Optimizing Onboarding: Strategies for Integrating New Engineers

A case study in a Swedish oil refinery

Master's thesis in Learning and Leadership

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Master's thesis 2023

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Gothenburg, Sweden 2023

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Abstract

We can all recognize the situation of being new at a job, feeling nervous and excited at the same time. The onboarding process of a new hire can either be well-managed and a quick way to achieve employee contribution, or an inefficient and costly entry. Many engineers enter organizations without the experience to locate their technical knowledge. This often results in anxiety and uncertainty regarding their roles, tasks, and carer prospects. Onboarding has shown to be a critical factor for organizational commitment, long-term performance, job satisfaction, and intentions to remain. Therefore, this case study aims to identify different key factors for a successful onboarding process for new engineers. The research was set out to answer how their current onboarding process was organized, any issues that arose, and possible actions that could be implemented to improve their onboarding and make it more customized after each department and role.

The study was conducted by qualitative semi-structured interviews with managers and new engineers in three technology departments in a refinery based in Sweden. By comparing a theoretical framework of organizational socialization with the manager's and the employees' ideas, several recommendations were presented. The results showed that the department that had the biggest need of improvement also had the most individual approach, where a mix of institutional and individual tactics seemed to be the most effective way to onboard new engineers. The two information types and adjustment indicators that seemed to be the most important during this study were referent information (role clarity) and relational information (social acceptance). Social aspects and relationship-building were considered to be extra important where the most satisfying learning experience came from forming a mentoring relationship. In addition to this, a customized and role-specific education plan for onboarding was designed to clarify what knowledge is required for different facilities at the refinery. This was also showed to increase the use of institutional tactics and strengthen the role clarity.

Acknowledgements

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1

Introduction

Every year, millions of people begin at new jobs [1]. It is a situation most of us can relate to, feeling excited and nervous at the same time, wondering what your days at the new company will be like. Behind every new employee, there is a manager who strives for a quick and smooth adjustment to their role in order to facilitate organizational success. However, for a company to truly benefit from each new employee, they need to support them through a comprehensive introductory process [2]. *Onboarding*, also found in academic literature under the term *Organizational socialization*, refers to the process of helping new hires adjust to social and performance aspects of their new jobs. Through this, the new employee moves from being an organizational outsider to an insider [3]. A lot of companies approach onboarding with the perception that it stops after the new employee got information about their lunch spot, a tour of their office, and the paperwork from human resources signed. The reality is that it is only getting started. Whereas *induction* covers the first few days and weeks of a new employee's journey, onboarding is the process of settling a new team member into the company culture and helping them acquire the skills, knowledge, and behaviors to become effective contributors to the organization [4].

The first few weeks at a company are one of the most critical phases of a new hire's organizational life [5], since the early stages of onboarding are crucial to establishing a long-lasting bond between employees and the company [2]. The newcomer determines what their new workplace is like, if the company meets its expectation, and decide whether they "fit in" or not [5]. The onboarding process of a new hire can either be a well-managed and a quick way to achieve employee contribution, or an inefficient and costly entry into the organization. Research shows that a positive onboarding experience makes the employees three times as likely to feel prepared and supported in their roles. This includes boosting their confidence and improving their ability to perform well on their job [6].

Several researchers in the past decades have also shown the importance of onboarding in terms of performance, job satisfaction, organizational commitment, and intention to remain [3], [7], [8]. Despite this, time and budget for onboarding processes are among the first to be cut at a company. Many organizations view training as an end unto itself, rather than something that increases on-the-job performance. This often leads to it falling under the "nice to have" category, instead of being a requirement for organizational success [9]. This is something that research also can confirm, where less than a third of executives worldwide are positive about their onboarding experience [10].

1.1 Onboarding new engineers

In the engineering profession today, the levels of education and demands for competition are increasing, meanwhile, organizational loyalty has been shown to decline [11]. For organizations to gain enhanced performance and satisfaction from engineers, they need to take specific actions to build professional loyalty and mitigate any related job problems. Many engineers pursue a career within the same organization, where they enter without the experience or knowledge to locate their technical knowledge and professional ideology within the organizational context [11]. Due to this, newly recruited engineers often experience anxiety and uncertainty regarding their roles, tasks, and career prospects in the organization [12]. They will also search to find information about workplace norms and expectations to fit into the new team [13], [14]. The onboarding experience of newly hired engineers has therefore shown to be a critical factor for organizational commitment and long-term performance [12]. In addition to this, organizations also make significant investments in training professionals to be able to utilize technical knowledge and innovative ideas [15]. Therefore, an effective onboarding could translate into investing in the organization's future [8].

The onboarding process, or the lack of it, has implications for effective functioning within the organizational context, and consequently, for retention, and turnover [12]. The retention of valuable technical professionals is a pressing priority for many organizations. Maurer [16] presented in his article for Society for Human Resource Management from 2015 some strengthening statistics related to the argument above. He reports that newly hired employees are 58 percent more likely to still be at the company three years later if they had completed a structured onboarding process. Another survey that Maurer presents shows that 86 percent of the respondents felt that a new hires decision to stay with a company long-term is made within the first six months of employment. He also reports that around one-third of thousand respondents of new hire's who had quit, said that they barley had any onboarding or none at all. 15 percent of respondents in the study noted that the lack of an effective onboarding program contributed to their decision to quit.

The existing research on the subject has a primary focus on the enculturation of engineering graduates and investigates how they cope with their organizational entry. However, relatively little is known about how onboarding for new engineers should be designed and which socialization tactics are the best ones to use [12]. The engineering culture and profession-specific jargon are strong and are expected to influence the design of the onboarding [12]. This study therefore aims to identify different key factors for a successful onboarding process for new engineers in three different technology departments. The goal is to find effective ways for new hire's to acquire the skills and knowledge that are required to become effective contributors to the organization, and collect ways to make it more customized after each department and role. By comparing the theoretical framework of organizational socialization tactics with the manager's and the employees' ideas, a customized and role-specific plan for onboarding will be designed to clarify what knowledge is required for different facilities at the refinery. This individual approach aims to equip

new engineers with the right technical skills to complete their tasks confidently.

1.2 Study context

This study will be conducted in a technology section in a large oil refinery based in Sweden. The section is divided in three departments with separate managers. The company currently has a short and general introduction checklist which the managers is expected to use, regardless of department. This checklist includes necessary activities for the manager to carry out before the first day of employment and during the first week. One box to fill on the checklist is to develop an individualized introduction program for the employee's role, to strengthen their clarity and knowledge of their specific tasks. This structure is something that the technology section currently stands without. However, other parts of the refinery (production technicians, maintenance, inspection, managers etc) already has an customized education program. These documents clearly state which supervised moments the newcomer should go through with their manager or supervisor to be able to perform their role-specific tasks, but also necessary courses to attend.

Since the technology section currently is recruiting new talents, a demand for an updated onboarding process emerged from one of the departments. The section appoints people of different ages with various backgrounds and experiences. Therefore, the onboarding wishes to be customized after the employee's profile. A lot of the engineering tasks at the refinery are technically complicated and often take a long time to fully understand. The onboarding should therefore contain the basic technical knowledge that is common for all new hires, but also a branching of the parts that are unique for the different roles and facilities at the refinery. Since the company continuously works with education and skill development, there was also a request for a system that easily can identify which person who has participated in which course. The technology section contributes with technical specialist expertise to make optimal use of existing facilities and further develop them for safe, reliable, energy-efficient, and economically profitable operation with minimized environmental impact. All of the engineers have responsibility for different facilities, equipment, and tasks around the refinery which makes their role-specific onboarding extra important.

1.3 Research questions

This case study sets out to answer the following research questions:

- **RQ1**: How is the current onboarding process organized and what issues arise?

With RQ1, the goal is to map the current onboarding process in the departments to understand how they work to integrate a new engineer into their role. By answering this, existing adaptations from the organization and underlying reasons why the onboarding is designed the way it is will be identified. This question will also map potential issues with their current methods of integrating new engineers intro their organization.

- **RQ2**: What actions can be implemented to improve the onboarding and make it more customized for each department and role?

RQ2 aims to identify key factors for a successful and role-specific onboarding process for engineers, through a comparison with the socialization tactics from the theoretical framework and the participants suggestions. This question will also help to map the best layout of the onboarding and provide proposals for implementation.

1.4 Delimitation

This qualitative case study of newly hired engineers is limited to only study three technology departments at one organization, interviewing three managers and three new engineers. The ability to generalize the findings to other organizations is only speculative. Since the thesis will be written and carried out at a company, the final recommendations for implementation will be designed after their needs to make sure it follow the same approach as the other departments at the organization. The study's primary focus is on the design of an onboarding process and will therefore not include the creation of direct materials such as educations, documents or training activities.

1.5 Thesis outline

Chapter 1 will introduce the research subject and the case statement. It will also present the aim and the research questions of the study. *Chapter 2* will present a theoretical framework to map relevant research regarding the onboarding of new engineers. *Chapter 3* will present, discuss, and motivate the choice of research methodology that was used during the study. *Chapter 4* will submit the result of the data analysis from the interviews, which later on will be discussed in *Chapter 5*.

2

Theoretical Framework

In the upcoming sections, previous research and exciting theories will be presented and put together in a framework. This will be used as a base for the study to answer the research questions, but also to draw meaningful conclusions of onboarding new engineers. The chapter will start with a clarification of the term onboarding, followed by descriptions of the two studied models of organizational socialization and their central parts. Last, a model of evaluation the onboarding experience will be presented as a complement to the two models.

2.1 Organizational socialization

After carrying out a successful recruitment and selection process, one of the most important ways to quickly create productive and contributing members to the organization is through an extensive employee onboarding program [3]. Onboarding is a relatively new term and is defined by Bauer [3] as "*the process of helping new hires adjust to social and performance aspects of their new jobs*". In the academic literature, this process also has been referred to as *organizational socialization*, *organizational entry*, and *newcomer adjustment*. Further on in the report, all of these terms will be used depending on each author's choice of terminology.

Researchers in the past have stressed the importance of onboarding to facilitate desired organizational outcomes. There are a lot of different models that have been produced to map the organizational socialization of a new employee. Some have a primary focus on the newcomers' learning [17] or role performance [18]. Other link the newcomer's antecedents of adjustments and outcomes [19], [20]. However, a lot of the models are similar, consisting of the same central parts, and builds on each other's research. Due to this project's limited size, all of the exciting models can not be investigated. To get an extensive theoretical framework for this study, two models will be presented thoroughly in the upcoming sections. Section 2.2 will describe Bauer et al.'s [20] *newcomer adjustment model* (NAM) which illustrates antecedents and outcomes of newcomer adjustment. This model represents the most commonly studied constructs in newcomer socialization [21] and will make a base for the academic view of organizational socialization. This model has an explicit focus on the individual level of adjustment, in comparison to Korte's [14] *relationship-building model* (RBM). This one will be described in Section 2.3. This model will complete NAM with an engineering perspective.

2.2 Newcomer adjustment model

In 2007, Bauer et al. [20] introduced a model of newcomer adjustment (Figure 2.1) which integrates the most commonly studied socialization research. This model proposes two antecedents of newcomer adjustment; *information-seeking* and *socialization tactics*. These will affect the three key indicators of the model; *role clarity*, *self-efficacy*, and *social acceptance*. The antecedents of newcomer adjustment will result in outcomes that affects the newcomer's job satisfaction, organizational commitment, job performance, intentions to remain, and turnover. The central parts of the model will be described together with complementing research further down in this chapter.
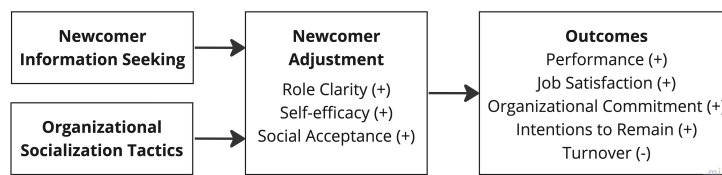
Figure 2.1: Antecedents and outcomes of newcomer adjustment during organizational socialization, according to Bauer et al. [20].

2.2.1 Adjustments indicators

Socialization researchers have studied similar adjustment indicators of organizational entry in a variety of ways, combining both task and social transitions. As mentioned, Bauer et al. [20] found role clarity, self-efficacy, and social acceptance emerging as three important indicators of newcomer adjustment. The focus below will be on role clarity since it also was presented in other research as an important indicator for new engineers.

When an employee has role clarity, they understand specifically what is expected of them in their job. This includes what job tasks they are supposed to perform, what their individual goals are, time allocation of their onboarding, and how their work impacts the larger goals of the business [22], [23]. Many socialization researchers have marked role clarification as a critical factor for the onboarding process and employee learning [20], [12], [24]. Bauer [23] herself presented another survey of more than 12,000 new employees where she found that role clarification was one of the most important parts of onboarding since it was related to employee performance. Through interviews and observation, she also found that when new employees have greater clarity regarding their role and place within the organization, they are more likely to be more effective and take risks, ask questions, and learn more about their new job and organization. In conclusion, Bauer states that employee clarifications help organizations to get newcomers up and running as quickly as possible.

Thamhain [24], another socialization researcher, highlighted that new engineers specifically expressed a need for clear role definitions and responsibilities. In his study with 150 engineering professionals and 155 engineering managers, thirty per-

cent identified role clarity as one of the most important needs to be satisfied for effective engineering work. He stated that multidisciplinary engineering efforts can be negatively affected when role conflict exists among the team members and/or supporting organizations. To achieve a higher role clarity and reduce uncertainties, one should use structured training processes captured by institutionalized tactics (formal, fixed, and sequential) mentioned in Section 2.1. These tactics will provide structured guidance to the new engineer [12]. Thamhain also stated that clear charters, plans, and good management direction as powerful tools to facilitate clear role definitions.

Bauer [23] proposed several things that organizations can do to enhance clarification and confidence for new employees. First, she claimed the importance of an orientation program that promotes clarification and confidence. Experiments at Google and Texas Instruments have shown that an effective program helped newcomers deal with anxiety and adjust more quickly [23]. Companies that implement a formal onboarding program have also seen 50% greater employee retention among new hire's and 62% greater productivity within the same group [6]. These programs should include both formal and informal training, which needs to be proactively designed in norder to get the new employees to play an active role in their onboarding process. Orientation programs also encourage them to proactively seek information. Another thing that Bauer stated as a powerful tool to facilitate clear role definitions is to share realistic job previews, both during the recruitment and the onboarding process [23]. Best practices should also include leveraging technology so that employees can easily access information in a self-service manner. This will help the organization to maximize the effectiveness of their onboarding targeted at building a clear and confident workforce. Last, Bauer also proposed that onboarding should be connected to long-term development to create a seamless transition between different roles.

The second adjustment indicator that Bauer et al. [20] identified in NAM was self-efficacy, which can be summarized as an individual's beliefs of how well he or she can execute a specific task. The authors mean that a higher self-efficacy with newcomers is connected to a greater tendency for proactive behavior. This overlapped with the indicator called social acceptance and refers to the newcomer's feeling of being liked and accepted.

2.2.2 Antecedents of newcomer adjustment

Over the last decades, researchers have taken different approaches to what and how the newcomer adjustment should be measured. Bauer et al. [20] describe socialization through a model that proposes information-seeking and socialization tactics as antecedents of adjustment. The newcomers proactively seek information to help them adjust to the organization, where the organization (either passively or actively) responds with different socialization tactics.

When new employees enter an organization, they have anticipatory expectations of what their work and roles might be like in the organization. However, their first time often falls short of expectations [25]. The newcomers often experience a feeling of insecurity and role shock [26], where unmet expectations are a common hazard of

the socialization process [25]. Bauer et al. [20] view socialization as an uncertainty reduction process. The uncertainty reduction theory, developed in 1975 by Berger and Calabrese [27], is a communication theory that specifically looks into the initial interaction between people. The theory asserts the notion that newcomers desire to increase the predictability of interactions between themselves and others within the new organization. NAM has a main focus on the individual level of adjustment, which will reduce uncertainty a theoretical base for both newcomer information-seeking and organizational socialization tactics [20].

