders and staffing coordinators two of the biggest barriers have proven to be the lack of skills and a lack of transparency and communication. Both issues have been addressed through the literature, having presented detailed frameworks for cross-training and workforce planning best practices.
The final question asked how to retain talent and avoid turnover. This is both highlighted directly and indirectly in the thematic literature. Retention proved to be simply a consequence of putting into practice the previous strategies presented. A well trained, content, and capable workforce will not look for opportunities elsewhere and will most of the times remain loyal to their current employer.

To recap, I find that an increased emphasis on training and development of the workforce can exponentially improve and benefit the business of a company. A more branched out workforce is indispensable in the current economic environment. The market around us keeps changing from one day to another, leading to a need of a wider skill-set workforce.

Nonetheless, communication and transparency should also be one of the main pillars in dealing with the workforce. Without them, processes will be less effective, their understanding by the employees will be insufficient and job satisfaction and employer trust might lower.

The leadership of the company can help with work-force planning and proper talent management, and they are directly responsible for taking the first step towards improving their strategy. Without this, the same current issues of under-assignation, over-assignation and lack of demanded skills will keep persisting.
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