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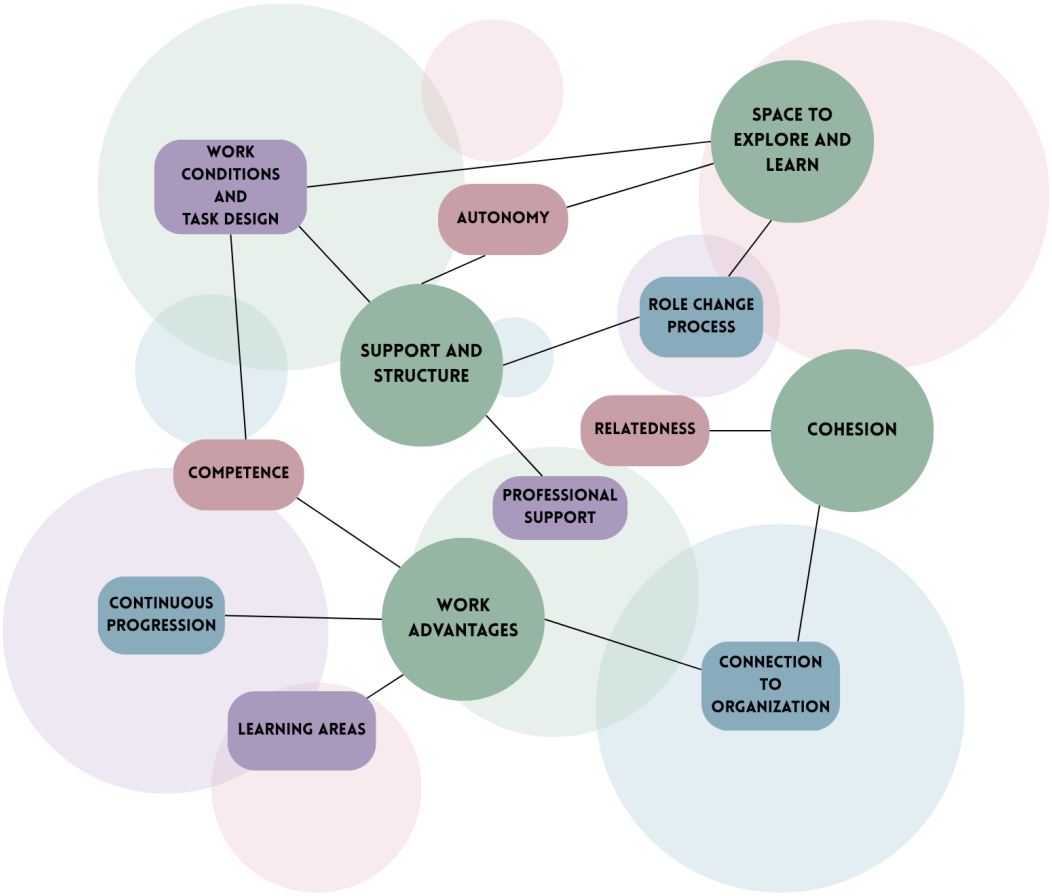

Identifying Key Factors for a Successful Trainee Program

Anchored in the Perception of Former Trainees

Masters Thesis in Learning and Leadership

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CHALMERS UNIVERSITY OF TECHNOLOGY
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Cover: A simplified chart of the results.

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Abstract

One common way to introduce newly graduated students into workplaces is through trainee programs. Although there is a wide variety of trainee programs, there is a lack of research on the factors influencing their effectiveness. The aim of this thesis has been to identify key factors for a successful trainee program from the trainees perspective. The aim has been evaluated and in relations to the trainees' learning experience, motivation and how they experienced the transition from trainee program to regular employment. The result is anchored in the perception of former trainees, and to ensure a broad perspective, 13 former trainees from 6 different large organizations in Sweden were interviewed. The interviews were semi-structured and analyzed using a thematic analysis. The analysis yielded the following insights: the former trainees valued being given space to explore and learn within the organizations, in addition to having a supportive structure provided by the trainee programs. The former trainees believed that the trainee programs facilitated skill development and helped them establish a network that gave them an advantage in their work after the programs. Furthermore, they appreciated the strong cohesion with the other trainees at their organization. Along with how the trainee programs accommodated for the trainees' needs, a successful trainee program was also linked to the trainees' perceived ability to contribute to the organization. Thus, this thesis highlights essential factors for a positive trainee experience and offers useful guidance for organizations developing their own trainee programs.

Keywords: TRAINEE, TRAINEE PROGRAM, LEARNING, MOTIVATION, TALENT RETENTION, STEM, SKILL GAP

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Especially, we would like to thank our two supervisors Maria Cervin-Ellqvist at Chalmers and Jan Johansson at RISE. Thanks to Jan, we together shaped this project and gave us the opportunity to do this thesis work. For the project, he provided valuable connections with incredible people that has not only increased the value of the project, but enriched our own experience. He truly made our time with this thesis work unforgettable, and despite being Frölunda/Brynäs supporter (depends on who wins), has brought us amazing support. Maria has done an incredible work in guiding and helping us during all phases in this project and has given us a tremendous support for the report writing. Maria and Jan, you have not only made us feel safe and cared for in this project, you have inspired us in many ways, both professionally and personally by being the kind and driven people you are. This thesis would not have been possible without you!

Lastly, we would like to show gratitude for our family and friends for their support during the period of this thesis work. Altogether, the support and interest you have shown has helped us conduct this work with great motivation and enthusiasm, thank you all!

Joel Nilsson & Madelene Törnkvist, Gothenburg, May 2025

List of Acronyms

Below is the list of acronyms that have been used throughout this thesis listed in alphabetical order:

AI	Artificial intelligence
RISE	RISE Research Institutes of Sweden AB
RQ	Research question
ORQ	Overarching research question
SDT	Self-Determination Theory
STEM	Science, Technology, Engineering and Mathematics

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1
Introduction

This first chapter introduces the background to why this research is being carried out, motivates and presents its aim and research questions by contextualizing and defining the scope. Previous research is also presented here.

1.1 Background

Introducing recent graduates into organizations is a strategic way to cultivate talent and maintain a competitive edge (Cesário and Chambel, 2017). In the *STEM* (Science, Technology, Engineering and Mathematics) fields, there is often a gap between the knowledge gained at university and the skills required in the workplace (Gope and Gope, 2022). One approach for bridging the gap and introducing recently graduated STEM students into organizations is trainee programs. The aim of these programs, from the perspective of the organizations, is to introduce promising graduates into the organizations to ensure a long-term competitive advantage (Cesário and Chambel, 2017). From the graduates' perspective, a trainee program can be an introduction to the organization and enable development of relevant organizational skills (Jonsson and Thorgren, 2017).

Trainee programs as a method of recruitment exist and have been studied worldwide (Al Ariss et al., 2014). However, cultural contexts and organizational practices lead to variation in both how such programs are designed and how trainees react to them (Latukha, 2011). This indicates that there is no universally applicable structure for trainee programs.