Newcomer information seeking

To reduce the uncertainties mentioned above, newcomers are often advised to seek the information and help they need to create a predictable environment [26], [20]. Ashforth and Saaks [28] describe that information can be provided through various communication channels and notably social interactions with superiors and peers. With their research, they also show that one can link a greater tendency to seek out missing information with a better adjustment process [29]. Another key input in the sense-making process is information given by organizational insiders. They can provide the newcomers with background information and serve as "sounding bars", which help them to diagnose and interpret potential surprises or unexpected events [30].

Although organizations try to provide their newcomers with all the useful information, they still have to seek a lot of information themselves. During these early stages of onboarding, newcomers have been shown to receive less information from the organizational insiders than they believe is needed [26]. In order to achieve an effective onboarding and information-seeking process, Wanberg and Kammeyer-Mueller [31] state the importance of a proactive personality. Their research shows that a proactive personality is positively related to all proximal adjustment outcomes. Bauer et al. adapted a typology of information seeking from Miller and Jablin [26]. Miller and Jablin theoretically investigated newcomers' information-seeking behaviors during organizational entry which resulted in three information types presented below.

- *Referent information*: What is required to function at the job.
- *Appraisal information*: Degree of functioning successfully at the job.
- *Relational information*: Nature of relationships with others.

Bauer et al. also found that the types of information sought overlapped with the adjustment indicators presented in Section 2.2.1. The understanding of what is needed to function on the job overlaps with role clarity, information on how well the newcomer can function in relationship to role requirements overlaps with self-efficacy, and the quality of relationships with organizational insiders overlaps with social acceptance.

Organizational socialization tactics

Organizations use several formal and informal processes to socialize newcomers to ease newcomers into their roles. These processes are usually labeled as *socialization*

tactics and are structured by others in the organization. They shape what information the newcomers receive, how it is retrieved, and to which degree it is available [32], [20]. One of the most popular and best-developed theoretical models of socialization is Van Maanen and Schein's [32] theory of socialization tactics. According to their theory, newcomers respond to their role differently depending on what socialization tactics that were used by the organization since it shape the information the newcomer receive. They presented six different ways that organizations could be differentiated based on how they approach the newcomer. Each tactical dimension is said to exist on a bipolar continuum with a considerable range between the two poles [19]. The six dimensions are summarized and presented in Table 2.1 below.

Table 2.1: The six dimensions of socialization's tactics [19], [32].

Socialization Tactic	*Definition*
Collective vs Individual	Grouping newcomers and putting them through a common set of experiences, rather than isolating newcomers from one another and putting them through more or less unique sets of experiences.
Formal vs Informal	Segregating a newcomer from regular organizational members during a defined socialization period, as opposed to not clearly distinguishing a newcomer from more experienced members.
Sequential vs Random	A fixed sequence of discrete and identifiable steps leading to the assumption of the role, as compared to an ambiguous, unknown, or continually changing sequence.
Fixed vs Variable	A timetable for the steps involved in the assumption of the role and precise knowledge of the time it will take, whereas a variable process does not provide this information.
Serial vs Disjunctive	Socializing the newcomer by an experienced member of the organization who mentors the newcomer and serves as a role model, as compared to a process where a role model is not available.
Investiture vs Divestiture	Affirming the incoming identity and personal characteristics of the newcomer rather than disconfirm, deny, and strip them away.

Using these tactics above will result in different consequences that will affect the newcomer's socialization process. Jones [33] found that Van Maanen and Schein's six tactics could be represented in three categories, see Figure 2.2 below. The first one, *context*, refers to the context in which the information is being presented to the newcomers. The two dimensions that relate to the context are *collective* vs

individual and *formal* vs *informal*. Using a collective approach with group setting interactions reinforces the situation and produces custodial role orientations, in which the newcomer accepts the status quo and passively accepts pre-set roles in the organization. In comparison to this, will the individual tactics provide the newcomer with opportunities to adopt innovative orientations and form their role to their own. Formal tactics, especially when used together with collective practices, help the newcomer to accept definitions offered by others in the organization. This will result in sharing the same common norms, values, and attitudes as the other meanwhile individual and informal tactics will likely result in innovative responses [33].

The second category, *content*, refers to the content that is given to newcomers through socialization. The two dimensions that relate to the context are *sequential* vs *random* and *fixed* vs *variable*. Sequential tactics in combination with fixed tactics will lead to stronger role clarity and increase the newcomer's structure. However, these tactics would not provide innovative responses as random and variable will, since the newcomers clearly can see the pathways to their future right from the beginning. Random and variable tactics will lead the newcomer to miss out on information regarding their organizational future which will increase their levels of uncertainty. However, variable tactics could also lead to role conformity since it causes anxiety that motivates people strongly towards conformity [33]. The last one, *social*, reflects social or interpersonal aspects of socialization. The two dimensions that relate to the context are *serial* vs *disjunctive* and *investiture* vs *divestiture*. Disjunctive and divestiture processes are likely to result in active and innovative role orientation since the newcomers must develop their own definitions of situations and reinforce their beliefs in their own competency. However, serial and investiture will support the newcomer with positive social responses [33].

In addition to these three categories, Jones [33] also divided the six dimensions into *Institutionalized* and *Individualized* tactics. The institutional tactics (collective, formal, sequential, fixed, serial, and investiture) were shown to encourage newcomers to passively accept pre-set roles in the organization where they get useful information about their roles and expectations. These tactics reduce the uncertainty inherent in the early work experiences and reflect a more structured and formalized socialization process [19], [33]. Jones research also shows that the institutional approach has a positive correlation to job satisfaction, organizational commitment, and organizational identification. Using the institutional approach will also lead to a smaller risk of stress [34]. The individualized tactics (individual, informal, random, variable, disjunctive, and divestiture) will on the other hand lead to more innovative and unique role orientations where the newcomers encourage to question the status quo [19]. The absence of structure may increase the uncertainty and is related to higher levels of role conflict and anxiety of early work experiences [33].

Jones showed, as he predicted, that the social tactics (serial vs disjunctive, investiture vs divestiture) were the most important ones for socialization adjustments since they will have more effect on the newcomers role orientation and transition into the organization. These were considered to be the most important ones since they pro-

	Institutionalized	**Individualized**
Social	Serial Investiture	Disjunctive Divestiture
Content	Sequential Fixed	Random Variable
Context	Collective Formal	Individual Informal

Figure 2.2: Jones classification of socialization tactics [33]

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vide the social cues and facilitation necessary during the learning processes. These were followed by the content tactics (sequential vs random, fixed vs variable) that also appeared to reduce uncertainty's during the organizational entry. The dimension that had the least impact was the context tactics (collective vs individual, formal vs informal).

2.2.3 Outcomes

Many researchers have linked socialization tactics to organizational outcomes. In NAM, Bauer et al. [20] found socialization outcomes in terms of performance, job satisfaction, organizational commitment, intention to remain, and turnover. They found that social acceptance was related to all outcomes, self-efficacy to all except job satisfaction and organizational commitment, and role clarity to all except turnover.

2.3 Relationship-building model

Despite the many years of organizational socialization research, there is only a handful of studies that have investigated the specific case of onboarding new engineers within organizations [12]. Korte [14], an associate professor of human and organizational learning, studied sociocultural systems along with their effects on learning and performance. He means that the excising models highlight the newcomer's responsibility to learn how to fit into the organization, which he refers to as a "*sink or swim*"-perspective. Korte summarized these models from the literature in a model called "*Newcomer model of organizational socialization*", which could be compared to NAM above.

In 2009, Korte examined the phenomenon of socialization as a process influenced by social exchange. He published a case study that investigated how newly hired engineers at a large manufacturing company learned job-related tasks and the social norms of the organization. He stated that effective onboarding with developmental interactions includes both personal, relational, and communication factors. The

central parts of his model are considered to be applicable for the onboarding process overall and have the engineering point of view that Bauer et al. [20] is missing. Korte presented his findings in the *Relationship-buildning Model* (RBM), which is shown together with the newcomer learning model in Figure 2.3 below.

A. Newcomer learning model of organizational socialization.

B. Relationship-building model of organizational socialization.
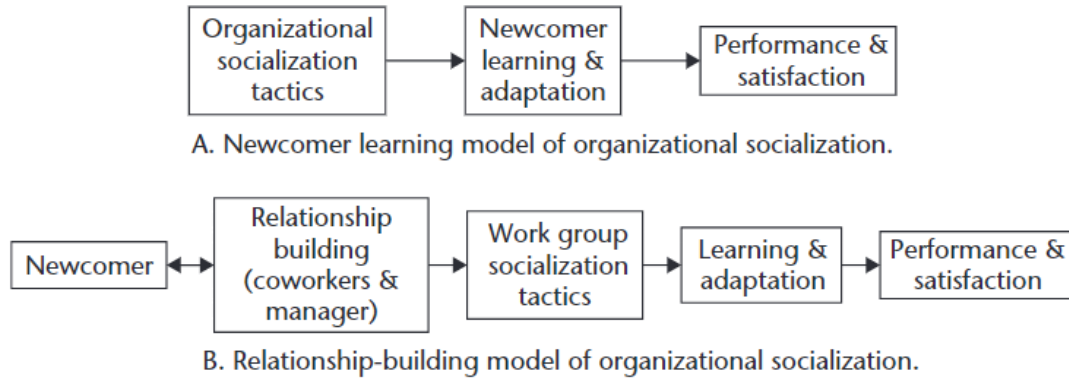
Figure 2.3: A comparison of (A) a newcomer learning model of the socialization process and (B) a model of the socialization process that highlights the mediating qualities of relationship building (RM) [14].

It is not that the existing models of organizational socialization, including NAM, totally ignores the importance of social systems. However, they typically relegate interpersonal relationships to one of several domains that the newcomers must master (e.g. organizational tactics, newcomer information-seeking, relationship building, and self-efficacy). They pay less attention to the interactions or social exchanges between the people within the organization, which Korte believed was important [14]. His findings confirmed this and proved to challenge the current views of organizational socialization. He showed that relationship building was the primary driver of socialization and that the work group was the engineer's primary context. Therefore, he chose to complement the current literature with RBM shown above. Although his study has a primary focus on how the new engineers learn social norms, it is still considered to be a valuable theoretical base for this thesis.

2.3.1 Relationship-building

When new employees enter an organization, they seek to build relationships with others in the organization. Research shows that building relationship with coworkers and their manager strengthens the new employees' socialization process [35], something that Korte's [14] findings also confirmed. The new engineers in his study reported the relationship-building as the primary driver and mediator of the onboarding, where the quality affected organizational outcomes. They also reported it as a prerequisite for knowing what to do, but also for how to do it well. Manager, mentors, supervisors, and other coworkers within the organization are crucial for the new employee since they provide them with both social and professional support [35]. They can integrate them into the work group, reduce stress, answer informal questions, and provide instructions on how to perform different job tasks. The result from other studies that analyzed the role of relationship building in the

onboarding process also find that it was positively related to job performance, desire for control, job satisfaction, domain knowledge, social integration, task mastery, and role clarity [35].

2.3.2 Work group socialization tactics

Like all newcomers to the organization, the novice engineer also needs to learn task-related activities, establish a role identity, socialize with the work group, master internal systems, among other things [12]. Initial interviews with practicing engineers in Korte's [14] study indicated the presence of strong influences outside the control and responsibility of the individual, signifying a need for further exploration of the experience. As mentioned in Section 2.2.2, social tactics appeared to be the strongest predictors of socialization outcomes. However, Saks et al. [19] stated that the strength of the various tactics can not be ascertained since no other literature or subsequent studies have focused on, nor reported results, concerning tactics for newcomer adjustment. They propose that more research was needed to further our understanding of how and why these tactics work. Due to this, Korte [14] conducted this study that aimed to identify and explain the array of qualitative factors and the relationships among these with new engineers.

Van Maanen and Schein [32] describe socialization tactics as formal procedures designed by organizations. The newcomer was seen as a passive recipient of something that the authors call "people processing" strategies. With Kortes [14] research, he showed that the work group was the primary context for engineering socialization instead of the organization. His findings show that it was the quality of the relationships within the work group that appeared to mediate how well newcomers learned the norms, tasks, and procedures of their jobs. Korte research indicates that socialization tactics for engineers should be structured by the work group to counteract the newcomer's responsibility to learn how to receive useful information.

2.3.3 Learning and adaption

Korte [14] analyzed three different sources of learning; coworkers, managers, and newcomers' knowledge and past experiences. These categories arose by a frequency count of learning incidents, which arose by letting new engineers recall in interviews specific events or incidents in which they learned something about how things worked at their job. These were reported and attributed to the different sources. Newcomers in the study reported 65% of learning incidents attributed to coworkers, which resulted as the primary source of learning. Through Korte's analysis, two subthemes emerged. The first, and most satisfying learning experience, resulted from developing a specific mentoring relationship with a coworker in the group. This could be done formally when the manager assigned a coworker, or informally when a willing coworker developed a mentoring relationship with the new engineer. The study showed that the quality of the relationship also mediates the quality of the learning experience. The mentoring relationships helped the newcomer learn specific job tasks, but also further explanations on the questions of how and why. In addition to work-related tasks, the newcomers also developed important insights about the formal and informal rules guiding them into the work group behaviors

and social norms.

The second subtheme resulted from being accepted into the work group by getting to personally know the members of the group. Learning processes emerged by the newcomer observing and listening to the group, reading interactions, and building relationships. This helped the new engineers to know how to approach others in the work group to facilitate their integration. These two subthemes can also be strengthened by another onboarding studies on engineers, which suggests that social ties and mentoring significantly influence the adjustment and long-term performance of engineers [12]. The thing that people first might think of in terms of onboarding, is the source of learning from the manager. It is most often the first one you have contact with, but also the one in charge of your department, and therefore expect to have the answers to your questions. However, only 15% of the learning incidents from Kortes study were attributed to the manager. With a few exceptions, newcomers had scant contact with their managers. The few employees that were able to build a high-quality relationship also reported learning valuable insights. The second theme described the relationship-building efforts of the new engineers, as a means to enchange their position in the group and the organization.

The last source of learning that Korte analyzed was learning from the newcomer's knowledge and past experiences (18% of learning incidents reported). He showed that new engineers relied on their pre-entry knowledge and past experience as a source of learning the social norms. Kammeyer-Mueller and Wanberg [36] also mark pre-entry knowledge as antecedents for newcomer adjustment. They state that people that have more accurate information about their job will have a predisposed advantage for adjusting to their positions over those who do not.

It is safe to say that how learning takes place during an onboarding process is an important aspect to take into consideration. According to the *Gestalt learning theory* (GLT) [37], the individual needs to be aware of himself and his behavior since learning is dependent on what the learner does. The theory indicates that an increased awareness in itself leads to change. Unless the learner, or in this case the new engineer, has struggled with a particular problem, likely, the information is just pushed to memory in a lifeless and mechanical way. This indicates that the learner needs to apply the information in some way (e.g. tasks, summaries, testing) and use it directly [37]. This theory is connected to the concept of *active learning* (AL), which can be seen as a collective name for different working methods where the newcomer is activated and gets involved in their learning process [38].

There are also many studies which also examine the social context of learning [25]. John Dewey, an American philosopher, psychologist, and pedagogue, identified a serious flaw in the GLT's way of letting the explored organism itself come to insights [37]. Dewey meant that the model was incomplete since the explanations did not consider the social factors even though people are evolutionarily formed in a social community. Instead of describing the learner as a lone explorer, Dewey described learning based on social factors where one learns by imitating, receiving hints, instructions, reading, telling stories, and more. According to Dewey, it is under no circumstances effective to simply tell the learner about a concept. In that case, the

learner will learn the idea by heart without fully understanding it. Dewey argued that the best way to learn a new idea is through a communication process where the learner interacts with others in purposeful activities or during explorations of common interest [37].