In Sweden, there are many organizations that have trainee programs but the structure of the programs differ in terms of activities, duration and design (TraineeGuiden, 2025b). While some programs span several years with rotations in different departments of the organization and provide participants with a broad understanding of the company's operations, others are more focused on development in a specific role. Due to the large variety of trainee programs, it is interesting to examine the various components of different trainee programs to gain insight into what makes them successful.

1.2 Aim

The aim of this master thesis is to identify key factors for a successful trainee program. The insights gained can enable companies to improve the experience for STEM trainees, making the programs more rewarding for the trainees in both the short and long term.

1.3 Specification of the Issue Being Investigated

Building on this aim, the overarching research question (ORQ) in this master's thesis is:

ORQ. *What are key factors in a successful trainee program anchored in the perception of trainees?*

The overarching research question will be evaluated in relation to three dimensions called *Learning Experience*, *Motivation* and *Transition to Employment*. Each of these dimensions is associated with its own specific research question (RQ):

RQ1. *What aspects of trainee programs facilitate the trainees' learning to acquire the skills necessary to perform tasks within the organization?*

RQ2. *What aspects of trainee programs are important to keep the trainees motivated throughout the programs?*

RQ3. *How do trainee programs affect the trainees' experiences of transitioning to regular employment?*

The first research question addresses the dimension *Learning Experience*. This dimension is chosen due to trainee programs' role in bridging the gap between previous knowledge and necessary skills for organizational tasks (Gope and Gope, 2022). In the Swedish context, earlier research on trainees' learning in trainee programs highlights the importance of being able to put knowledge into practice, as well as the importance of group affiliation and a sense of community (Ericson and Holmér, 2024; Jansheden and Wiren, 2024). In contrast to this thesis, previous research is either case studies (Ragnås and Säisä, 2011; Ericson and Holmér, 2024; Jansheden and Wiren, 2024) or examine learning from the perspective of the program (Madrigal and Hassel, 2011). Therefore, studying learning across multiple organizations from the perspective of the trainee is a valuable addition to further the research.

The second research question addresses the dimension *Motivation*. This dimension is chosen due to the importance of motivation for work effort and work enjoyment for the trainee (Dysvik et al., 2010; Ryan and Deci, 2000). Therefore, examining trainees' motivations and how trainee programs facilitate motivation is valuable. Trainee motivation will be analyzed with *self-determination theory* as described by Ryan and Deci (2000). Previous research has used self-determination to evaluate

workplace motivation in general (Howard et al., 2016) but as of our understanding, no previous studies have evaluated trainee programs' practices through the lens of self-determination theory, thus making this thesis contribution important.

The third research question addresses the dimension *Transition to Employment*. This dimension is of importance because previous research has found that trainees have a tendency to switch employer after the programs are finished (Cesário and Chambel, 2017; Král et al., 2022; Latukha, 2011). Thus, the organizations lose their investment in the trainees (Cesário and Chambel, 2017). Earlier research on transitions found that changes in organizational attention and investment after the shift to regular employment create a stark contrast, leading more trainees to leave (Král et al., 2022). Moreover, after finishing trainee programs, the most common causes of disappointment for trainees was lacking career opportunities and a low salary (Jonsson and Thorgren, 2017). Additionally, studies examining why trainees leave organizations after the programs found that a "lack of personal development" is a key reason (Latukha, 2011, s.156) which can be improved by continuous workplace training following trainee programs (Cesário and Chambel, 2017). Most of the research is from western Europe but lacks the Swedish perspective. Furthermore, the research does not focus on how the trainee programs influence the trainees' willingness to stay. Therefore, it is interesting to examine trainee programs to find what factors of the programs themselves affect transition to regular employment.

1.4 Scope

To achieve more generalizable results and avoid results that becomes assessment of a particular trainee program, this study examines multiple programs within our definition of organizations. There are mainly three different aspects limiting the scope. The first limiting aspect is the *Perspective of The Thesis*, the second is the *Profile of Examined Organizations* and the third is the *Definition of Trainee Program*, used in this thesis.

1.4.1 Perspective of the Thesis

This study focuses on the trainees' perspectives and experiences. Consequently, the results do not evaluate if the identified key factors should be implemented by organizations with trainee programs, only that the trainees perceive them as important. Moreover, the trainees in this study are former STEM students, and therefore, this thesis holds a STEM trainee perspective.

1.4.2 Profile of Examined Organizations

This thesis focuses solely on trainee programs in larger organizations with graduates from STEM fields. In this study, large organizations are defined as organizations with more than 250 full-time employees, which is based on the definition the European Union uses to define large enterprises (Eurostat, 2025). This limitation is based on the presumption that the experience and structure of a trainee program

can differ depending on the size of the organization and its orientation. When limiting the scope of the organizations examined, this thesis mainly focuses on those that are similar to our collaborative partner *RISE Research Institutes of Sweden AB* (RISE).

1.4.3 Definition of Trainee Program

In previous research, there is no undisputed definition of what a trainee program is (Jonsson and Thorgren, 2017; Al Ariss et al., 2014). Every trainee program is different in some way, whether it is in duration, structure, or in specific activities. Because of the unclear nature of trainee programs, it is important to clarify what we consider as trainee programs in our study. In Sweden, there is a trainee program certificate issued by The Trainee Guide (Swedish: Traineeguiden), owned by the company Mecenat Group (TraineeGuiden, 2025c), which is widely used in Sweden. They have, together with the unions for economics and engineering graduates (*Civilekonomerna* and *Sveriges ingenjörer*) defined requirements for the certificate (TraineeGuiden, 2025a).

In this study, we establish certain criteria that all trainee programs must meet to be classified as trainee programs; only programs meeting these criteria are classified as trainee programs within the scope of this research. A trainee program should always lead to a permanent position in the company for the trainee and the trainee should be employed. During the employment the trainee should be fairly paid, which is in line with the certificate requirements (TraineeGuiden, 2025a). Furthermore, a trainee program should have some form of courses designated for learning outside of doing everyday tasks. In this aspect, trainee programs are distinguished from internships or mentorship programs. The trainee program should also be an assigned period of time, with a minimum of 6 months, which is in line with The Trainee Guide definition.

1.4.4 Structure and Reading Guide of This Thesis

This thesis presents extensive results, capturing diverse experiences and preferences from former trainees, organized into four categories corresponding to RQ1, RQ2, RQ3 and ORQ. If using this thesis as inspiration for designing a trainee program, readers are encouraged to review the sections corresponding to each category separately. The sections in this thesis are color coded as seen in section above (1.3).

Further recommendations: In the *Results* chapter, each section begins with a figure providing an overview of the key factors identified for the respective research question. This figure can help readers quickly locate areas of particular interest. Additionally, readers are encouraged is to consult the *Discussion* chapter, specifically section 5.2 *Implications for Practice*. This section presents key insights that may be valuable when reflecting on the design of trainee programs. It further elaborates on how the extensive results, regarding the diverse experiences and preferences of former trainees, can be applied, and emphasizes that the relevance of specific findings may vary depending on the intended characteristics of the trainee program.

2

Theoretical Framework and Previous Research

This chapter presents the theoretical framework used to examine the research questions within the three dimensions Learning Experience, Motivation and Transition to Employment. The chapter begins with declaring the existing overlap between these dimensions. The rest of the chapters is parted into the sections corresponds to the dimensions: Learning in STEM Fields, Motivation and Self-Determination Theory and Transition to Regular Employment.

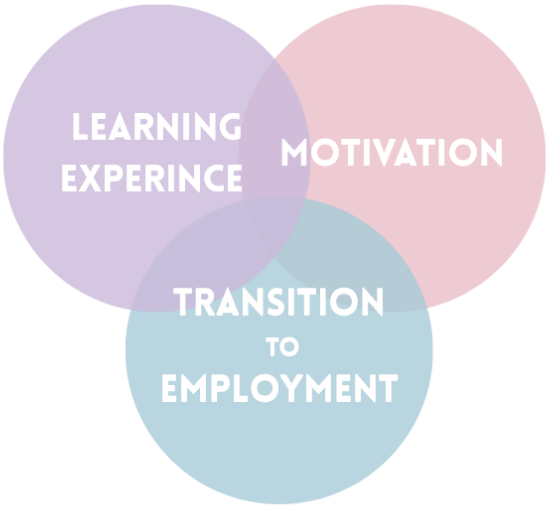

Figure 2.1: Illustration of overlapping of the three dimensions in this study.

As mentioned in section specifying the research questions (**??**), this thesis examines trainee programs with a focus on three different dimensions as well as overarching key factors. The three dimensions are: *Learning Experience*, *Motivation* and *Transition to Employment*. These dimensions are investigated separately in the three research questions (RQ1, RQ2 and RQ3), but there exist a significant overlap between them. Earlier research to help investigate these dimension are represented under the following sections in this chapter: 2.1 *Learning in STEM Fields*, 2.2 *Motivation and*

Self-Determination Theory and 2.3 *Transition to Regular Employment*.

To exemplify the overlapping of the dimensions: learning and motivation are linked in relation to both the apprentice's openness to receive and learn new information, and also on how to design learning activities to keep the apprentice motivated. A second example of this overlap between motivation and learning: conceptual learning, as in understanding of key ideas in a cohesive manner, is improved when students feel autonomy and freedom when they are learning (Grolnick and Ryan, 1987). Another example is the use of feedback in teaching or mentoring: feedback that use extrinsic rewards can undermine intrinsic motivation because it can be seen as a strategy of control and thereby have a negative effect on people's ability to motivate and regulate their own work efficiency (Hattie and Timperley, 2007). It is more helpful to provide feedback that help people evaluate their own work and encourage self-regulated learning or to provide information that deepens or adds to their current understanding in relation to their work.

As a final example, learning within an organization increases the employees' willingness to stay in an organization, suggesting an overlap between the dimensions in this study regarding learning and transition to employment (Cesário and Chambel, 2017). Moreover, all three of the dimensions are related to the employees thriving and having good overall well-being (Ryan and Deci, 2000). Despite the overlap between the dimensions, it is still interesting to evaluate each of these dimensions in trainee programs.

2.1 Learning in STEM Fields

When recruiting graduate engineers, industry actors are primarily interested in hiring candidates who possess the competencies currently in demand. However, the required skill sets within STEM fields are evolving rapidly, and a gap has been identified between the competencies provided by engineering education and those expected by the industries (Gope and Gope, 2022). This ongoing mismatch between engineering curricula and industry needs raises important questions about how companies support newly recruited engineering graduates in bridging this gap. To further introduce this topic, the following sections, *Learning Gap*, *Mentorship*, and *Experiential Learning* present relevant research on the educational and professional learning conditions of engineers in relation to industries' expectations.

2.1.1 Learning Gap

To reach new goals and learn new things, the process of learning can be supported by identifying the so called *learning gap* between what is currently understood and what is desired to be understood (Hattie and Timperley, 2007). To efficiently move toward closing the learning gap the apprentice should be aware of the desired state, and be guided towards it. For employment of engineering graduates, there exist a gap between the competence gathered during the education compared to the competence needed in the industries today (Gope and Gope, 2022). For a common understanding

of this so called *skill gap*, a definition was composed in a study of its concept and of its measuring approaches (Rikala et al., 2024):

> "Skill gaps are gaps between training outcomes and industry-specific skill needs and, therefore, gaps between the skills that employees possess and those that industry players consider necessary. Consequently, a skill gap can be understood as a difficulty in providing the right skills to the right people at the right time to enhance employee productivity, improve and advance organizational performance, create value, support digital transformation, and narrow gaps in business realities and labor markets." (Rikala et al., 2024, pp. 12-13)

The definition was created in context of the engineers' competence and the gap between industries' demands. The emerging of Industry 5.0 is shifting the industries' focus from an earlier technology-centric approach to emphasize human-centricity, sustainability, and resilience (Koch et al., 2025). In contrast to Industry 4.0, which primarily emphasized technological skills, Industry 5.0 calls for competencies that integrate technical expertise with human-centric abilities. This more holistic set of competencies includes "advanced capabilities in human-machine collaboration, ethical decision-making, creativity, sustainability, and social responsibility" (Koch et al., 2025, p. 2220). In a systematic literature review, studies show that there exist a gap, and that this skill gap mainly concerns human-centric abilities (de Campos et al., 2020). These skills were summarized into the following six categories: *Problem Solving*, *Communication*, *Team Work*, *Ethical Perspective*, *Emotional Intelligence*, and *Creative Thinking*.

To keep engineering education relevant to industry needs and the rapid developments in the engineering field, and to ensure a smoother transition into the workforce, academia aims to align the engineering curriculum with industry requirements (Gope and Gope, 2022). To compensate for graduates' lack of certain required skills, industries should adapt the transition into employment to better support graduates in developing the competencies they are missing. Different studies relates to either the industries' abilities to support and compensate for the engineering graduates lack of requiring skills (Akerele et al., 2019, Santora et al., 2013), while other studies points towards changes in the engineering education curriculum to match the industries changing demands (de Campos et al., 2020, Koch et al., 2025, León et al., 2024). Some organizations use mentoring to bridge the skill gap between the knowledge and skills gathered during academic learning and what is acquired in the industry for engineering graduates (Akerele et al., 2019). However, there is also no consensus among experienced mentors in the study of Akerele et al. (2019) whether the learning of particularly soft skills should be in the study program, part of professional training or come from interaction between mentee and mentor.

2.1.2 Mentorship

March (2017, referenced in Akerele et al., 2019) stated that mentoring is the only resolution to the knowledge gap crisis in engineering. The industries are interested

in continuing to create or access a supply of professional engineers that can take on professional responsibilities by having the necessary skills and experience to do so.

> "Previous attempts focused on addressing graduate engineers' lack of experience or practical skills through skills development programs, job shadowing, holiday placements and other initiatives is not always successful" (Akerele et al., 2019, p. 136).