2.3.4   Outcomes

For engineers specifically, Korte [14] showed that the quality of the relationships formed between newcomers and coworkers has a lasting effect on the engineer's attitudes, satisfaction, and performance in the organization. His research indicates the importance of the relational qualities and the salience of the work group to accomplish effective onboarding. Korte means that the focus from the newcomer's capability and responsibility for learning should shift to a focus on the mutual constitution of relationships within the work group. An additional study of new engineers in their first professional year showed that organizational socialization tactics strongly influence the new engineer's role clarity, work group integration, and task mastery. These proximal outcomes, in turn, lead to increased satisfaction and organizational commitment [12].

2.4   Evaluation of the onboarding experience

One thing that neither Bauer et al. [20] or Korte [14] included in their socialization models is the evaluation of the onboarding experience. Davila and Pina-Ramirez [8] state that the implementation of an onboarding program is not complete without an evaluation that reflects the *Kirkpatrick Model*, also known as *Kirkpatrick's Four Levels of Training Evaluation*. It is one of the oldest and most adapted models for evaluating the efficacy of training within organizations. The model is used as a necessary step to improve the program, but also to maximize the transfer of learning to behavior and subsequent organizational results. One should note that the use of the word training in the model refers to any type of modality in which individuals gain knowledge or skills to do their jobs more effectively [9]. Another definition is made by Alvarez et al. [39], who refers to Training Evaluation as "*the measurement of a training program's success or failure concerning content and design, changes in learners, and organizational payoffs*". Since the Kirkpatrick Model is the world's most used training evaluation model in the world [9], it is considered to be useful for evaluating an onboarding process. The Kirkpatrick Model is divided into four different levels: Reaction, Learning, Behavior, and Results [9]. For each level, the less formal the evaluation gets.

The first part of the onboarding evaluation (*Reaction*) should, according to the model, be learner-focused. This level evaluates if the learner has found the training to be relevant to their role, engaging, and useful and measures satisfaction, engagement, and relevance. This could be done with a questionnaire asking if the learner was happy with what they have learned during their training, how much the learner got involved and contributed to the experience, and how much of the information the learner would be able to apply on the job. The second level of the onboarding (*Learning*) should focus on whether or not the learner has acquired the knowledge, skills, attitude, confidence, and commitment. These five aspects can be measured

Figure 2.4: The Kirkpatrick Model illustrated with the four levels: Reaction, Learning, Behavior, and Results [40].

either formally by questionnaires or interviews, or informally with one-on-one talks.

The third part of the evaluation (*Behavior*) should focus on measuring the behavioral changes after the training [9]. This part will show if the learners are applying what they learned as they do their job. This is a crucial step for understanding the true impact of the training since it will show if the learner understood the essential parts. Evaluation of this level should be done after 3-6 months since evaluations done too soon will not provide reliable data. The last part, and the most informal one to evaluate, is the results [9]. This level measures the degree to which desired outcomes occur in the organization as a result of the training, support, and accountability package. To evaluate the fourth level (*Results*), some leading indicators that training aims to affect has to be isolated and measured before and after training. The indicators can be anything that is of interest to the organization, from less staff turnover or higher employee satisfaction.

So when should these evaluation steps be addressed in the onboarding process? Bielski [41] identifies the first three months as critical to successfully acclimate an employee to his or her new role in the organization. He marks day 30, 60, and 90 as milestones to assess any established expectations. Davila and Pina-Ramirez [8] also stated these days as important marks where they have produced suitable questions for the manager to use in these check-in meetings.

3

Methods

The following chapter will present, discuss, and motivate the choice of research methodology that was used in this case study. It will initially describe the research approach, followed by the method for data collection and analysis, potential threats to validity, and ethical aspects.

3.1 Approach

To best address the formulated research questions, a qualitative approach was applied through a case study. This is one of the most commonly used methodologies of social research. Investigating a phenomenon in its real-life context provides a holistic understanding of the case [42]. By using a qualitative method such as interviews, the whole picture is taken into consideration in a way that a quantified method cannot do [43]. It is a good choice when the researcher is looking to find out *Why* rather than *How many* or *How much* [44]. However, qualitative methods are more expensive in terms of time and analysis. In this study though, only a small number of interviews were needed to draw valuable conclusions. An iterative process is also more suitable to fulfill the purpose of this research since it seeks to maximize the depth and richness of the data to address the research questions [45]. A quantitative method such as questionnaires could be a good complement to the data if the time frames for this study had allowed.

3.2 Data collection

In this study, qualitative interviews were conducted as a method for data collection at the company's technology section. One-to-one interviews are the most commonly used data collection tools in qualitative research [46]. In-depth information with complete answers can be obtained from the respondent where both clarifications and explanations can be made. It is an effective and flexible method that is especially appropriate when the researcher wants to collect information about the participant's experiences, beliefs, and behaviors. The results will indicate something about how people themselves perceive their world and various phenomena [47]. Qualitative interviews are also used to discover shared understandings of a particular group [45], which in this case are employees in a technology section. Conversational interviews also create an opportunity to record unexpected answers and to ask follow-up questions, which helps to continue any conversation of value [47].

The interviews were semi-structured, which means that a set of questions was formu-

lated into a guide to use during the interviews [44]. The conversation was, however, free to vary in contrast with structured interviews where a predetermined list of questions is covered in the same order for each person. While the literature review gave an understanding of the key factors for an onboarding process from an academic point of view, the interviews identified how new hires are integrated into the organization and their department. The interviews were used to map their own experiences of onboarding, requirements for their specific role, and possible suggestions for development. The following section will explain the selection of participants, the design of the interview guide, and the layout of the interview process.

3.2.1   Selection and delimitation

In this study, the onboarding process at three technology departments was investigated. The departments were assigned a letter, **A**-**C**, for further identification. When selecting interviewees, centrality was used. The centrally located sources are the people you perceive in advance as being important to interview for the study [47]. The choice of interviewees is motivated by the fact that these people, through their positions, are expected to include a concentration of knowledge needed to map a certain sequence of events [47]. In this study, the centrally located sources were firstly considered to be the three department managers, since they are the ones in charge of the design and fulfillment of the onboarding. Since the managers only represent one perspective of the socialization process in the organization, three interviews with employees from each department were also conducted to enrich the data with an employee's point of view.

The managers and the employees who participated in the study were presented together with the letter of their department. The interviewed managers had been responsible for their department for a time range from one up to sixteen years. The employees were the newest engineer in each department, excluding internal movements, and were employed within a period of a few months up to six years. To avoid potential difficulties in scheduling interviews with busy managers and employees, the study was thoroughly planned and the interviews were booked well in advance. After the interviews were held, transcription and preliminary analyses were performed.

3.2.2   Interview guide

Since the interviews were semi-structured, two different interview guides were created. One was made for the Department Managers (Appendix A.1) and the other one for the employees (Appendix A.2). These were used as a guideline to make sure that all topics were covered. However, they were not strictly used since they could be waived if this was considered necessary for the data collection. The development of these guides is an important first step in the construction of the interview process [46], where both the content and the form should be considered [47]. The questions were determined from the research questions and the aim of the study. They were sorted under two different categories to strengthen the participants awareness of what specific areas he or she was being asked about [46]. The categories were *Current onboarding situation* and *Future vision and goals.*

The structure and sequence followed an established methodology with warm-up questions, thematic questions, follow-up questions, direct questions, and closing questions [47]. This structure leads to a natural sequence and ensures that the participants are feeling comfortable throughout the interview [46]. According to the methodology, this will also make the participants answer the questions more truthfully [47]. Due to this, the interviews started with easy, non-threatening questions as a warm-up. They were followed by thematic questions which directly concerned the main focus of the study. The follow-up questions are linked to the thematic questions and are used to get more meaningful answers when trust has been established. By using prompts instead of why questions, spontaneous descriptions were evoked, and the feeling of being questioned was avoided. For example, this could be a question such as "*What did you feel in that situation?*" or "*Can you tell me more about that please?*". If the answers began to dry out, direct questions were asked about the content that not yet had been touched upon during the interview.

When it comes to the design of the questions, they aimed to be asked in such a way that the participants would feel motivated to continuously tell about their experiences [47]. One fundamental rule is that the questions would be short, easy to understand, and free from academic language. The questions were mostly open, since closed questions that only require a yes or no answer generally do not help elicit useful information [46].

3.2.3 The interview process

The one-to-one interview is a social interaction where the relationship between the interviewer and the interviewee should be taken into account to ensure that the process is successful [46]. The interviewer has to be aware of their role and enter the interview with the intention to make the interviewee feel at ease by establishing trust early in the process. To create an equal and relaxed relationship, the interviewer should behave friendly and show gratitude for the participant [46].

To accomplish this, the interviewer asked the selected interviewee about participation, proposed a suitable time, and booked the interviews in a comfortable environment. Before the interview started, a warm welcome and appreciation for participation were shown. An information sheet, see Appendix B, was presented with information about the research, what data is collected, what happens to the data, how the findings will be shared, their right to refuse or withdraw, and who they shall contact if they have queries or concerns about the research. The information sheet ended with a consent statement for them to sign to agree that they have received and understood the information. It was also explained that the interviews will be recorded with audio to use afterward for transcription and further analysis, which is a prerequisite for the data to be managed. In the end, they were asked if they had any final questions or concerns before the interview started.

During the interview, the interviewer asked questions from the interview guide to the respondents, giving clarifications and explanations when needed. This was made through a friendly tone, with active listening and eye contact without any judgments or interruptions. When the interview was finished, the interviewee was thanked for

participating. It was also told that he or she was welcome to contact the interviewer if any questions or concerns arose. The participant was also told that the interviewer could reach out with potential questions or needs for clarification.

3.3 Data analysis

The data analysis occurred concurrently with the data collection since it can generate an emerging understanding of the research questions and therefore affect the questions that were asked [45]. The analysis activities consisted of three main steps: *Data Condensation*, *Data Display*, and *Drawing and Verifying Conclusions*. The three types of analysis activities above form an interactive, cyclical process which is displayed in Figure 3.1 below [48].
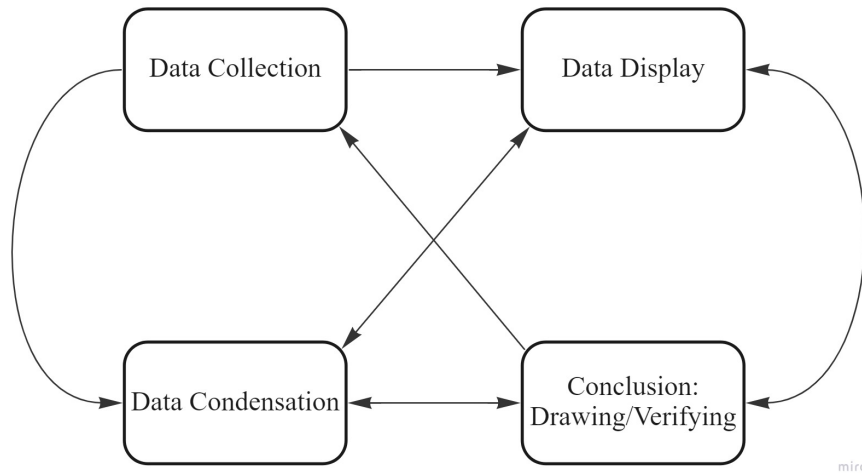
Figure 3.1: Interactive model data analysis components [48].

Data Condensation refers to the process where the data was transcribed, simplified, and summarized [48]. It is important to get a verbatim account of the data to analyze it [46]. So when the interviews had been held, the data was transcribed in Microsoft Word using their transcription tool. These were also reviewed together with audio files to identify any possible technical errors. The next step was to do a thematic categorization of the data, which is a common summary technique in qualitative analyses [47]. Thematic analysis is highly beneficial when working with large bodies of data such as interview transcriptions. It helps you to divide and categorise data in a way that makes it easier to digest. It is particularly useful when looking for subjective information, which in this study is the participant's experiences, views, and opinions [49].

A thematic analysis is driven by the aim and research questions of the study, which makes it unnecessary to identify every possible theme in the data [49]. Therefore, the data was firstly separated under two themes from the research questions; *Current onboarding situation* and *Suggestions to improve the onboarding*. From these two, subthemes emerged from the data. The subthemes for the departments current onboarding situation were *Onboarding documents and introduction courses*, *People*

involved, General onboarding, Role-specific onboarding, Relationship-building, and *Evaluation of employees onboarding experience.* The suggestions for improving the onboarding was divided into the same subthemes except *Onboarding documents and introduction courses* and *Evaluation of employees onboarding experience.* Many of the subthemes arose as a direct consequence of how the questions were structured in the interview guide.

The second analysis activity was *Data Display*, where the data was organized and visibly presented to show possible relationships and similarities [48]. This is an important step since only extended text overloads our information-processing capabilities and makes it difficult to find simple patterns [48]. The design of the displays also has clear Data Condensation implications. This was done by using the tool Miro. A dashboard was created where the data was visually represented by digital sticky notes under each theme.

The last step was *Drawing and Verifying Conclusions*, where possible conclusions and explanations were made from the data. From the beginning of the data collection, patterns, and propositions were notified but were held lightly to maintain openness and skepticism [48]. Conclusions were also verified as the analyst process proceeded, but the final ones were not drawn until the data collection was over.

3.4 Threats to validity

When conducting qualitative interviews, one should be aware of the potential threats to validity. Interviews have a potential for bias to occur since it is a social interaction between two people. This can occur in the selection of the participants and the conduction of the interviews [46]. In this study, a reflection of these issues, a clear accurate interview guide, and documentation minimized the risk of bias. A consistent approach and well-designed questions in the interview guide also helped to achieve trustworthiness in terms of credibility, transferability, and dependability [50]. To avoid leading or misleading questions, the participant got to talk uninterrupted without any judgments about the answers [46]. The role of the interviewer and work relationships could however influence the outcome.

Another risk is interviewer effects, which means that the same set of questions may receive diverse answers depending on who is asking the questions [47]. To strengthen the accuracy of the interviews, they were recorded and transcribed [46]. This allows returning to the material without missing essential parts of what was said. The interviews may have a technical barrier and entail various technical problems that can influence the quality, such as excessive background noise and placement of the recorder. To avoid this, a quiet and isolated meeting room was selected.

Transcribing tape-recorded interviews into text is a complicated and technical process. The insertion of a period or a comma can change the meaning of an entire sentence [45]. To ensure the validity of the data, the audiotape was therefore listened to while the transcripts were read to ensure accuracy [46]. The transcriptions were also given to the participants so they could check the data and look for any technical errors or inaccurate interpretations made by the interviewer.

3.5   Ethical aspects

The involvement of human subjects in the study led to an ethical analysis to ensure the ethical guidelines [47]. Protection of participants' rights is a fundamental aspect of conducting interviews [46]. Information about the aim of the research and the format of the interview was told, and their anonymity was clearly stated before the study began. The interviewer did not ask the participants to provide any information that might lead to their identification. They were also informed about consent and that they could withdraw from the survey at any time [47].

4

Results

The following chapter will present gathered data from the interviews under each theme that emerged during the data analysis, see Section 3.3. Instead of presenting the empirical data from each department separately, it will be organized in such way that possible similarities and differences could arise. The data will be summarized under each theme and complemented with quotes from the participants. All quotes are translated from Swedish where the original can be found in Appendix C. The managers and the employees who participated in the study will be presented together with their department, assigned by letter **A**-**C**. First, the departments current onboarding will be presented under *onboarding documents and introduction courses , people involved, general onboarding, role-specific onboarding, relationship-building*, and *evaluation of the employees onboarding experience.* After that will the participant's suggestions for improving the onboarding be presented under the same themes as above, except onboarding documents and introduction courses and evaluation of the employees onboarding experience.

4.1 Current onboarding situation

The three technology departments turned out to handle the onboarding in different ways based on their various circumstances such as time and needs. As mentioned in the case statement, Department **A** was the one that requested an updated onboarding process. The other two departments were examined to broaden the perspective and coordinate the onboarding of the entire technology section. The total number of employees varied from department to department. Department **B** was the largest group of 15 engineers, Department **A** consisted of 13 engineers and Department **C** was the smallest group of 4 engineers.

4.1.1 Onboarding documents and introduction courses

Intro checklist
As mentioned in the introduction, the company already had a general intro checklist that included activities before and during the newcomer's first week of employment. The managers had different ways to use the checklist and go through with the onboarding. Manager **A** used the checklist and showed it to Employee **A**. However, at the time when the interview was held, the manager had not yet followed up with the newcomer nor signed it. Employee **A** confirmed this and explained that he/she also had to complete some parts of the list on his/hers initiative. Manager **B** and Manager **C** told that they looked at the checklist when they created a separate

onboarding plan, where they implemented the activities from the list. Employee **B** and Employee **C** had therefore never seen the original checklist.

Guidelines from the company
On the company's internal web page, there is a page called "Introduction of new employees". Here, they share the purpose of a good introduction, general guidelines, and some information. This page also includes recommended content in an introductory program (day 1, day 2-14) and recommendations for a follow-up meeting after three months of employment. Neither of the managers said that they used this page when they receive a new employee.

Introduction courses
The company arranges a group-wide introduction, which gives new employees basic knowledge about the company, the organization, and its value chain. They also get the opportunity to make new contacts and create networks with colleagues from different locations and business areas. According to the company guidelines, it is the manager's responsibility to book the employee to the next opening. When the interviews were held, Employee **C** was the only one that had attended. Employee **B** explained that he/she did not know about it during the onboarding period, but heard about it afterward. There is also a basic education for the refinery, including topics such as the organization, an overview of the path of oil, security, environment, chemical health risks, work environment, and so on. Since the managers thought this course was not directed to the technology section, neither of the employees had participated.

4.1.2 People involved

There are different people involved in onboarding new engineers in the technology section today. In the section below, the identified people mentioned during the interviews will be described further.

Newcomer
Manager **A** told that it is often up to the individual to search for the information they need and to find available colleagues, something that the interview with Employee **A** confirms. The manager also adds that this is a lot more difficult in the beginning since you do not know what your job entails. Therefore, it can also be very difficult to ask the right questions as well. The manager described the department with the following words;

"We have a very unpretentious department with an open door policy, so I don't think there is anyone who sits with the feeling that they cannot ask someone for help in case they wonder about something." - Manager **A**

Employee **A** however requested more opportunity's to ask people since he/she thought it sometimes could be a though feeling interrupted others. Manager **B** and Manager **C** did not mentioned the need for the newcomer to be proactive when describing their current onboarding. However, curious, outgoing and communicative are mentioned as important qualities for the newcomer to accomplish a good onboarding experience.

Manager

One thing in common with the three departments was that the manager had the main responsibility throughout the process. In Department **C**, which also was the smallest one, it was told that it came naturally since Manager **C** was the one with the longest experience. However, the manager was clear to state that it does not always have to be the case. Interviews with participants from Department **A** showed a direct consequence of the manager having the main responsibility. Manager **A** expressed a feeling of stress and pressure over how to spend their time.

"As it is today, I have quite a bad conscience, I have to admit. You walk around and feel that you are inadequate where you wish you could help the new employees more. But I don't have time for that, I have so many other work-related tasks. You can't suddenly spend all your time on one person." - Manager **A**

This was something that Employee **A** also mentioned. The participant perceived that the manager often has a lot on their table, which may lead to a time constraint. Therefore, the employee had the feeling that the onboarding sometimes could fall between the chairs. Employee **B** and Employee **C** on the other hand, both told that the managers had enough time for them in the first couple of weeks. They stopped by their office and talked to them, answered questions, and asked if they required a break.

Mentor

Department **B** always assigns a mentor for the new engineer. The mentor was described as an experienced employee that, in the best case scenario, had worked with the same equipment or areas of responsibility which the employee will work with. The department currently stands without any junior engineers but has two fully competent, five seniors, and five experts. Manager **B** meant that assigning competent mentors is a mission that you have to parry since they might have lent out staff for different projects. One of these might be one of those who would have been best suited to be a mentor for the new engineer. But for that reason, it may not be.

One aspect that was mentioned by Employee **B** was that some of the specialists might feel that you come in and take over their responsibility. However, the employee was satisfied with this arrangement and thought it worked out well.

*"[Mentor] had the responsibility for the facility at the time. He/she told me a lot and I consulted him about different things that I wondered about, things I want to do,
and so on. It was like a phase-in period, one could say. It worked well, there were no oddities really."* - Employee **B**

The manager for Department **A** also mentioned the value of having a mentor, since this was the situation back when he/she started at the department a couple of years ago. Back then, it was an overlap between employees, where the representative for the role still was available to teach the newcomer.

"Right now, we've ended up in a situation where it's not really like that anymore, people who had the position before have disappeared from the department before the new one has started. And that has made it a little more difficult to have it that way, which I see as a big shortcoming. It's not that easy to learn everything you need to know by simple reading, it's very much dependent on the support of people around you." - Manager **A**

Currently, there was also starting to be a predominance of new ones in Department **A**. This was described as a factor that could affect the possibility of using mentors. Another difficulty that was mentioned was the time aspect for the mentor. Even though, it was told by the manager that it has to be prioritized. When the interviews were being held, Department **C** was not using any mentors due to their small group.

Colleagues

Besides the manager and a potential mentor, all three departments had the belief that, to some extent, colleagues also participated in the onboarding.

"In a way, the entire department is involved in the introduction. But a lot of people don't spend so many hours on it, rather a few. Me, together with one or two others or something like that." - Manager **B**

Despite the issue with learning from the previous engineer's in the position, Manager **A** described that there is still enough experienced people in the department to help the newcomers. Employee **A** explained this as a necessity since the colleagues know that the onboarding at their department does not work if they do not step in. During the employee's interview, many different colleagues were mentioned as important people in the onboarding. For example, one colleague showed the newcomer computer-related stuff, another employee with experience in the operation explained how things work there, and so on. In Department **C**, the manager makes sure to schedule one hour-long individual meetings for the newcomer with everyone in the department. The manager tells that this will make the newcomer understand how everyone works, their responsibility, and who they are as a person. However, both the manager and the employee pointed out that this activity could be difficult in a larger department, but told them that it worked in theirs. This activity also came up as an answer to the question of what the Employee **C** thought was the best part of the onboarding.

"It feels very good to be able to sit alone with them and hear what they do. We talked about anything really. There was no agenda. We touched on different topics, people, and tasks. Then you also got to know everyone." - Employee **C**

People outside of the department

The manager and employee in Department **A** also mentioned the operating engineer's that they work closely with. These often help the newcomers and answer their questions. When Employee **A** got the question of what he/she thought worked well during the onboarding, talking to the operating engineer was mentioned as one of the things. Another thing that Employee **A** appreciated was that the manager hired a consultant with many years of experience within the company, to explain important things to the new engineers and show them around.

4.1.3 General onboarding

Before the newcomer's first day, the participants explained that human resources have the main responsibility over the communication. Manager **B** also mentioned that the company sends out a starting package. Manager **A** and Manager **B** explained that the applicant in some cases also gets to meet the colleagues at the department on the same day as the interview. The managers also told that they answer specific questions regarding their employment and communicate with them regarding the arrival on their first day. Employee **C** confirmed both phone calls and emails, that held information about the newcomer's first day, the size of safety clothes, some courses to attend, and so on. All three managers also explained that they start to look at the intro checklist before the newcomer arrives. This includes activities such as setting up a workplace, fixing a computer, creating accounts, and ordering flowers for their desk for their first day.

The first day as a new engineer was explained to be quite alike, regardless of department. It includes basic activities such as showing the newcomers around, presenting them for their office, introducing them to everyone, participating in weekly meetings, and so on.

> *"First, I had to go around and meet a lot of people, many whose names you don't remember. Those were quite busy days. A little information interspersed with meeting different people."* - Employee **C**

Manager **A** and Manager **B** did not mention any written structure of their onboarding. The lack of this systematic approach and its consequences was something that Manager **A** and Employee **A** highlighted. Employee **A**, which had written school assignments on the department before the employment started, found it a bit hard to distinguish which activities were missing from the onboarding since the participant already got the presentations of their internal systems, company routines, among other things. The participant started the employment at the department during a Christmas break which lead to a lot of people being away on their holiday. The manager also worked night shifts during this period. Employee **A** believed that these circumstances lead to him/her missing out on proper onboarding, including the introductions to colleges at different departments. The employee also mentioned that there was no one there to meet him/her on the first day back when he/she was writing the school work either.

> *"There was not any communication. I got here and... If I hadn't been independent in myself, I probably don't know. I just started reading about the facilities and kind of jumped into my office."* - Employee **A**

Employee **B** shared the same feeling as above. Besides the presentations of key persons during the first days, the participant did not describe the onboarding as so much more than getting an office and a chair, and roughly getting presented with what you would work with. However, the mentor was mentioned as a key person for helping out during this period. Manager **B** thought their onboarding overall worked out well, at least the structure was not mentioned. However, he/she thought that

the timing of the employment could affect the onboarding since it affects which people that are available to work as a mentor and in turn how long the onboarding will be.

Manager **C** described that he/she began with creating an individual plan for the new engineer. This was structured by a schedule over the first two weeks. Each day has different activities or tasks assigned. When one part was completed, the manager and the newcomer check it off together. This included things such as the company introduction, safety, values, department culture, and other practical details. The manager also presented online courses and self-studies for the newcomer. Employee **C** thought that this was a good introduction to general knowledge at the company. One thing that interviewee's from Department **A** and Department **B** shared was the frustration over the new hires difficulties in gaining access to the internal systems and programs on the computer. There was many permissions that could not be activated before the newcomer arrived which took a lot of time in the first weeks.

"One thing that isn't as good is that you receive a PC with nothing installed, which creates a lot of frustration. You try for several weeks to get all the programs in. There isn't any document that describes which programs I need, what I need them for, or something like that. That is something I miss. " - Employee **A**

One thing Employee **A** appreciated was their meeting once a week with the department, where the aim was to talk about different synergies. Through these meetings, the participant got a lot of explanations on how things work and relate to each other. The company works with a lot of internal education, both at their site and through different e-learnings for self-studies. Before this study, the technology section had raised the issue of structuring a base package of education for engineers across the three departments. Currently, Manager **A** and Manager **B** simply register their new hires to courses they believe they need, without following any list or system. Which courses the newcomers attended are not registered anywhere. Manager **C** has worked with an excel-sheet to track the attended courses for the employees.

One thing in common between the three departments was that they send the newcomers on shift practice out in the refinery, working together with the operators. The managers describe this as an important activity in the onboarding since it will help the newcomer to get a greater understanding of the work outside. It will also help them to get to know new people outside the department. All the employees explained that it was good for their learning. However, Employee **B** also mentioned that it is often routine work at the shifts and that he/she felt that it also was nice when those weeks were over.

Understandably, it was difficult to answer how long the onboarding of a new employee is. As the participants explain, it depends on if you refer to the time before the newcomer feels at home or the time when they are self-propelled. The participants believed that the time before a newcomer felt at home with the department and got a proper introduction varied from one to three months. However, they told that it often took up to a year or more for the new employee to become useful and independent of others.

4.1.4 Role-specific onboarding

One activity on the checklist was to develop an individual introduction program for the employee's specific role, which was supposed to be done before the employee's first day. In line with the case statement, the structure of this was something that Department **A** was missing. To the question of how the new engineers get introduced to their role-specific tasks, the manager answered with the following words.

> *"Unfortunately, I have to be self-critical and say that it doesn't work very well today"* - Manager **A**

As mentioned in Section 4.1.2, Department **A** currently has an issue with engineers quitting before the new one for the position has started. Before this, the manager explains, the newcomer could learn directly from the person, by shadowing them on an ordinary day at their job. Employee **A** has only worked for a couple of months and confirms the statement above by explaining that the role-specific tasks are diffuse. The employee stated the lack of role clarity and described that you want to perform well, but you do not have the tools to do so. The previous person who held the position changed departments before Employee **A** started the employment.

> *"I've tried to connect to [name] and ask questions so that they can describe what my role-specific tasks are. But [name] is also new to their position [...] It feels annoying to nag every time you want something."* - Employee **A**

Since Department **B** had a larger number of engineers that have worked for many years at the refinery, Manager **B** believed that the role-specific training of new employees got easier since more experienced people are available to learn the new-comers. However, the interviewee also mentions one possible consequence that could effect the onboarding negatively.

> *"But it's probably worth considering that if you've been here for twenty, twenty-five years, you might have forgotten what was difficult in the beginning. And since then, some things have changed."* - Manager **B**

The employees described that talking to other people, both internal (mentor, colleagues) and external (operating engineer, consultant), helped them to gain clarity in their tasks connected to their role. They also explained that the shift practices and specific courses helped them to know more about the facilities/areas/equipment they had responsibility for. Despite the actions mentioned above, Employee **B** felt that it was really hard to understand the role-specific tasks and felt that the expectations were a bit unclear. However, the participant described that you grow into your role as time goes on.

> *"I tried to learn about the facility that I was in charge of at the time, but I didn't understand the work tasks at first. And what was expected of me, based on my previous experience. [...]. But otherwise, colleagues and the manager were engaged and talked a lot, but not that much about what I was expected to do."* - Employee **B**

Manager **C** expressed that they have the opportunity to influence the setup of the onboarding and optimize it after the individual. To the question of how a newcomer in their department learns their role-specific tasks, the manager answered that it was through the individual onboarding plan that he/she creates before the newcomer arrives. The manager told that the plan becomes individually adapted to who you are, when it is in time, who is available, and so on. Employee **C** felt satisfied with the arrangement. Another factor that the manager thinks positively affects the onboarding is the size of the department. Manager **C** described that being in a small work group leads to technical security, as the engineer knows who to relate the knowledge to and develops security by asking around. To the question of how they got introduced to the role-specific tasks, Employee **C** answered;

> *"It has been a mixture of things, me studying when [the manager] did it, but also me doing it when [the manager] looks. Now, it is more [the manager] that gives me an assignment that I try to solve. Whenever I run into problems, I ask for help. "* - Employee **C**

The participant also adds that he/she learns the most in situations where you have to take your own responsibility for a task since you are forced to continue and try to understand it.

4.1.5   Relationship-building

When asking the participants how they work to socialize a newcomer and create relationships at the department, many of them had a hard time answering. They had to think for a long time where they still only could come up with a few activities that strengthen the relationships between the newcomer and the people in the department. Two activities that most participants gave as an example were integration during coffee or lunch breaks and their shift practice. Manager **A** also raised the importance of taking time to pass by the employee's office and ask how things are going, if they have anything to do, or if they need anything. The participant also believed that the one-on-one talks was an important relationship-building activity.

> *"Already in the interviews, I usually ask what expectations they have of a manager. I think it is important that you talk a little about that, where I can inform them that I do not expect them to know the job right away, especially not when they are completely new."* - Manager **A**

Historically, Department **B** have had a low turnover of staff. Therefore, the manager and employee found it hard to answer how their department worked to build relationships or socialize with a newcomer, except including them in new contexts, projects, and meetings. No other socialization efforts were mentioned by either the manager or the employee. Since Employee **B** is one of the younger ones in the department, he/she mentioned that it can be difficult to socialize with older colleagues. The employee also brought up the time aspect.

> *"The business keeps on going. You might have a lot to do yourself, which can make it difficult to get involved with a new employee as well."* - Employee **B**

Employee **C** was the only one that had attended the group-wide introduction. This was something that he/she enjoyed and thought was good for connecting with others within the company. Both the manager and the employee from Department **C** also mentioned their scheduled introduction to each colleague. Manager **C** believed that the small size of their department helped the employees to quickly enter the group and form relationships.