With mentoring, engineering graduates can build their competence and develop both personal as professional abilities (Akerele et al., 2019). Akerele et al. (2019) identify three themes when determining the benefits of mentoring for engineering graduates: *Career Development*, *Skill Development* and *Experiential Learning*. Some of the benefits for career development is that the mentor can see the mentees' potential and capacity in the industry that mentees themselves are not aware of, and guide them to help them grow and take advantage of their strength through a fitting career path. A mentor can help the mentee to become a part of the organization through incorporating them in real projects for the organization which needs interdisciplinary collaboration and teamwork where their competence and strengths are needed. Skill development instead is closely linked to workplace performance where the mentee learns specific skills. Mentors can help the mentees to develop practical skills and also provide and facilitate expansion of their current knowledge base by exposing the mentee with opportunities to apply theoretical knowledge and academic learning in engineering practices. The skill development is related to experiential learning where this means that the mentee is being exposed to relevant experiences and practice for applying theoretical knowledge and to reflect on these applications. Experiential learning rather focuses on the applicability of theoretical knowledge and reflection rather then the learning outcomes in form of skill development.

2.1.3 Experiential Learning

Experiential learning can be defined as a way of teaching were the educator purposely engage the apprentice in experience to apply theoretical knowledge and encourage reflection on these experiences "in order to increase knowledge, develop skills, clarify values, and develop people's capacity to contribute to their communities" (Tembrevilla et al., 2024, p. 197). The approach goes beyond practical elements of other learning methods as in *learning by doing* or learning through experience by encouraging the apprentice to reflect over their application of knowledge in a context of usage for the society. Experiential learning gives the engineering graduate the opportunity to apply and try out their theoretical knowledge in practices and to reflect on these. Mentors for engineering gradate can help the mentee gather "wisdom" from a senior mentor within the engineering practices (Akerele et al., 2019). Experiential learning can also be defined as the process within a person when learning occurs from reflection of a experience (Tembrevilla et al., 2024).

2.2 Motivation and Self-Determination Theory

To evaluate how trainee programs can facilitate motivation for the trainee, this thesis uses an established model of motivation called self-determination theory (SDT). At the time of this study, no existing research applying SDT to evaluate motivational practices in trainee programs was identified. Although, SDT has been applied in studies on learning and workplace motivation, and is one of the leading theories on motivation (Rigby and Ryan, 2018; Howard et al., 2016). Therefore, studying trainee programs through the lens of SDT is considered appropriate, and the theory will be presented in this section as the chosen theoretical framework.

SDT, as presented by Ryan and Deci (2000), defines different types of motivation and explains factors that affects motivation and well-being. Typically, motivation is divided into intrinsic and extrinsic motivation. According to SDT, intrinsic motivation is defined as "doing an activity for the inherent satisfaction of the activity itself" (Ryan and Deci, 2000, p. 71). Extrinsic motivation is defined in contrast to intrinsic motivation, therefore, any motivation that is not intrinsic is considered extrinsic. Although SDT uses this classification of motivation, there are also alternative classifications within SDT that may be more useful when researching trainee programs. This is because trainee programs constitute a form of employment, where trainees are likely to be extrinsically motivated. According to SDT, extrinsic motivation can take several different forms, each varying in the degree of autonomy, which in turn effects the motivation and well-being of the trainee (Ryan and Deci, 2000).

Extrinsic motivation can be divided into *controlled* and *autonomous* motivation. Controlled motivation is the least autonomous form of extrinsic motivation and is characterized by external pressure and leads the feeling of alienation (Ryan and Deci, 2000). Controlled motivation is when you perceive that your action is determined by external forces. In contrast, autonomous motivation is when you perceive that your actions are determined by yourself. For example, if a employee put effort into a project because they feel pressure from peers, then their motivation is controlled. On the other hand, if a employee instead put effort into a project because they feel that it is of personal importance, then their motivation is autonomous. In reality, there is a continuous scale between these two forms of motivation and most people experience that their actions are determined by a combination of external and internal factors. Empirical studies about controlled and autonomous motivation have shown that people that are autonomous motivated feel more energized and experience increase well-being (Nix et al., 1999). Thus, it is important to foster autonomous motivation.

Autonomous motivation can be achieved by *internalizing* ones actions. Through the process of internalization, behaviors begin to align with the sense of self, actions stops being perceived to be regulated by external factors and starts being regulated by internal factors (Ryan and Deci, 2000). For the process of internalization to succeed the *basic psychological needs* need to be satisfied. Ryan and Deci postulates, based on empirical research, that these needs are *autonomy*, *competence* and *relat-*

edness. Fulfilling these needs lead to "enhanced self-motivation and mental health and when thwarted lead to diminished motivation and well-being" (Ryan and Deci, 2000, p. 68).

The first basic psychological need is autonomy and it refers to the need for a person to perceive that their actions are determined by themselves. Autonomy can be described as a person's sense of freedom when making decisions and taking action and is essential for internalization to be possible. Consequentially, a controlled environment without autonomy diminishes motivation and has en overall negative impact on well-being. Similar negative effects occur when the second psychological need, competence, is not fulfilled. Therefore, perceived competence in relevant activities facilitates internalization and thus increases motivation. The third psychological need, relatedness, is "the need to feel belongingess and connectedness with others" (Ryan and Deci, 2000, p. 73). The feeling of relatedness can come from feeling cared for by others, or from performing activities that are valued by others, thereby feeling connectedness. Because of the clear positive effects satisfying the three basic psychological needs yield, it is interesting to analyze ways in which trainee programs satisfy these needs.

2.3 Transition to Regular Employment

Trainee programs are an investment by organizations and a method of recruiting newly graduated talent. For the organizations to get their return on investment, it is important to keep the trainees in the organization after the have switched to regular employment (Král et al., 2022). However, despite the investment by the organization, many trainees switch employer after the trainee programs finish (Latukha, 2011; Cesário and Chambel, 2017; Král et al., 2022).

The transition from trainee program to regular employment is complex and can make the trainee want to leave the organization. Previous research exploring why trainees want to leave for another organizations after the trainee programs has found a variety of interesting aspects important in explaining this issue (Král et al., 2022; Cesário and Chambel, 2017; Jonsson and Thorgren, 2017).

In order to present an overview over previous research, we have divided reasons for why trainees want to leave into two main ones presented below, called *Contrasting experiences* and *Unfulfilled expectations*. Contrasting experiences describes how a gap can emerge between what the trainee encounters in a trainee program and what they experience in a regular position. Unfulfilled expectations describes what expectation a trainee can have about their future role and how these expectations are not always met.

2.3.1 Contrasting Experiences

A study researched the retention of graduates from the Skoda Auto trainee program, focusing on the factors that influenced their willingness to remain within the

organization (Král et al., 2022). The study concluded that there is a paradoxical phenomenon were some of the trainee program's positive aspects may lead to more trainees leaving. This is a consequence of trainees perceiving themselves as exclusive, unique and especially prioritized during the program, which vanishes when entering regular employment. Much of the trainees every day work is centered around their development and seeing different parts of the organization. These aspects are seen as positive by the trainees during the program but leads to a contrast after transitioning to regular employment. Then, these advantages are not as common and the former trainees experience less freedom, fever learning opportunities and less accessible mentors.