4.1.6 Evaluation of employees onboarding experience

When asking if the onboarding was evaluated, Manager **A** responded that it was not. He/she continued by explaining that it should be, but that the first step would be to actually have an structured onboarding to evaluate. However, all the employees at Department **A** and Department **C** have "one-on-one" meetings together with their manager. These were scheduled approximately every two weeks up to once a month. During these meetings, the managers and newcomers talk about the newcomers current situation at the company and discuss further plans and goals. Employee **A** described the value of these meetings.

> *"It is at the one-on-one meetings I have been able to tell if I am stressed or*
> *frustrated. I've presented many improvement suggestions for me to learn*
> *and I believe that [the manager] is very good at listening to them. [...]*
> *Everything I say is heard and taken seriously, which is good."* - Employee **A**

Department **B** did not have these meetings regularly like the other two departments had. Instead, Manager **B** referred to the summary meeting that are being held once a year to evaluate the employee's current work situation and discuss future development opportunities. This summary meeting also includes mapping which courses the employee will attend and setting new goals. Besides these "one-on-one" meetings, the employees experience of their onboarding is not evaluated any further by Department **A** or Department **B**. Manager **C** did mention that the manager and employee should have a conversation after 90 days to talk through the first period. Whether this was done or not could not be read from the resulting data.

4.2 Suggestions for improving the onboarding

In this section, the participant's suggestions on actions to implement that can improve their onboarding will be presented.

4.2.1 People involved

The manager and employee from Department **A** both agreed that assigning a mentor would improve their onboarding. If the circumstances allow, it would ease to have an employee that had the responsibility over the facility before the newcomer. Manager **A** also highlighted that all employees in the department should be involved, where a better system for the manager to assign different people to activities was requested. This was something that Employee **A** also lifted. In addition to this, Employee **A** also believed that you should prioritize to open up the possibility of being able to go and talk to colleagues. The employee wished for an environment where people,

both the manager and colleagues, stopped by the new employee's office more often and asked how things were going.

Manager **B** felt that there was missing a unifying function such as a technical administrator. This person is desired to have overall responsibility over the section for practical activities of the onboarding (e.g. computer access, pick up clothes, keys), but also support the departments with their different systems and access to these. The manager also mentioned that there are more people from the section that has requested a technical administrator. The reason for this is that a lot of time is spilled on administrative tasks in their systems which could be used for their regular work. This in turn lead to a big frustration.

Even though the interviewee's from Department **C** thought their arrangement with the manager as coach was good, Manager **C** also highlighted the perks of having a senior employee who takes care of the new engineer. One reason for this was that managers may find themselves in a bind as they have to prioritize other things. Employee **C** pushed for the whole department to be active in the onboarding, to get good cooperation, and have people with experience by your side. One example that the employee raised was to shadow the colleague more in the beginning to gain an understanding of how processes work more broadly, and not specifically just for your area of responsibility. However, Employee **C** was clear in pointing out that how you learn is very individual.

4.2.2 General onboarding

The first thing that the participants from Department **A** mentioned as a proposal for improvement was the structure of their onboarding. A systematic plan or checklist for what should be done within the first couple of months was requested, both from the manager and the employee. Manager **A** described that this plan should, in a structured way, help the manager to assign people in the department to onboarding activities together with the newcomer. It should also define what the new engineer is going to learn under which time horizon. Employee **A** also request that it should include activities to do when you start your day at your office, but also what to do each week.

Another thing that they believed should be implemented to improve their onboarding is to produce some introducing material and systematic instructions, for the newcomer to back to when searching for general information. Employee **A** gives a concrete example of printed documents in a folder with numbers, instructions, abbreviations, and information collected. The employee also wished that all computer programs and other things you need access to should be written down since no one knows how to handle this today. Manager **A** believes that it should be combined with simple tasks to optimize learning. However, the manager was also careful to note that there is a difference from school, as there will not always be an answer or someone who can assess you.

When it comes to specific courses to attend, Employee **A** wished that these would be specified on a checklist together with information on how to sign up. The employee

also lifted an important aspect of the onboarding overall. He/she believed that you learn so much in the beginning, that one after a while can not absorb any new information. Then it is important to alternate with repetition and discussion as well.

Manager **B** agreed that the structure of the onboarding should be prioritized, especially when their department is approaching a generational change. He/she also stated that the onboarding should not be too short, that you should combine different learning techniques (e.g. self-studies, education, internal briefings, etc), and that you should work in the team. Another thing that Employee **B** wished to become clearer was the organizational structure where hierarchies should be clarified. He/she perceived that it was many names and designations at the beginning, which made it difficult to clarify the organizational structure of the departments. Like Department **A**, they also believed that this should be listed in some kind of way to avoid being forgotten. The employee meant that new engineers will take things like this very seriously since they all want to perform at their new job.

"From my perspective, you should be given some type of responsibilities
or tasks that you are expected to deliver or perform. This will lead to some
type of structure. Then, when you go home for the day, you can still be able
to feel that you did a good job. I think that it's important to feel
satisfied in that kind of way." - Employee **B**

Furthermore, Employee **B** described that this could be marginal tasks at first simply to engage the newcomer. A newly graduated engineer has no experience from working life, so they have nothing to compare it to. However, the manager thought it was important to point out that a newly graduated engineer often has a focus on performance due to their long time in school. To improve their onboarding, the manager stated that one should clear the expectations so the new engineer does not feel any pressure over that something has to be produced.

"As a new engineer, you don't need to perform. What you have to achieve is to
join, listen, and try to understand as much as possible in the first years."
- Manager **B**

Even though Department **C** seemed to be pleased with their current onboarding, they agreed that it was important to build a structure to refer back to for larger departments than theirs. The only thing that Manager **C** raised as an improvement factor was the collective platform for engineers in the technology section as a whole. Manager **C** proposed that, in the best-case scenario, all the new engineers from the three different departments could meet and learn together.

"It's difficult to adapt so that all new engineers start at the same time, but I'm
only thinking based on what could have been done. If you had a common platform,
as I talked about earlier, new employees would be able to go through similar parts if
you run this at regular intervals. From an educational perspective, they could learn
at the same time and talk to each other about what they were doing." - Manager **C**

The manager meant that you can not see each department as an isolated island, since a lot of things are connected and common over the section. The onboarding should therefore be more streamlined across the technology departments, so all new engineers get an equal start before expanding their role-specific knowledge. It will also help the newcomers to create contacts and share their experiences.

4.2.3 Role-specific onboarding

When it comes to role-specific onboarding, interviewee's from Department **A** were the one with the most suggestions. Even though Manager **A** stated that they currently clear their expectations in the onboarding process, it was also mentioned as an improvement factor together with short-term goals. This was something that Employee **A** and Employee **B** also raised, a wish to clarify specific work tasks that you are expected to deliver. The plan mentioned in Section 4.2.2 wished to be customized after the individual and their facility, and facilitate the possibilities to map the employee's competence development and which courses they have attended. Manager **A** also told that the newcomer should be informed about important contact routes based on their role. Manager **B** agreed that it is good to coordinate and individualize the onboarding. However, he/she also raised the aspect that you can not have it completely automatic and individually adapted since it has to be customized after each department and situation.

Employee **A** had a lot of suggestions, besides a role-specific plan, on how to clear the diffuse tasks connected to the role. First of all, the participant believed that you have to improve the handover from the previous person in the position. One example to implement this was to insert a requirement that the person has to attend a scheduled meeting each week, where the newcomer has the chance to sit down and learn before the person quits their position completely. When it comes to the learning aspect, the participant wished for more involvement from others in the department that has experience. For example, this could be to summarize for someone that could give inputs or check if you learned correctly through simple questioning.

> *"It would be nice if someone actually checked that I've learned it. I have asked it many times, "Can't you interrogate me so I know I have learned it correctly?". I would like to explain to someone, describing how I think it works and get the answer to if it's correct or if I'm thinking completely wrong?"."* - Employee **A**

In addition to this, Employee **A** suggested that one should work more in a group during the onboarding to sit down together and discuss, but also that you should learn through different scenarios and alternate it with going out into the facility and seeing it in real life.

4.2.4 Relationship-building

In addition to the obvious relationships strengthened by having a mentor or a senior colleague introduce you to your role, a few more areas of development were mentioned as suggestions to strengthen the relationships at work. Manager **A** believed that the company should introduce more initiatives to increase the newcomer's social network in the town where the refinery is placed, outside of working hours.

"I think that activities like floorball every week, where people from different departments and areas play together, are important to build a social network. Both here in town, but also at work since you as a process engineer also needs to integrate with people from other departments. I think that such activities are important in [city] to introduce the newcomer to a community." - Manager **A**

This topic was something Employee **A** also highlighted since he/she newly moved to the city. When the interview was being held, the employee had not made a lot of friends through the company yet. One thing that was raised, was that colleagues should ask the newcomer more questions on a private level to feel seen at the workplace and form strong relationships. Two other proposals were to continue to invite for lunch or coffee beaks, but also get the chance to connect with every colleague through personal introductions or scheduled meetings with everyone. As mentioned under Section 4.2.3, Employee **A** had a lot of suggestions for increased learning that went hand in hand with relationship-building activities (e.g. work more in groups to be able to discuss and ask questions, talk to someone with experience, be questioned, summarize to others, and so on).

Manager **C** meant that the common platform, see Section 4.2.2, could help the new engineers to form new contacts and build relationships. Besides this, the manager also suggested that you could increase the intervals between one-on-one meetings at the beginning. If you had a meeting every week, you could talk about things such as the work environment, how they are doing, tasks, etc. to build a better security/relationship between the newcomer and the manager.

5

Discussion

This thesis was set out to identify different key factors for a successful onboarding process for new engineers in three technology departments. The goal was to find effective ways for new hires to acquire the skills and knowledge that are required to become effective contributors to an organization. The following chapter will present a discussion of the two research questions based on the results from this case study. The two research questions were as follows:

- **RQ1**: How is the current onboarding process organized and what issues arise?

- **RQ2**: What actions can be implemented to improve the onboarding and make it more customized for each department and role?

The research questions will be discussed together throughout the chapter since it was considered to be circumstantially hard to talk about them separately. The discussion will take place by relating the empirical data from the technology departments to the theoretical framework, to clarify their current issues and improvement possibilities with onboarding new engineers. This will be discussed under the following sections; *receiving or seeking information, socialization tactics*, and *evaluation of the onboarding experience*. After analyzing the resulting data together with the developed theoretical framework, several recommendations was identified that could be implemented to improve the onboarding. Both for the investigated technology departments in this study, but also for other companies that are employing new engineers. All sections will end with a shorter part summarizing the recommendations. In addition to this, a template of an education program will be presented as a summarizing implementation proposal. In the end, the methodology will be discussed together with future work, followed by the conclusions of the study.

5.1 Comparison of the two adapted models

After interviewing managers and employees in the technology departments, both Bauer et al.'s [20] *Newcomer Adjustment Model* (NAM) and Korte's [14] *Relationship-buildning Model* (RBM) was accurate to apply for this case study. NAM gave a wide and deep perspective on onboarding in general and a better understanding of what antecedents that will affect the outcomes, meanwhile RBM highlighted the specific case of new engineers and the importance of building relationships within the work group. Even though RBM was not as profound as the NAM, it completed it with an interesting and important perspective. Bauer et al. view onboarding as an uncertain reduction process with a main focus on the individual level of adjustment

meanwhile Korte [14] has a focus on the work group. Both these perspectives will be included and discussed in the sections below.

5.2 Receiving or seeking information

After analyzing the data together with the theoretical framework, one important factor that seemed to affect the onboarding was how the information was provided. Newcomers seek the information and help they need to create a predictable environment and reduce uncertainties [20], where a greater tendency to seek out missing information was linked to a better adjustment process [29]. The analyzed data showed that the department that initially requested an updated onboarding also was the one where new engineers had to work most proactively, something that the literature highlighted as an important personality trait [36]. However, letting the new engineer work proactively during the onboarding was not pursued either by the manager or the engineer. It indicated an unstructured process where a lot of responsibility to learn rested on the newcomer's shoulders. This seemed to be connected to the department's use of socialization tactics which will be discussed further in Section 5.3 below. Referent and relational information, connected to the adjustment indicators role clarity and social acceptance [20], will be discussed below together with the resulting data. Appraisal information (self-efficacy) was connected to a greater tendency for proactive behavior. Since this was not the focus of this study nor mentioned in the interviews, it will not be discussed any further.

5.2.1 Referent information

The analyzed data from the interviews showed that the referent information, which was defined as the information that is required to function at the job [20], was confirmed as an important factor for the new engineers. Two of the engineers mentioned role-specific onboarding when they were asked what the biggest improvement factor for their department was. Role clarity was mentioned in the theory as an important indicator for engineers specifically [24] and was one of the adjustment indicators in NAM [20]. Clarification should therefore be seen as a corner for the foundation upon which effective onboarding is built. It is contradictory to believe that an employee who lacks clarity regarding expectations of their role within an organization can perform effectively without feeling anxious or confused. Analyzing new engineers, they often start their new job with a feeling that they need to perform. This may be a natural consequence of the described increased levels of education and demands [11], where many years of studies can result in high-performance requirements. The analysis shows that it often takes up to a year or more for new engineers to become useful and independent of others. Their eager feeling for performance could therefore collide with the first year as an engineer since you no longer have routine tasks that come with a direct solution.

There were also a few activities from the data that could be connected to the *Gestalt Learning Theory* (GLT) [37] and *Active Learning* (AL) [38]. One example was the shift practice where the engineers got the opportunity to come outside and see their facilities or equipment in real life. This activity will increase their knowledge and understanding of their work since they actively are a part of the operation for a few

weeks. A few participants also requested concrete exercises or tasks to work with in the beginning to learn their different computer systems and role-specific tasks. This is something that goes in line with the GLT which states that the learner needs to struggle with a particular problem or the information is just pushed to memory in a lifeless and mechanical way. The learner needs to apply the information in some way (e.g. tasks, summaries, testing) and use it directly which the participants also propose. However, it is important to be aware of the difference between engineering studies as there is not always a correct answer or someone who will assess you in the same way. During the onboarding, it seemed to be important to both work actively and situational. If a sudden situation occurs with your facility or area of responsibility, you need to be there and learn at that exact moment instead of being stuck with routine tasks. It is like a manager said, all you have to achieve in your first year as a new engineer is to join, listen, and try to understand as much as possible.

5.2.2 Relational information

The other information type that NAM highlighted was relational information which refers to the nature of relationships with others [20]. After analyzing the collected data, this information type seemed to be as important as the researchers state. All departments had a large focus on which people should be involved in the onboarding since the manager had the main responsibility today. The data showed that the manager often has a lot on their plate which often affects the onboarding negatively in multiple perspectives. The participants highlighted that they learn the most from situations where they talked to other people, both internal (mentor, colleagues) and external (operating engineer, consultant). It helped them to gain clarity in their tasks and role. This result validates Korte's findings that 65% of the learning incidents were attributed to coworkers which also resulted as the primary source of learning [14]. The interviewee's belief on social learning confirms Dewey's studies on the social context of learning as well [37].