Another research paper investigated which common human resource (HR) activities that effected turnover intentions of employees with previous trainee background (Cesário and Chambel, 2017). They found that training activities aimed at developing skills relevant to the organization had a significant negative impact on turnover intentions. This indicates that opportunities for continued development increased former trainees' willingness to remain with the organization after completing the trainee program. Similarly, turnover intentions also lessened if the trainee programs offered extra support during the initial period of integration into the organization after the trainee program. Since both training and integration are key processes in both trainee programs and regular employment, these findings suggest that strengthening these areas can support a smoother transition and reduce contrasts between the two roles.

2.3.2 Unfulfilled Expectations

In previous trainee program research, Jonsson and Thorgren (2017) studied the relationship between the trainee and the organization using psychological contract theory, as described by Rousseau (1989). Using this theory, the researchers investigated mutual expectations between employer and employee and what those mutual expectations are when the trainee transitions to employment.

They found that trainees wanted "challenging, stimulating work, and more responsibility" after the trainee programs ended but this was not always realized, leading to disappointment (Jonsson and Thorgren, 2017, p. 1747). Moreover, they found that after the trainee programs were finished, "career opportunities and wages were of greatest relevance" for the trainee (Jonsson and Thorgren, 2017, p. 1750), thereby highlighting some usual expectations that trainees have after the trainee programs are finished.

3

Methodology

This chapter presents and motivates the methods used for data collection and data analysis. This includes both theory and the description of conduction of the interviews and thematic analysis

3.1 Choice of Methods

The methods used for data collection were *literature review* and *semi-structured interviews*. The literature review was considered suitable to gather knowledge and investigate previous studies related to trainees' experience within trainee programs. The acquired knowledge was used to gain further insight into research about trainees' experiences and to specify this study's own research scope, identifying areas where additional research was necessary. This knowledge later led to the definitions of the study's own research dimensions and its research questions. The dimensions being: *Learning Experience*, *Motivation* and *Transition to Employment*.

Semi-structured interviews were selected as the method for data collection since this type of interview is considered preferable when collecting qualitative data in fields where interviewees are more knowledgeable than the interviewer (Leech, 2002). In this project, the interviewees were former trainees.

It is important to recognize that there are multiple approaches to analyzing qualitative data, and that researchers make active choices in this process (Braun and Clarke, 2006). This thesis used a *thematic analysis*, which is particularly appropriate when working with qualitative data collected through semi-structured interviews (Braun and Clarke, 2006). Thematic analysis enables the identification of factors that may have been unknown to the researcher in advance, but that emerge as significant within the scope of the investigation. In this project, the use of thematic analysis facilitated the recognition of patterns across the data set, allowing for the identification of key themes that recurred both within individual interviews and across multiple interviews.

3.2 Literature Review

The literature review was used to provide an overview of previous studies on trainee programs and to identify areas of further investigation to contribute to the understanding of successful trainee programs. The literature review was conducted using an iterative process involving the continuous refinement of *search parameters* and the application of the *snowballing* method. The iterative approach enabled each search cycle to generate new insights, which informed the revision of search parameters for subsequent iterations (Randolph, 2009). Snowball sampling, in turn, relies on references from already identified sources to locate additional relevant literature (Esaiasson et al., 2017). In this project, the method was implemented by reviewing the reference lists of initially relevant research papers to identify further studies of interest. Both the iterative search process and the snowball sampling process continued until a point of saturation was reached, when no new, significant sources emerged. The use of these ensured a thorough and focused identification of literature aligned with the project's research aim.

The literature review helped specify the projects dimensions of interest: *Learning Experience*, *Motivation* and *Transitions to Employment*. The dimensions later guided the development of the interview guide for the semi-structured interviews.

3.3 Semi-Structured Interviews

The qualitative data was collected through semi-structured interviews. This type of interview is described as a middle ground between unstructured and structured interviews (Leech, 2002). Structured interviews are interviews which follows a sequence of predefined questions and where the answers to these specific questions are in interest. An unstructured interview, on the other hand, follows a more open approach with no predefined questions.

In a semi-structured interview the interview followed a structured guide while allowing space to explore unpredictable topics that may arise when the interviewee elaborates on their answers (Leech, 2002). This format also enabled the interviewer to ask follow-up questions on topics that emerges.

The semi-structured interviews conducted in this project were designed to capture both *foreknown* and previously *unknown* topics of interest. The distinction between these two types of data, foreknown and unknown, will be referred to throughout this chapter. It is important to acknowledge that both the data collection process and its alignment with the project's theoretical framework influenced the design of the interview guide and also shaped the approach of data analysis. For the data analysis, the distinction affected whether the analysis was carried out in a more deductive or inductive manner (see section 3.4 *Thematic analysis* or Figure 3.1).

Having predefined questions created a structure to gather information and aspects of interest, regarding so called foreknown topics. An example of evaluating foreknown

topics in this project can be seen in the questions' connection to the SDT as a theoretical framework (see this connection in Table 3.1). This resulted in questions that investigated the three psychological needs within SDT to evaluate how trainee programs accommodated for the interviewees motivation. By also leaving space for the interviewee to elaborate on their answers, this created an opportunity to introduce valuable, previously unknown topics to the interviewer. As this study aimed to identify key factors for trainee program, the combination of predefined structure and open-ended exploration enabled the interviews to gather data that was both, to some extent, foreknown aspects of interest, but also unknown aspects.

3.3.1 Interview Questions and Guide

There are different types of questions that are preferably used in different parts of the interviews (Esaiasson et al., 2017). In this thesis, the interviews used the following types of questions: at the beginning of the interview, questions referred to as *warm-up questions* were asked to gather background information and create a relaxed setting for the interviewee. The main part of the interview consisted primarily of *grand tour questions* (see *Main Questions* 2-6 in Table 3.1), which allowed the interviewees to give answers that differ depending on their own experience and opinions. This approach allowed the interviewer to gather information that was not previously known, which was preferably as the interviewee typically had more knowledge about the trainee experience than the interviewer.

The interview guide was designed to create a natural flow and keep the conversation focused on subjects that support answering the research questions (Esaiasson et al., 2017). In this thesis, the guide intended to translate and elaborate the research question into questions and prompts that softened the academic tone, creating a conversation with the former trainees that flows naturally in an everyday language, while still providing insights into the subjects under investigation. An important part of this study was to gather the interviewees' opinions of the trainee programs different parts and how it supported them and not just a description of the program. Therefore, they were encouraged multiple times to evaluate and asses their experience, rather then just describe the programs.

Before creating the final interview guide, a pilot interview was held with a former trainee not included in the study to test and the refine the guide. Slight adjustments were done after this pilot interview in changing the question order and adding more prompts. Particularly prompts were added covering the trainee's evaluation regarding the programs elements, avoiding the former trainee to only describe the program's elements. The interview guide was divided into seven sequences to ensure that all relevant topics were addressed, as in the trainees' learning experience, motivation and transition to employment. An outline of the interview guide is found in Table 3.1 where both the questions *connection* to SDT and the questions *purpose* is presented under Table 3.1. The whole interview guide is found in Appendix A.

Nr	Main Question	Purpose	Theory Framework
1	Could you tell us a little about yourself?	Warm up questions to start the conversation and get background information.	
2	Could you tell us about the trainee program?	To understand the structure, expectations and reflections on different parts of the program.	Autonomy (SDT)
3	How would you describe the unity and solidarity in the program?	Evaluate unity and relatedness between trainees and employees and how the program assisted this and reflections.	Relatedness (SDT)
4	Can you describe what you learned during the program?	Assess the learning experience, mentoring, knowledge gain and reflections.	Relatedness & Competence (SDT)
5	Did you feel that you were able to use your skills from education or previous work?	Identify knowledge gaps and how the program helped bridge them and reflections.	Competence (SDT)
6	How was the transition from trainee to regular employment?	Evaluate the transition and the program's support during the transition to employment and reflections.	
7	What would you say are the most important components for a positive trainee experience?	Highlight the trainee's view on key components for a positive experience.	

Table 3.1: An outline of the seven questions sequences in the interview guide. The *Theory Framework* highlights the components of SDT that are reflected in the interview questions. The whole interview guide is found i Appendix A.

3.3.2 Selection of Former Trainees

The former trainees were contacted either through the organizations where they participated in the trainee program and now worked, through contact shared from fellow trainees, or directly at job fairs. The different methods of finding former trainees were a consequence of limitations in finding people that met certain criteria for this project, these criteria are described below.

The criteria for selection of former trainees were the following: firstly, a criterion that impacted the process of contacting the former trainees was that the they had finished a trainee program. This ensured that each participant was able to reflect on the full scope of their trainee experience, enabling an evaluation across all three research dimensions: *Learning Experience*, *Motivation*, and *Transition to Employment*. Consequently, each interview provided data relevant to all three research questions, including the third, which specifically addressed the transition from the trainee program to regular employment. Secondly, the trainee programs which the trainees attended needed to take place in a large organization working within STEM (defined in section 1.4.2). Lastly, all the trainees who were interviewed needed to have an engineering degree.

The start years of the former trainees ranged from 2018 to 2023 (seven out of 13 started in 2023), with the exception of one trainee who began the program in 2013. The inclusion of the 2013 participant in this study was not considered problematic, based on the authors' assessment of the relevance and quality of the interview data. Trainees who had completed the program some time prior to the interview were often able to reflect on the long-term impacts of the program on their professional development, while those who had recently completed it tended to remember more details about their experiences and feelings during the program.

In total, 13 former trainees, eight women and five men, from six different organizations were interviewed. Five of the trainees held a Master's degree in Industrial Economy, four of whom had specializations in areas such as mechanical engineering with a focus on energy and environment, production management, or production development. The remaining trainees came from a variety of engineering backgrounds, with technical expertise in areas such as artificial intelligence, data science, information technology, electrical engineering, environmental engineering, energy systems, sustainability, and surveying. See more outlined information of the former trainees' academic backgrounds in Table 3.2. In Table 3.3 on the next page, the interviewees profiles are anonymized and presented.

Program Description	**Qty**
Industrial Economy, Masters in Production Management (Mechanics)	2
Industrial Economy, Masters in Production (Mechanics)	1
Industrial Economy (Mechanics), Masters in Energy and Environment	1
Industrial Economy (Masters degree)	1
Electrical Engineering (Bachelor degree)	1
Mechanical Engineering, Masters in Production (Mechanics)	2
Engineering Physics, Masters in Computer Science	2
Science in Computer Systems (Bachelor degree)	1
Energy and Environment (Masters degree)	1
Sustainability and Surveying (Masters degree)	1

Table 3.2: A summary of the former trainees' descriptions of their engineering programs and the quantity of former trainees that attended such program.

Former trainee	Program length	Organization
T1	1 year	A
T2	1 year	A
T3	9 months	B
T4	6 months	C
T5	1.5 years	D
T6	2 years	D
T7	1 year	E
T8	9 months	F
T9	1 year	E
T10	1 year	A
T11	1 year	E
T12	1 year	A
T13	1.5 years	F

Table 3.3: A profile of the former trainees participating in this study. This includes: the former trainees' pseudonym, duration of their trainee programs, and their organizational affiliation A-F.

3.3.3 Selection of and Differences in Trainee Programs

The overall structure of trainee programs, for example, whether they include rotations between different departments or units within the organization is often described by the organization in their trainee program applications. Most of the time, these descriptions are brief and do not incorporate more specific elements and processes in the programs.

When selecting former trainees for this study, differences in overall structure of trainee programs were not considered for several reasons. Firstly, this project wanted to evaluate the overall experience of a trainee program, therefore the definition of a trainee program was kept broad as described in section 1.4.2 *Definition of Trainee Program*. This also brought a valuable opportunity to compare different experiences that former trainees had from different program structures. Secondly, since the project focuses on former trainees rather than current ones, the exact structure, components, and processes of the trainee programs could not always be identified. This was due to a lack of documentation regarding annual changes, resulting from restructuring efforts between different program years.

There were several differences between the trainee programs in this study, as exemplified by the different lengths of the programs as seen in Table 3.3. All program

had trainee gatherings around 4-5 times during the trainee period which they built the trainee community around. Two of the programs in this study were marketed as trainee program but were called introduction programs internally. These two programs did only have the trainee gathering as a part of the overall trainee program structure and focused on introducing the trainee to a future work role.

The other programs beside the introductory programs had a main purpose of letting the trainee build a network and explore within the organization. This was done using two main ideas. One program had a trainee-time-portfolio as the main idea to network and explore the organization where 50 percent of their time was dedicated to visits, internships or other trainee activities such as networking. The rest of the programs had rotations as a main idea which meant that the trainees shifted workplace within the organization during the trainee period. The durations of the rotations spanned between the program from one to six months long rotation. There were also differences in whether the programs allowed the trainees to choose freely between all departments in the organization or if they were limited within certain department(s). The trainees' possibility to consulate in rotation placement varied as well. Three of the programs were international programs. These programs included trainee gatherings and rotations abroad and a trainee group with international trainees. Three other programs included one rotation abroad.

3.3.4 Conduction of Interviews

Before the interviews, a consent form was signed by the former trainees outlining their anonymity, the use of the recordings and their right to withdraw from participation. The consent form can be found in Appendix C. They also received a summary of the main questions before the interview (see Table 3.1).

One interview was conducted in person, while the remaining interviews were carried out remotely using the digital communication and collaboration platform *Microsoft Teams*. All interviews were recorded and subsequently transcribed using Teams' built-in recording and AI-based transcription functionalities in addition to being checked manually. This facilitated the thematic analysis later. Each interview was estimated to last approximately one hour and each interview made sure to cover all questions in the interview guide (see Table 3.1).

The initial interviews were conducted jointly by both authors. As the study progressed and familiarity with the interview context and emerging data grew, the remaining interviews were conducted individually by one of the authors. This adjustment aimed to maintain flexibility in scheduling of the interviews.