There was no clear data from the study that could be connected to the newcomer's adjustment indicator social acceptance [20], except for one employee describing that he/she did not want to interrupt the colleagues all the time to ask questions. Whether this had to do with social acceptance is difficult to confirm by the collected data. Instead of focusing on the newcomer's feeling of being accepted, Korte focused on social interactions and learning from coworkers [14]. One of the engineers wished for more consulting work together in groups where they could discuss and ask questions. This could be connected to one of Korte's subthemes that resulted from being accepted into the work group by getting to personally know the members of the group. Korte showed that learning processes emerged by the newcomer observing and listening to the group, reading interactions, and building relationships. It would also help them to approach others in the work group in order to proactively facilitate their integration. The resulting data also provided other suggestions for increased learning that goes hand in hand with relationship-building activities. For example, this could be talking to someone with experience, being questioned, summarizing to other colleagues, and so on. If companies that heirs new engineers would think more in these paths they will be able to kill two birds with one stone;

learning meanwhile they build strong relationships early in the organizational life. Another example of this was the arrangement where the newcomer got scheduled time with each colleague. It seemed to be helpful for the learning, but also to create more natural and informal talks in line with Korte's theory. Even if this activity was a part of the onboarding in the smallest department, larger ones could adapt this as well by implementing it on a smaller scale. One example could be to schedule these separate meetings early with people that the newcomer will work the most within their role. However, the most satisfying learning experience Korte showed came from a mentoring relationship with a coworker in the group. This will be further discussed under the department's use of social socialization tactics (Section 5.3.3).

One interesting perspective from the analysis was that questions the participants had a hard time answering were those concerning how they work to actually build relationships or socialize with a new employee. It seemed hard to find other activities other than talking during coffee or lunch breaks. This indicates that it might be something that they do not work with as much as the theory state that they should. This might be something worth working extra with since the research shows that building relationships with their manager and coworkers strengthens the new employees' socialization process [14], [35]. Department **C** rarely hired new people and when they do, it is often an internal movement where the engineer already knows many of the colleagues. Due to this, it might not be so strange that the participants had a hard time answering.

Employee **A** however felt that it was difficult to build more informal relationships. Something worth mentioning was the value of asking non-work related and friendly questions to the newcomer, to make them feel seen and cared about outside of work. This would lead to a better atmosphere which might be helpful to open up "invisible doors" between colleagues and the newcomer. The managers believed that informal check-ups, "one-on-one"-meetings, and the shift practice also were important relationship-creating activities. One also mentioned other activities organized by the organization, such as floorball, but it did not seem like the knowledge about this or the participation was so strong in the department. Health-related activities outside of work could be a good way to build a network and build more informal relationships. Having a good relationship around the organization was also described as extra important for engineers at the refinery since you have a lot of communication with different people from different areas.

However, it is important to note that strong relationships are not built on poor foundations. This means that there are still important factors affecting the possibility to build relationships during the onboarding period such as structured documents, designated time from the manager, clarity on what information should be thought, who is assigned to learn the newcomer what, and so on. This will be discussed further in Section 5.3 reviewing the department's use of socialization tactics.

5.2.3 Recommendations

The literature and interviewees proposed several things that organizations can do to facilitate clear role definitions for new employees. Since the analysis showed that it

often takes up to a year or more for new engineers to become useful and independent of others, clarification of the expectations is an important factor as the new engineers encounter new challenges during their first year within the organization. This was something that both the literature [23] and interviewees highlighted. The literature also claims the importance of including leveraging technology so that employees easily can access information in a self-service manner, together with a long-term development plan to create a seamless transition between different roles. One way to do this is through an orientation program, which was recommended by both researchers and interviewees [23]. This will be discussed further in Section 5.5 where a template of this program based on this case study will be presented. As discussed, shift practice and a few concrete assignments (e.g. tasks, summaries, testing) is a good way to activate the new engineers in their own learning.

There were many suggestions on how technology companies could work to strengthen the process of seeking or receiving relational information, both from the literature and from the analysis. First, one should look over which people are involved in the process in order to open up the possibility of learning through many different organizational insiders such as managers, colleagues, mentors, operating engineers, consults, and so on). The new engineer should always feel seen and socially accepted, having the possibility to proactively ask people for help. Departments and companies should prioritize the relationship-building processes early in the onboarding to personally get to know the members of the group. Some examples of this (where some worked out well and other should be improved for some of the departments in this case study) was check-ups, "one-on-one" meetings, shift practice, scheduled time with each college, health-related activities outside of work, and so on. This could also be provided through activities that combine learning opportunities. For example, this could be informal or formal meetings, letting the newcomer summarize or answer questions in front of another with experience, working and discussing in groups, and so on. The most satisfying learning experience that also builds a strong relationship in the early stages of onboarding resulted from assigning a mentor. This will further be discussed as a recommendation of the socialization tactics under Section 5.3.5.

5.3 Socialization tactics

The two adapted models, NAM [20] and RBM [14], both present socialization tactics as a factor that affects onboarding. The definition of these is found in Table 2.1. The work group showed to be the primary context in RBM in comparison to the organization in NAM. The discussion will include both perspectives to be able to draw meaningful conclusions and find possible recommendations for which socialization tactics should be used to onboard new engineers for each department in this case study. This will be presented according to Jones [33] divisions represented in Figure 2.2. Lastly, a summarized discussion for each department will be presented.

The following section will go through each division (context, content, social) and relate it to the resulting data from the different departments and their onboarding. A five-degree scale between the dimensions will be determined to get an overview

of the department's use of different socialization tactics. This will be presented in three separate radar charts to compare the department's use of institutionalized or individualized tactics. The research showed that institutionalized onboarding is the most effective way to onboard newcomers due to the structure and formalized process. Even though individualized onboarding leads to a more innovative and unique role orientation, will the absence of structure lead to higher levels of role conflict, stress, and anxiety [33]. Figure 5.1 illustrates the socialization tactics as completely institutionalized (blue) and completely individualized (orange).
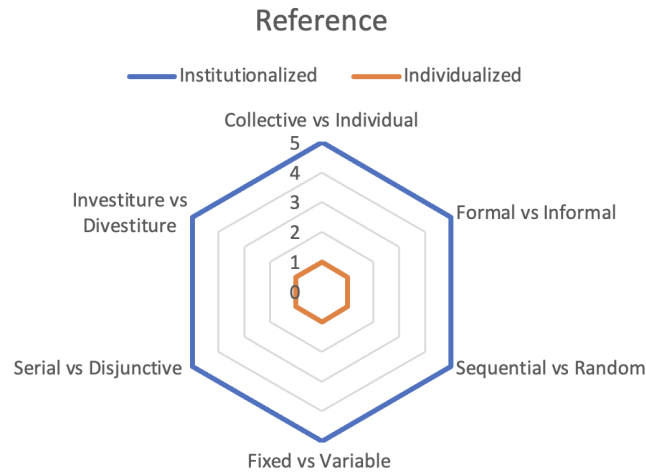
Figure 5.1: A chart illustrating the dimensions between the socialization tactics. 1=Individualized, 2=Mostly individualized, 3=Neither of the options are more prominent, 4=Mostly institutional and 5=Institutional.

One important thing to note is that these diagrams are only used to get a better overview of the three department's use of socialization tactics and their dimension between an institutional or individualized approach to onboarding. They were presented as a way to relate the theoretical framework to the results from the interview. However, the interview questions were not asked with the aim to map these tactics specifically. The values in the diagrams for each department are therefore only an estimate based on interview data which made the range between some dimensions hard to determine.

5.3.1 Context
(Collective vs Individual, Formal vs Informal)

Jones' first division refers to the context in which the information is being presented to the newcomers. In this case study, all new engineers in the technology section are introduced individually. Only a few engineers are hired during a year, which makes it difficult to provide a collective introduction where they can be put through a common set of experiences. The theory state that collective practices, especially coupled with formal tactics, increase the newcomer's acceptance of definitions offered by others within the organization [33]. One of the managers expressed a desire to give the engineers an equal start at the company. The manager mentioned that

one could run things in different intervals to "collect" a group of new hires. It is unreasonable to think that such effort could be applied to basic knowledge learned in the first few weeks, as long as the engineers do not start their employment at the exact same time.

However, other learning activities or educational courses that could be held within the first year of employment could be carried through in a group if the circumstances allowed. The organization also offers two introductory courses for all new employees at the company which is a good example of a collective tactic that did not seem to be used by all departments. Attending these could provide the engineers with a general overview of the refinery, common norms and values, and more information about the organization. At the same time, it will help them form new relationships outside the department which was shown to be important for their demand for communication around the refinery. Employee **C** was the only one that had attended one of the courses which led to Department **C** getting a 2 on the scale in the chart below instead of 1 like the other two departments.

Department **A** and **B** had an informal onboarding, since they do not segregate the newcomer from the regular organizational members. Instead, they let the newcomer integrate together with the work group throughout their whole onboarding period. Department **C** used a combination of formal and informal tactics since they had a formal plan to follow. The new engineer sat down with the manager, away from the others in the department, during some scheduled time. Manager **C** also sends the newcomer on the group-wide introduction together with other newcomers. Therefore, Department **C** got a 3 on the scale meanwhile the other two departments got a 1. The group-wide introduction is an example of an identified formal tactic structured by the organization. Going to an event like this could strengthen the employee's sense of belonging since they would meet other new employees at the organization. It would also help them form new relationships and counteract the feeling of being the only new one, which might be the case in the department.

Although formal onboarding is an institutional tactic, one could argue that distinguishing new engineers from more experienced members is not the right way to go for. Relationship building was also shown to be the primary driver of socialization of engineers where the work group was the primary context [14]. The analysis indicated that it probably would be harder for new engineers to learn their role if they were separated from the senior staff during their whole onboarding. The participants also seemed to believe that informal tactics were better to use, where one of the departments even wished for a better system for further integration by colleagues in the onboarding. Engineers in technical departments have various responsibilities, knowledge, ways to work, and pedagogical abilities. An informal onboarding could therefore help the engineer to create better relationships and lower the barrier to asking questions. In addition to this, technical tasks are often complicated and take a long time to learn in comparison to routine work that always follows the same procedure. Learning the role depends on watching, analyzing, and discussing with other senior employees. Formal tactics are therefore considered to be better to use in combination with collective tactics during the general onboarding, meanwhile

informal should be prioritized when it comes to role-specific onboarding. Taking these factors into consideration, a mix of these tactics would result in more effective integration of engineers into the company.

5.3.2 Content

(Sequential vs Random, Fixed vs Variable)

The next dimension relates to the content that is given to newcomers through socialization, where a sequential tactic is defined as a fixed sequence of discrete and identifiable steps leading to the assumption of the role, as compared to an ambiguous, unknown, or continually changing sequence [32]. Department **C** was the only one that had a structured schedule over the first two weeks. The other two departments were currently missing this fixed sequence, except for the company introduction checklist. This checklist was very general and missed out on a lot of important activities. This led to the managers looking at it quickly instead of using it as a sequential tactic. The analyzed data confirmed that their structure seemed ambiguous, unknown, or continually changing. One example was their shared frustration over gaining access to the internal systems and programs on the computer. Employee **A** therefore wished for a structured document that described which programs they need. The execution of the onboarding seemed to depend on different circumstances such as time or people available at the department. This lack of discrete and identifiable steps showed to make a huge difference in the Employee **A** and Employee **B** role clarity and perception of their onboarding. The more structure that was given, the less anxious the employees seemed to be. Even though Employee **C** still not had figured out his role completely, he/she did not express any stress about it in comparison to the two other employees. It is however important to note that Employee **A** was employed during a period when many colleagues were on holiday and the manager worked night shifts, which may have affected the onboarding negatively. Nevertheless, this lack of structure seemed to be a problem before this specific new heir as well according to interviews with the manager and informal talks with other colleagues.

In order to get an institutionalized onboarding, a fixed timetable is preferable for the steps involved leading to the assumption of the role. It should also include precise knowledge of what time this will take. After analyzing the data, this part seemed to be well connected with the use of sequential tactics. Department **C**'s fixed schedule over the first two weeks helped the employee to know what to do each day and what was expected to learn. This indicated a larger use of fixed tactics compared to the other two departments. Having a more variable onboarding seemed to confuse Employee **A** and Employee **B** since it was hard for them to understand what to do each day. This was not expressed by Employee **C** in the same way.

Even though the time frame in Department **A** was not considered to be as fixed, it was not completely variable either. Just like Department **C**, they have their "one-on-one" meeting where they could discuss the current situation and further goals. This is considered an activity that could help the newcomer strengthen the knowledge of what time the activities during the onboarding will take. Department

B only has these formal meetings once a year instead of every two weeks or once a month. However, it is important to state that these conversations could be held more informally as well. Another thing that Manager **A** mentioned was the importance of clarifying expectations. The manager meant that one should communicate early in the onboarding what expectations they have on the newcomer, including the time aspect of things. Since no actions or activities could indicate a fixed timetable for Department **B** they only got a 1 in the summarizing chart, meanwhile Department **A** got a 2.

5.3.3 Social

(Serial vs Disjunctive, Investiture vs Divestiture)

This last category reflects social or interpersonal aspects of socialization, which according to the literature were the most important tactics [33]. Serial tactics refer to a newcomer being socialized by an experienced member of the organization who mentors the newcomer and serves as a role model, as compared to a process where this is not available. The resulting data showed the importance of assigning a mentor, even though Department **B** was the only one that had a formal routine for this. Onboarding through this arrangement seemed to help the employee a lot since it was an important source of learning and a natural way to get answers to questions that arise. Department **C** said that one reason for them not assigning a mentor was the small size of their department, leading to the manager is the one with the most experience. One difference between Department **C** and Department **A** was that the Manager **C** actually served as an informal mentor for the newcomer since he had the responsibility to go through the individual plan during the first two weeks. This was confirmed by the employee that seemed pleased with the arrangement and did not specifically ask for a mentor in the same way that Department **A** did. Due to this, Department **C** got a three in the chart meanwhile Department **A** got a 1. Although, both managers thought a mentor should be assigned further on anyway due to the value of having extra support from another person than the manager.

The value of having a mentor was also highlighted in Korte's relationship studies as the most satisfying learning experience. A mentor provides the newcomer with both social and professional support, integrates them into the work group, reduces stress, answers informal questions, and provides instructions on how to perform different job tasks [14]. The analysis shows that engineers often start with an eager feeling to perform immediately from the first day, where a mentor would be helpful to clear the expectations and answer more informal questions to lower the pressure.

Missing out on having a mentor seemed to contribute to negative effects for Employee **A** since the participant expressed that it was hard to always seek out and ask colleagues who might be stressed about other things. Manager **A** believed that a mentor should be implemented to facilitate role-specific onboarding and a strong relationship with a college. However, two difficulties in their current situation were also noticed. First, the department only has a few experienced employees that could serve as a mentor. However, the theory shows that the mentor does not have to be assigned as a reflection of their experience. It could also be an invested, pedagogic,

communicative colleague that has the right tools to help you find the right person for any role-related questions. It is considered to be more important that the mentor takes on the task in a good way and provides the right social support. Another difficulty mentioned by the manager was the ability to set aside time for it. The person who will serve as a mentor needs to have the possibility to put their own tasks on hold. However, since Jones [33] showed that the social tactics will have a larger effect on the newcomer's role orientation and transition into the organization, this should be a prioritization for the departments.

Last but not least, an institutionalized process promotes investiture socialization tactics. This means that the organization affirms the incoming identity and personal characteristics of the newcomer rather than disconfirming, denying, and stripping them away. The participants were not asked any questions regarding this subject. Neither did the managers formally express any active actions to change the employee's personalities. This makes it complicated to decide whether the departments use investiture or divestiture socialization tactics, even if one hopes and assume that neither of the departments disconfirms the new engineer's identity and personal characteristics. Due to this, all departments will be assigned number 3 on this dimension since neither of the options is more prominent.

5.3.4 Summarizing charts for the departments

The department's use of socialization tactics will be illustrated in radar charts in Figure 5.2. As mentioned before, it is important to note that the interview questions were not asked to map these tactics specifically. The values in the following diagrams are only estimated from the interview data which made the range between some dimensions hard to determine.