3.4 Thematic Analysis

The interviews were recorded to enable further analysis which was done through a thematic analysis in both a deductive and an inductive manner. These approaches

differ in whether the analysis is based on a theoretical framework or not (Braun and Clarke, 2006). The use of a theoretical framework in a deductive analysis shapes the parsing of the data, while an inductive analysis method is grounded in the data which then shapes a theory or pattern recognition without any theoretical framework. See Figure 3.1 below, which illustrates the differences in data collection and analysis between deductive and inductive approaches.

In the deductive analysis there exist assumptions about ”reality”. In this project for example, SDT involved assumptions that you can evaluate motivation through relatedness, competence and autonomy. The projects scope in relation to its three dimensions as well as SDT as a theoretical frameworks became frameworks that then shaped the analysis. An inductive approach was also employed, as it was considered appropriate and reasonable given that the overarching research question aims to identify key factors. It enables capturing significant factors that extend beyond the project's initial dimensions, earlier referred to as unknown key factors.

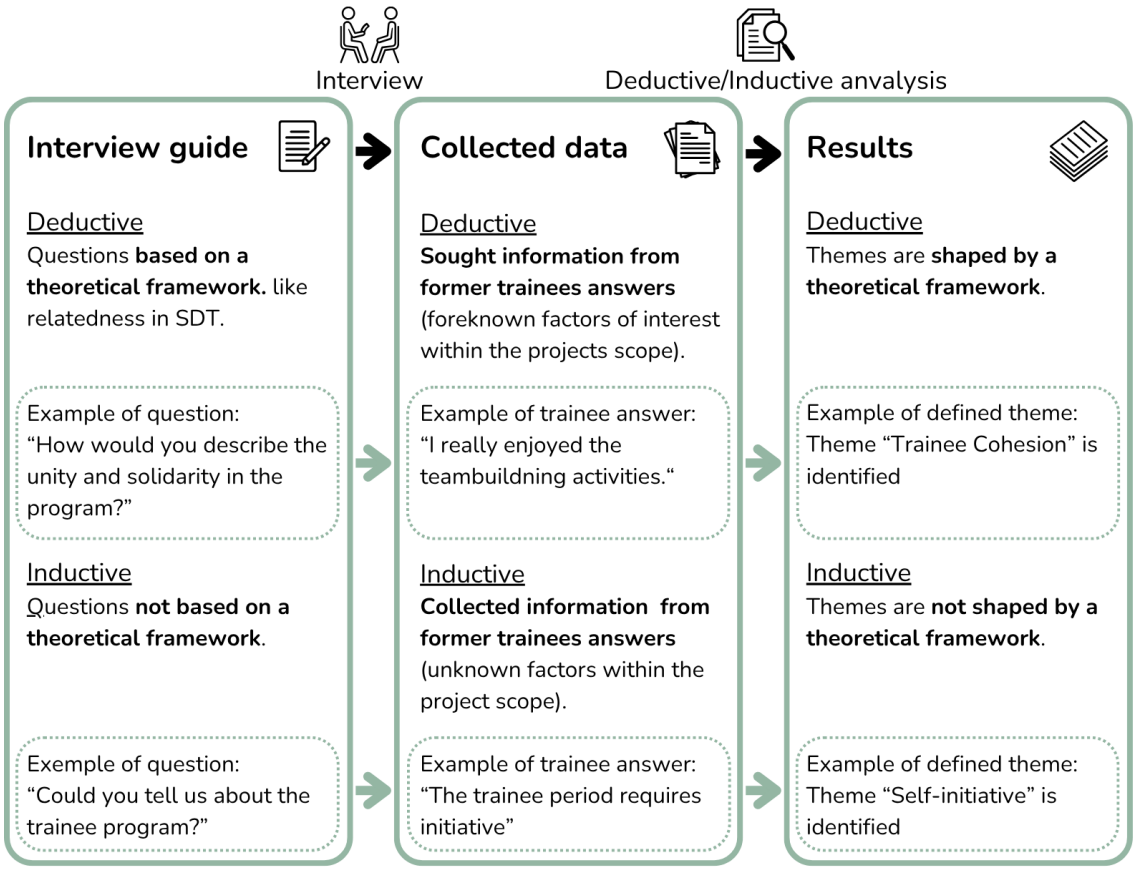

Figure 3.1: An illustration of the differences between inductive and deductive approaches for data collection and analysis. The *Example of question* are taken from the actual interview guide, while the *Example of trainee answer* and *Example of defined theme* are fictional and included for illustrative purposes.

3.4.1 Conduction of Thematic Analyses

The thematic analysis was conducted in four parts. The first, and most inductive, analysis aimed to identify overarching key factors. It was intentionally carried out first to avoid potential bias that could arise from analyses within the study's predefined research dimensions. Subsequently, three separate analyses were carried out, each corresponding to one of the study's three research dimensions. The analysis related to the dimension *Motivation* followed the most deductive approach, using predetermined themes based on the psychological needs defined in SDT: *Autonomy*, *Competence*, and *Relatedness*. Each analysis was conducted following a six-step thematic analysis guide by Braun and Clarke (2006). These steps are illustrated in Figure 3.2. The first step, *Familiarize with the data*, was done through listening to the recordings, simultaneously taking notes, and also proofread and re-read the transcription. To ensure both authors got familiarized with all data, it was processed in unison, all interviews were processed by both authors, either by listening, reading or proofreading the data material.

The second step, *Generating initial codes*, was done through continuing to review the data by reading and listening. This step focuses on further finding patterns and breaking down the data into fragments and creating initial codes from the transcription. Since the study aim to evaluate how trainee programs facilitate a successful experience for the trainees, some of the codes described both what activities they did and their opinions of those activities. Valuable citations were also gathered and linked to the codes as a part of this step. The coding was conducted using *Microsoft Excel* to assist in categorizing and store codes.

The third step, *Searching for themes*. In this step the codes were gathered into potential themes where all relevant data for each theme were clustered. This step involved writing initial codes on separate post-its to allow for easy movement and clustering which facilitating theme identification more effectively than working on a computer.

The fourth step, *Reviewing themes*, was done to review the themes in two levels for quality-checking. The first level entailed reviewing that the collected data codes for a potential theme formed a coherent pattern. The second level assessed that the potential themes were relevant and representative for the entire data set and that they were also relevant for the research questions. In this step, the themes were thereby distinctly divided between the three research questions and the overarching research question (RQ1, RQ2, RQ3, ORQ). This is illustrated in Figure 3.2 through color coding.

The fifth step, *Defining and naming themes*, was done to "define and refine" the themes. In this step, the themes were revisited to making sure that the essence of both the individual themes and the themes together works in coherent with projects the research questions.