Department **A** was the department that initially requested an updated onboarding process. Therefore, it may not be surprising that the resulting data indicated that their current onboarding had an individualized setting rather than institutionalized. Department **B** seemed to be somewhere in between meanwhile Department **C** had the most institutional approach. Consistent with Jones's theory, the two participants from Department **A** both expressed stress about the absence of structure in their onboarding and had it raised as an issue. Due to this, a new employee at the department currently is in need of proactive behavior in order to achieve successful onboarding. This personality trait could be extra hard to use at the beginning of a new job since everything is new - the tasks, the people, and the organization. The theory also indicated that individualized onboarding could increase the employee's uncertainties and was related to higher levels of role conflict and anxiety during the early work experiences. Looking at the results, the expressed role conflict seemed to be closely related to uncertainties and negative feelings toward the employee. Even though a manager can see his department having a warm climate with an open-door policy, newcomers in their entry still can experience anxiety to interrupt colleagues since they have other things to work with. Jones's theory also stated that the use of individualized tactics would lead to more innovative and unique role orientations where the newcomers encourage to question the status quo. This could be confirmed by Employee **A** proactively had to shape the role on their own since

(a) Department A

(b) Department B
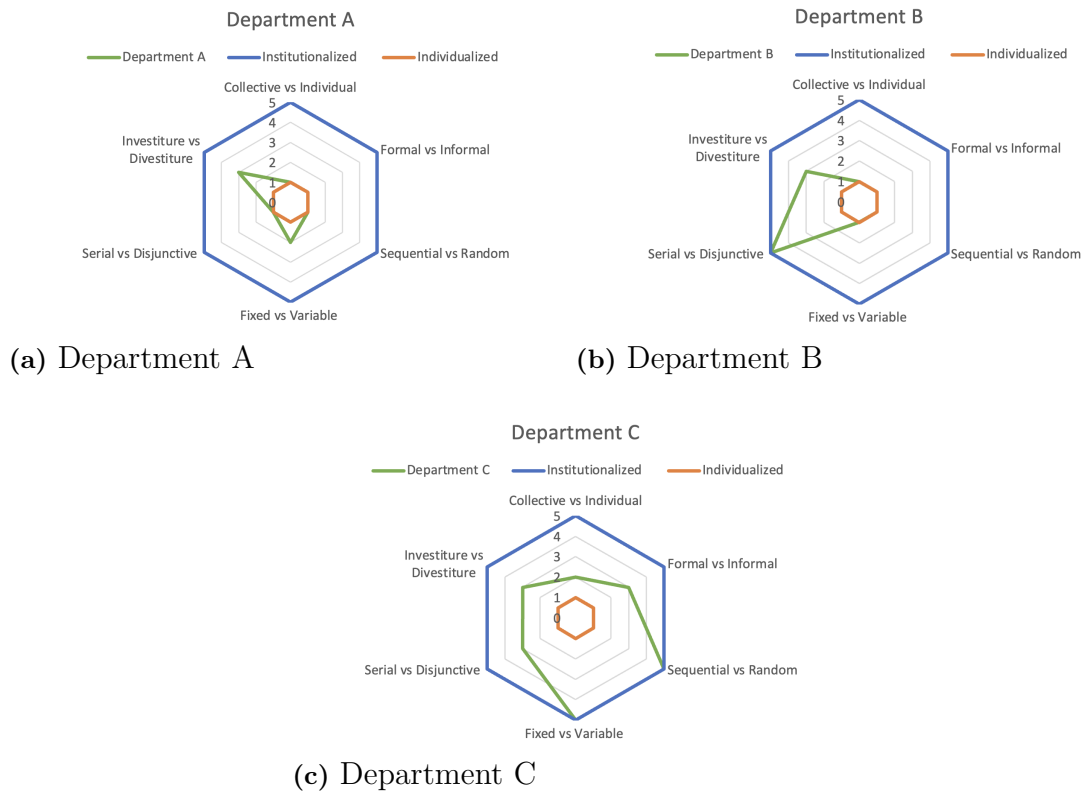
(c) Department C

Figure 5.2: Radar chart illustrating the dimensions between the socialization tactics for Department **A**-**C**. 1=Individualized, 2=Mostly individualized, 3=Neither of the options are more prominent, 4=Mostly institutional and 5=Institutional.

the person who had the role before already had left the department. This could indicate a more innovative and unique role orientation, in comparison to having it completely institutionalized.

The chart for Department **B** indicates that they had a more institutionalized approach than Department **A**. This results from their use of a mentor which created a more serial approach, something that the theory described as the most important factor for socialization. Since the department has a lot of experienced employees and rarely hires new engineers from outside the organization, they had not asked for an updated onboarding in the same way as the other two. Department **C** used the most institutional socialization tactics. This was a direct effect of their scheduled, structured, and fixed onboarding plan where the newcomer got useful information about their roles and expectations. The literature means that these institutional tactics encourage newcomers to passively accept pre-set roles in the organization, in comparison to individualized which promotes more innovative and unique role orientations where the newcomers encourage to question the status quo. This dimension was considered to be quite hard to map from the resulting data. One thing that could be identified as a difference between Department **A** (individualized approach) and Department **C** (institutional approach) was that Employee **C** did not work as proactive as Employee **A** was "forced" to do. However, Employee **C** had a

less innovative and unique role orientation or a smaller opportunity to question the status quo is difficult to state from this specific case study.

5.3.5 Recommendations

When onboarding new engineers, there are many different socialization tactics to use. The recommendations after analyzing the theoretical framework together with the collected data shows that a combination of institutional and individual tactics would be the best. Even though collective and formal tactics lead to an institutional approach that is told to increase the structure and reduce stress [33], it was not considered to be better for the context in which the information is being presented or the engineers learning. However, since collective tactics give the engineers an equal start and help them form new relationships outside the department, a few activities could be inserted. One concrete example is common courses that new engineers could attend together within their first year. Organizing more collective tactics requires good communication and cooperation between the managers. An education program, described further in Section 5.5, could help the managers to get an overview of the courses and gives the new engineers the possibility to book the same course session. The recommended use of tactics for onboarding engineers is illustrated in Figure 5.3 below.
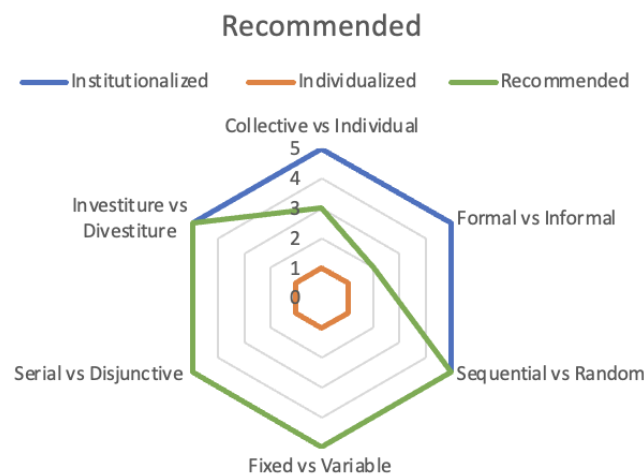
Figure 5.3: A chart illustrating the recommended use of socialization tactics for engineers. 1=Individualized, 2=Mostly individualized, 3=Neither of the options are more prominent, 4=Mostly institutional and 5=Institutional.

When it comes to the content, sequential tactics in combination with fixed ones are recommended since they will lead to stronger role clarity and increase the structure. This will also lead to lower levels of stress and anxiety. In order to achieve a structured onboarding with a clear timeline for the different activities could also be implemented with the use of an orientation or education program. It is also recommended to clear expectations and set further goals in order to get a fixed onboarding. If there is something an organization should prioritize to implement is the use of serial tactics where a mentor is assigned. The literature and the resulting data both show that it is the most important factor for achieving effective

onboarding. If the circumstance makes it hard to find a mentor with the right experience for the engineer's role, there is still a recommendation to assign one. The mentor provides the newcomer with so much more than work-related experience where the biggest achievement would be social support.

5.4 Evaluation of the onboarding experience

As the theoretical framework state, Kirkpatrick's Four Levels of Training Evaluation [9] could be a good model to use in onboarding situations to maximize the transfer of learning and subsequent organizational results. The company's internal web page said that each newcomer should have a follow-up meeting after three months of employment, which only one manager mentioned. Except for their "one-on-one" meetings with their manager, which one of the departments only had once a year, no evaluation was done. The analyzed data indicates that evaluation, in this case, was considered to be a bit superfluous at the moment. One of the managers described that their priority is to create a functioning onboarding before they could start thinking about how they should evaluate it. Instead of viewing evaluation as an extra step to handle, one could use it as a tool to develop and improve the onboarding process.

5.4.1 Recommendations

The "one-on-one" meetings were really appreciated by the new engineers and are therefore considered to be an important way for the employees to express their thoughts and ideas for improvement. To use evaluation as a tool to develop and improve onboarding, one should focus on more formal levels of evaluation in Kirkpatrick's model. By a simple questionnaire, Level 1 (Reaction) and Level 2 (Learning) could be mapped easily to collect ideas and thoughts from newly employed engineers. This could also be done more informally at their "one-on-one" meetings or at the potential follow-up meeting after three months of employment which the organization recommends. The analysis identified that it often took up to a year or more for the new employee to become useful and independent of others. Therefore, evaluation of Level 3 (Behavior) would not be recommended before that since it would be hard to map if the learners seem to apply what they learned. The last level (Results) is something that has been taken into consideration when recommending the department's different implementing proposals. For example, the managers were asked what their future visions for the onboarding process were and how an updated onboarding would help them. As mentioned when presenting the model, you have to isolate leading indicators before and after the training (e.g. less staff turnover or higher employee satisfaction). This is considered to be more helpful if the onboarding would include a larger number of engineers where indicators like this that could be connected to onboarding were more visible.

5.5 Education program for implementation

This thesis indicated the importance for organizations to know what they can do to help new engineers gain clarity and confidence quickly prior to entry, upon entry, and

during their first year on their new job. In order to achieve this, an formal education program for each department was created to promote clarification and confidence. This last summarizing recommendation is presented as a general template shown in Appendix D. The literature proclaims that an effective program will help newcomers deal with anxiety and adjust more quickly. It will also lead to greater employee retention and productivity within the same group [20]. Implementing a program like this will increase the use of institutional tactics regarding the content and context, which will make the onboarding more structured and formalized. How the program will be used can also affect social integration positively. Companies can benefit by assuming that new hires undergo common experiences and shape those experiences in a consistent way. It is also important having a unified document over the technology section as the company expands. This is not to say that companies should take a completely standardized, one-size-fits-all approach to onboarding. This education program was created with the possibility to be customized after each department and role, even if some parts of the content will be the same. This collective socialization tactic gives new engineers, regardless of department, a bigger possibility to connect with each other. It will increase the opportunities for them to attend the same common course sessions such as the introduction courses. This collective socialization was also requested by one of the managers.

When it comes to the layout of this program, it is designed in a way that includes both informal and formal training which the literature recommends [20]. It is also complemented with a fixed timetable to help the engineers predict when each activity is expected to be completed. Besides, there is also a box for the manager to tick when the activity is completed. In the first section, practical orientation tasks and informal training are piled up. This includes activities such as the introduction checklist, setting up the office, ordering clothes, presentation of the organizational chart, internal reviews (e.g. company's policies, the department's computer systems, internal training, competence development plan), and so on. In order to get more colleagues involved and ease some burden on the manager, one could assign a person to each activity in the box beside. Both the literature and the analysis also state the importance of a mentor. In these programs, one box could be to assign and introduce that one.

The analysis showed that the company has great formal education possibility which includes both internal and external educational courses. One issue that arise was their lack of written structure over which employee had attended which course. Neither did they have any way to know which courses were available, besides from their memory. This educational program will map all informal training activities or formal courses that the newcomer shall attend assigned under different time periods of employment. The program distinguishes self-study from the other boxes in order to collect them in one place. In order to customize it after each role, the program has a section for role-specific training where all available courses will be listed. All employees in the department will be assigned one program in their personal profile in the company system. This provides the opportunity for the manager to add small notation, assign people to help with different activities, and highlight the role-specific courses for their specific role.

This program also opens up the opportunity to include other things or activities that were stated as important in this thesis, such as a box for clearing expectations, booking scheduled meetings with each colleague, shift practice, and so on. It is important to note that this study was delimited to simply present a design and not to create any direct materials. The literature state that the program should also be proactively designed to encourage the new employees to play an active role in their onboarding [20]. To complete an effective onboarding, complementing documents and tasks should therefore be created. Various technical solutions should be utilized so that employees can easily access information in a self-service manner. This was also something that the participants requested and is therefore considered to be an essential part of the newcomers. Both as a structured foundation to lean on, but also to look back to in order to refresh their memory.

5.6   Methodology and future work

Using interviews for this case study seemed to be the most appropriate method for this thesis and provided the data that was needed. A case study delimited to one organization makes it hard to generalize the results to other organizations. Rather than a goal of generalizing the findings, the aim was to provide an authentic investigation of the onboarding process experienced by a rather homogeneous group of new engineers in an organizational setting. Since this was a case study, the interview questions were formed to map the organization's current onboarding process and its following improvement aspects. To be able to apply the results to a larger extent, more organizations and interviewees should be included. By expanding the selection and getting more data from a larger number of new engineers, more ideas and valuable experiences could have been raised. It would also be rewarding to complement the qualitative method with a quantitative one such as questionnaires. However, conducting more interviews or complementing with other methods was outside the time frame of this study.

Another limitation that could have an effect on the results is the data collection from retrospective interviews. The participants had to retell their own experiences of onboarding from a time back were important data could be missed or distorted by memory or retrospective biases. The managers might have the urge to make the process sound better than it is due to the responsibility of a manager. Some of the engineers that participated were recently hired, and may therefore not be fully settled into the organization and their own work yet. Optimal would be to interview a larger group of new engineers, that had worked for more than one year so they are "done" with their onboarding, but less than three years to get a correct view of their experience. To develop the research further, it could be complemented with other quantitative methods. Questionnaires would open up the possibility to collect data from a larger group of engineers. Another alternative is an observation of the actual onboarding period. However, this would be very time-consuming and outside the frame for this work. Using a qualitative method as interviews, aspects regarding the technique should be addressed.

Using a qualitative method as interviews, aspects regarding the technique should

be addressed. This study was conducted by a master's student where the lack of experience in interviewing could affect the outcome in terms of listening and reacting to the interviewees, the flexibility of changing a topic while following a story, asking leading questions, or missing interesting follow-up questions. The interviews could be developed by having another person in the room as a second interviewee. It was also chosen to conduct interviews in the participant's native language in order to help them express and recall situations more naturally. One risk with this could be translation errors, but it was considered immaterial in relation to the information that could have been missed otherwise. To expand this research, it would be interesting to do a deeper analysis of the socialization tactics of new engineers and how they are affected by relationships within the work group. The findings that coworkers had a large influence on onboarding new engineers could be investigated further to understand how interrelationships among members of work groups affect other factors such as learning, development, and performance within the organization.

6
Conclusions

This case study aimed to identify how the onboarding of new engineer's at a refinery was organized and possible issues that arose. This included recommendations of actions that could be implemented to improve the onboarding and make it more customized after each department and role. The study of previous research connected to the subject proposed two models (NAM and RBM) that both were considered to be accurate to apply to new engineers at the refinery. The findings in this study are specific to this case but are based upon a general framework and could therefore be accurate for other technology organizations as well.

The two information types and adjustment indicators that seemed to be the most important during this study were referent information (role clarity) and relational information (social acceptance). Role clarity was stated as an important indicator for engineers due to their eagerness to perform and should therefore be seen as a corner for the foundation upon which effective onboarding is built. In order to achieve effective role-specific onboarding, implementation of a education program is recommended. This will decrease the newcomer's uncertainties and help them adjust more quickly. Implementing a program like this will increase the use of institutional tactics regarding the content and context and make it more structured and formalized. Depending on how the program is used can also lead to a positive effect on social integration. The program can also be customized for each department, individual, and role. In addition to this, realistic job previews and expectations should be clear, leveraging technology should be included for employees to easily access information in a self-service manner, and long-term development should be provided in order to create a seamless transition between different roles. Last but not least, a better handover from the person that held the position before is necessary to understand the role-specific tasks. This was shown to be an important factor to reduce stress and anxiety in newly employed engineers.

The study confirmed that building strong relationships with coworkers and their managers mediates the quality of the onboarding process of new engineers. The participants in this case study had a collective belief that more people in the department should be involved, which will facilitate for the manager. Relational information was provided by talking to other people, both internal (mentor, colleagues) and external (operating engineer, consultant). Involving other people besides the manager helped them to gain clarity in their tasks and role. In order to improve onboarding, a better system for relational learning was requested. This could be implemented by assigning different people to some of the activities found in the education program. Therefore, it was considered appropriate that managers and

employees take into account the relational structures that exist in work groups as critical contextual factors that influence the new engineers learning. An open climate that opens up the possibility for discussions and more work within the group is recommended to lower the barrier for the newcomer to ask questions.

When analyzing the socialization tactics, a mix between the use of institutional and individual tactics seemed to be the most effective way to onboard new engineers. The institutional tactics were more important when it comes to the content and social integration, since they reduces uncertainty, stress, and anxiety in the early work experiences and reflect a more structured and formalized onboarding. The study showed that it was better to use sequential, fixed, and serial tactics which all are categorized as institutional tactics. The investigated refinery could implement this by using the recommended education program in combination with assigning a mentor.

Even though the literature recommends an institutional approach, some of the tactics seemed better suited as individualized for the setting of onboarding new engineers. The individual tactics were better for the context since it lead to more innovative and unique role orientations for the engineers. It was more common to use individual and informal tactics rather than collective and formal ones. This was a direct consequence of the small number of engineers employed at the same time. However, organizations should also work to insert some collective and formal elements to provide the engineers with common experiences, norms, and values. It will also help them form new relationships outside the department which was shown to be very important for communication within the refinery and the engineer's roles. For this specific case, that could be sending them at the same time to their common introduction courses organized by the organization.

Kirkpatrick's Four Levels of Training Evaluation could be a good model to use in onboarding situations to maximize the transfer of learning and subsequent organizational result. In this case study, evaluation was considered to be a bit superfluous at the moment since the focus was on forming a structured onboarding. Instead of viewing evaluation as an extra step to handle, one could use it as a tool to develop and improve onboarding in a simple way. To do this, one should focus on more formal levels of evaluation in Kirkpatrick's model. For this specific case, it would be easy to implement this during their "one-on-one"-meetings.

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A

Appendix A

A.1 Interviewguide I

DEPARTMENT MANAGER

Q1: For how long have you been working at the refinery?

- *If several departments, which other have you been at?*

Q2: How would you describe your current role and tasks?

CATEGORY 1: CURRENT ONBOARDING SITUATION

Q3: Which people participates in the onboarding process of a new hire at your department?

Q4: What happens between the new employees accept the job offer and their first day?

- *Do you work with any pre-onboarding?*
- *How does your department communicate the arrival of a new employee?*

Q5: How does the onboarding continue after their first day?

- *How does the new employee get introduced to their new position and role-specific tasks?*
- *How do you work to build a relationships between the new employee, the co-workers and the manager?*
- *For how long time does the onboarding last?*

Q6: What would you say works well and what works less well?

- *Have your previous introduction efforts produced the expected results?*

Q7: Do you use the general "Onboarding checklist for new hires" or the "Introduction of new hires" on your your intranet?

- *Is it ensured that everything is checked off? Do you always sign it?*

Q8: Does your department evaluate the progress of onboarded employee before the end of their first year?

- *If yes, how and how often?*

- *If no, is that something you think should be checked and how?*

Category 2: Future vision and goals

Q9: What are your visions for the onboarding process and how would it help you?
Q10: What competencies do you feel newly hired engineers are lacking today?
(*e.g. personality traits, integration tactics to the department or company, technical skills*)
Q11: If you put yourself in the situation as a new employee in your department, what do you think it should include?

- *How can onboarding be personalised to the individual and their specific role?*

- *How do you think one should work to strengthen their learning processes?*

- *What is the best way to socialise the new employee's in to the team and the company culture?*

- *For how long do you think the onboarding should last?*

Q12: Which people do you think should be included in the onboarding process?

- *Do you feel that you, as a manager, have the time required to introduce the new employee in a good way?*

- *Do you feel that you need specific training yourself or help to be able to deliver better onboarding?*

Closing Questions

Q17: The purpose of this interview was to map your current onboarding situation and your suggestions to how the onboarding can be improved and more role-specific. Do you feel that you have answered this or is it something you would like to add?
Q18: Is there anything else that feels unclear or unfinished?

A.2   Interviewguide II

EMPLOYEE

Q1: For how long have you been working at the refinery?

- *If several departments, which other have you been at?*

Q2: How would you describe your current role and tasks?

CATEGORY 1: CURRENT ONBOARDING SITUATION

Q3: Which people would you say participate in the onboarding process at your department?

————————————————*If newley employeed:*————————————————

Q4a: What communication did the company had between your job offer and your first day?

- *Did your department work with any pre-onboarding?*
- *How did the department communicate the arrival before your first day?*

Q5a: How were you received on your first day and how did the onboarding continue after that?

- *How did you get introduced to your new position and your role-specific tasks?*
- *For how long time did the onboarding last?*

Q6a: What would you say worked well and less well?

- *Was there something that made you insecure or confused?*

Q7a: Did they use the general "Onboarding checklist for new hires"?

- *How was it ensured that everything was checked off?*

Q8a: Did they evaluate your onboarding process before the end of your first year?

- *If yes, how and how often?*
- *If no, is that something you think should be checked and how?*

———————————— *Employed since more then two years ago* ——————————

Q4b: What would you say works well and less well with your departments current onboarding process? (*For example: Communication, people involved, checklist, education, role-specific training or evaluation.*)

CATEGORY 2: FUTURE VISION AND GOALS

Q5: If you put yourself in the situation as a new employee in your department, what do you think it should include?

- *How can onboarding be personalised to the individual and their specific role?*

- *How do you think one should work to strengthen the learning processes?*

- *What is the best way to socialise the new employee's in to the team and the company culture?*

- *For how long do you think the onboarding should last?*

Q6: Which people do you think should be included in the onboarding process?

- *Do you feel that the manager have the time required to introduce the new employee in a good way?*

Q7: Are there any specific courses (classroom or E-learning), information material, training or practical moments you consider to be useful for a new hire in your department?

Closing Questions

Q8: The purpose of this interview was to map your current onboarding situation and your suggestions to how the onboarding can be improved and more role-specific. Do you feel that you have answered this or is it something you would like to add?

Q9: Is there anything else that feels unclear or unfinished?

B

Appendix B

Information Sheet

Master Thesis Onboarding – Information Sheet

What is the research about?
This qualitative study aims to identify different key factors for a successful onboarding process for new engineers in three different technical departments. The goal is to find effective ways for new hires to acquire both general and role-specific skills and knowledge required to become effective contributors to the organization.

Who is conducting the research?
This research is part of a Masters project. The research is primarily conducted by Elvira Arnstrand, with the support of supervisors from Communication and Learning in Science at Chalmers University of Technology.

What data is collected?
The interviews will collect data to map experiences of the current onboarding process, the future goals and visions, and the design and content of the department's education program. Only the person responsible for the study, Elvira Arnstrand, will analyze the collected data.

What happens to the data?
The transcript from the interview will be anonymized and any personal details will be removed. The data is stored by Elvira Arnstrand. The company, supervisors, or Chalmers University of Technology will not have access to it. The data will be stored securely until data collection analysis and publication is finished and then securely deleted after completion of the study.

How will the findings be shared?
The findings will be published publicly. Anonymous quotes maybe be used to strengthen the results. Steps will be taken to ensure that no individual will be identifiable in reports and publications.

Right to refuse or withdraw
You participate in this research with consent and will therefore have the right to withdraw from the interview or the study at any time.

Who can I contact if I have queries or concerns about the research?
You can contact Elvira Arnstrand [mail].

Consent statement

I have received and understood written information about the study and had the opportunity to ask questions. I agree to participate in the research and the publication of its results as outlined on the information sheet.

Signature and date: _____

CHALMERS
UNIVERSITY OF TECHNOLOGY

Figure B.1: Information sheet to provide useful information about the study, the interviews and consent.

C
Appendix C

Swedish quotes before translation

Section 4.1.2

> ”Vi har ju en väldigt prestigelös avdelning med en öppen dörrpolicy,
> så jag tror inte att det är någon som sitter och känner att man inte
> kan fråga någon om hjälp om det är någonting.”
> **- Chef A**

> ”Som det är idag så har jag ganska mycket dåligt samvete får jag ju erkänna.
> Man går ju runt och känner att man är otillräcklig och man skulle önska att
> man kunde hjälpa nyanställda mer. Men jag har ju inte tid till det, jag har ju
> så mycket andra arbetsuppgifter. Man kan ju inte helt plötsligt lägga all sin
> tid på en person eller lite så.”
> **- Chef A**

> ”[Mentorn] var ju den som hade ansvaret för anläggningen då. Han berättade
> väldigt mycket och jag konsulterade honom om olika saker jag undrade eller saker
> jag vill göra och så. Det var ju som en sån där infasning då kan man säga.
> Det fungerade bra, det var inga konstigheter egentligen.”
> **- Anställd B**

> ”Nu har vi ju hamnat i en situation där det inte riktigt är så längre utan att de
> personerna som har haft tjänsten innan har ju försvunnit innan den nya har
> börjat. Och det har gjort att det är lite svårare att ha det på det sättet vilket jag
> ser som en stor bristvara. Det är liksom inte så enkelt att läsa sig till allt man ska
> kunna utan det är väldigt mycket beroende av att folk runt omkring stöttar.”
> **- Chef A**

> ”Men på sätt och vis är det ju hela avdelningen som är med på introduktionen.
> Men många personer lägger ju inte så många timmar på det utan det kanske är
> snarare några få då. Jag och tillsammans med 1 eller 2 stycken till så.”
> **- Chef B**

"Det kändes väldigt bra att kunna sitta ensam med dem och höra vad de gör. Man pratade om vad som helst egentligen, det fanns ingen agenda. Vi kom in på olika ämnen, olika personer och uppgifter. Då fick man också lära känna alla."
- **Anställd C**

Section 4.1.3

"Först fick jag gå runt och hälsa på väldigt många människor, många man ej minns namnet på. Det var rätt hektiska dagar. Lite information varvat med att gå och hälsa på olika folk."
- **Anställd C**

"Det fanns ingen kommunikation. Utan jag kom hit och... Hade jag inte varit självgående i mig själv så vet jag nog inte. Jag började bara läsa på om anläggningarna och hoppade in på mitt kontor typ."
- **Anställd A**

"En sak som är mindre bra är väl att man får en PC där ingenting är installerat, så det skapar mycket frustration. Man försöker i flera veckor att försöka få in alla program. Det finns ingen lathund som beskriver vilka program jag behöver, vad jag behöver dem till eller någonting sånt. Så det saknar jag.
- **Anställd A**

Section 4.1.4

"Tyvärr så får jag vara lite självkritisk och säga att det inte fungerar jättebra idag."
- **Chef A**

"Jag har ju försökt att ta kontakt med [namn] och frågat väldigt mycket så att personen kan beskriva mina rollspecifika arbetsuppgifter. Men [namn] är ju också ny i hennes tjänst. [...] Det känns jobbigt att tjata varje gång man vill någonting också. "
- **Anställd A**

"Men det är någonting som är värt att tänka på för ifall man varit här i tjugo, tjugofem år så kanske man har glömt av vad som var svårt i början. Och sen dess finns det ju dessutom saker och ting som har förändrats."
- **Chef B**

"Jag försökte sätta mig in i anläggningen som jag var ansvarig för då, men jag förstod inte riktigt vilka arbetsuppgifterna var till en början eller så där. Och vad man förväntades egentligen, med tanke på den erfarenhet som man hade innan. [...]. Men annars så var ju kollegor och chefen engagerade och pratade mycket, men inte så mycket egentligen om vad jag förväntades göra."
- Anställd B

"Det har ju varit en liten blandning, att jag tittar på när [chefen] har gjort det och att jag har gjort det när [chefen] tittar på. Nu har det blivit mer så att [chefen] ger mig en uppgift som jag försöker lösa och när jag stöter på problem så får jag be om hjälp."
- Anställd C

Section 4.1.5

"Redan på intervjuerna frågar jag oftast vad man har för förväntningar på en chef och lite så där. Jag tycker det är viktigt att man berättar lite om förväntningarna och jag inte förväntar mig att man ska kunna jobbet på en gång, speciellt när man kommer som helt ny."
- Chef A

Det är ju så att det är lite såhär att verksamheten rullar på. Man kanske har mycket att göra själv och så blir det svårt bra att engagera sig i nyanställd också
- Anställd B

Section 4.1.6

Det är på dessa möten jag har kunnat berätta ifall jag är stressad eller frustrerad. Jag har sagt många förslag och jag tycker han är väldigt duktig på att lyssna på dessa. [...] Allt jag säger liksom blir hört och blir taget på allvar, vilket är bra.
- Anställd A

Section 4.2.2

"För egen del borde man få några ansvarsområden som man vet att man ska jobba med och arbetsuppgifter som man ändå förväntas leverera då, eller förväntas utföra. Då får man i alla fall någon typ av struktur i alla fall som gör att man ändå känner, när man går hem för dagen, att man ändå har gjort ett bra jobb. Jag tror att det är viktigt att känna sig tillfredsställd på det sättet."
- Anställd B

"Som en ny ingenjör behöver man inte prestera. Det man skall uppnå är att vara med, lyssna och försöka förstå så mycket som möjligt under de första åren."
- Chef B

"Det är svårt att liksom anpassa så att alla startar samtidigt, men jag tänker bara utifrån vad man hade kunnat göra. Om man då hade haft en gemensam plattform som jag pratade om tidigare hade nyanställda kunnat gå igenom liknande delar ifall du körde det med regelbunda intervall. Från ett utbildningsperspektiv kan dem lära sig samtidigt och prata ihop sig om sitt."
- Chef C

Section 4.2.3

"Det hade varit fint ifall någon verkligen kontrollerade att jag har lärt mig det. Jag har bett om det många gånger, "kan du inte förhöra mig så att jag vet att jag har lärt mig rätt. Jag hade gärna velat bolla med någon och förklara hur jag uppfattat hur det fungerar. Stämmer det eller tänker jag helt fel liksom?
- Anställd A

Section 4.2.4

"Jag tror att aktiviteter som innebandy varje vecka, där personer från olika avdelningar och skift får spela tillsammans, är viktiga för att bilda ett socialt närverk. Både här i stan, men även på jobbet eftersom man som en processingenjör även behöver interagera med personer från olika avdelningar. Jag tror att aktiviteter som dessa är extra viktiga i [stad] för att introducera en nyanställd till en gemenskap."
- Chef A

D
Appendix D

Education Program

	Company Section	Author:	
		Last updated by:	
Company Logo	**Department**	Reviewed by:	
		Approved by:	
	Revision:	Date:	Page: 1 (1)

Education program Section - Department

Name: Employment number:

	Training & information material to be studied and practical tasks carried out during working hours with the support of a manager or supervisor (first month)	**Person in charge**	**Manager ticks the box when it's completed**
			☐
			☐

Course no	**Courses & information material for the employee's self-studies (first year)**	**Place**	**Manager ticks the box when it's completed**
			☐
			☐

Course no	**Training & courses to attend (first year)**	**Course leader or company**	**Manager ticks the box when it's completed**
			☐
			☐

Course no	**Courses & training carried out after planning in development meetings (year 2-3)**	**Course leader or company**	**Manager ticks the box when it's completed**
			☐
			☐

Course no	**Role-specific courses & training that <u>can</u> be planned in development meetings**	**Course leader or company**	**Manager ticks the box when it's completed**
			☐
			☐

Figure D.1: A recommended template for an individual educational program customized for each department to use.