The sixth and last step, *Producing the report*, is to produce a comprehensive report. Because of the partly deductive analysis approach the themes have already been

distinctly divided into the research questions and the overarching research question but are in this step checked again to make sure that the new refined and defined themes matches the these questions. The themes were also related back to the literature. After this, the structure for the presentation of the themes were composed and vivid citations were extracted. To help extract citations, the Excel document that was created in the second step to both generate codes and save valuable citations was used. An Chalmers AI tool in *Chalmers AI Portal* called *Meeting Transcriptions* was also used to orientate in the data. This was done through a feature were you ask a question for individual interviews which generates a fast answer on that question. A question could be ”Did the trainee have a explicit supervisor that helped answer the trainee's question for daily work tasks”. All answers were manually checked in comparison to the transcripts.

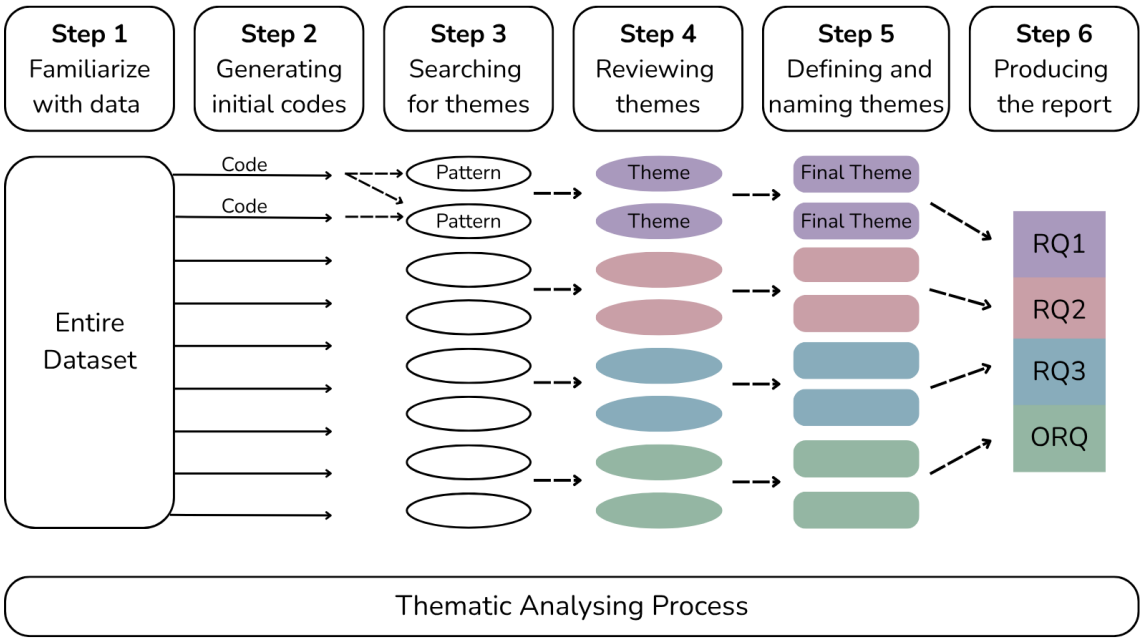

Figure 3.2: An illustration of the thematic analysis process, including the differentiation of themes based on the specific research questions and the overarching research question, using color coding.

4

Results

This chapter presents the results of the thematic analysis from this study. To make the chapter comprehensive, it begins with a description of common trainee program activities. These descriptions are needed as context for all research questions, and can be complimented with the explained differences in the trainee programs from section 3.3.3.

The rest of the chapter is divided based on the research questions, into the following sections: **RQ1 - Learning Experience**, **RQ2 - Motivation**, **RQ3 - Transition to Employment** and **ORQ - Overarching Research Question**. Under each section the themes from the thematic analysis are presented.

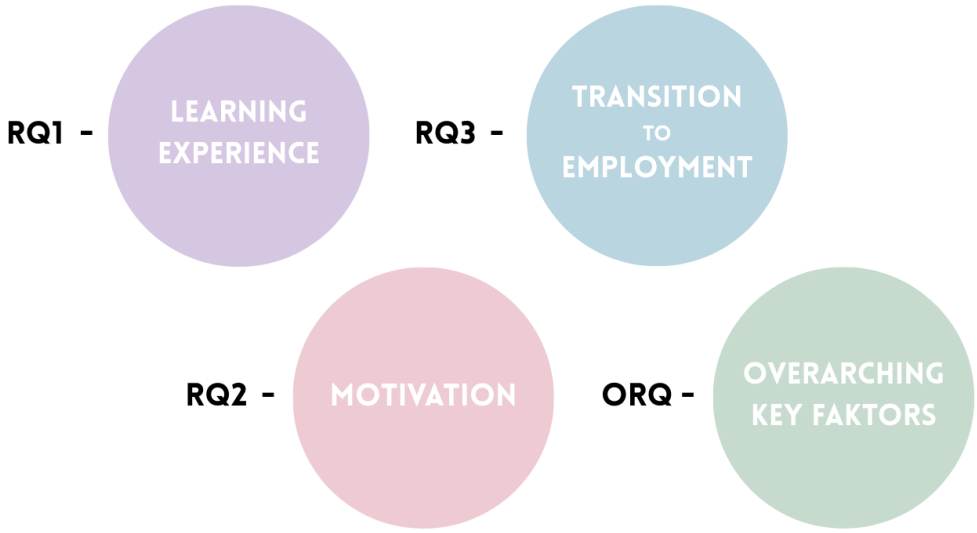

Figure 4.1: The overall structure of the results.

In the interviews with former trainees, several trainee program activities were found to recur across multiple programs. Since there is no fixed definition of what a trainee program must include, the activities presented are described in the some of the 13 interviews conducted. For the sake of clarity, alternative activities can occur at other trainee programs, but the following paragraphs provides explanations of the

common activities, based on the 13 former trainees' description. These activities are not included in every trainee program but were present in more than one.

Rotations A rotation is a period of time, usually between 1 to 6 months, were the trainee work at one department of the organization before rotating to another department. Trainee programs with rotations often have a couple of them in order to experience many parts of the organization. Every day work at the rotations vary, in some rotations the trainee works close to other full-time employees at the department, in others they work in individual projects customized for the trainee. Moreover, it is also common to shadow their supervisors during the rotation.

Internships An internship during a trainee program spans a shorter period of time, usually no more then a couple of weeks where the trainee shadows a department of either their own organization, or a related organization.

Visits A visit is when the trainees visits either a department of the organization, or of a similar partner within the industry and gets a guided tour.

Lectures A lecture is a form of presentation of a subject where the trainees listens.

Cases Cases is an activity where the trainees get a task they work together on and later present. The cases can be both hypothetical or real.

Introduction week The introduction is usually a week or weeks at the beginning of the trainee program where all the trainees meet each other. This period often functions as an introduction to the organization and often has a focus on team building.

Trainee gathering A trainee gathering usually lasts a week, but could be just a couple of days and is commonly between rotations, where the trainees meet each other. The specific activities during this week vary greatly among the trainee programs but examples are: reflecting on their recent rotations, presenting to each other, team building and other forms of lectures, courses or cases.

4.1 RQ1 - Learning Experience

This section presents the results to answer the first research question (RQ1) about the trainees' learning experience. It contains results related to the former trainees' learning experiences, with the aim of evaluating how the trainee program facilitated learning during the program. The themes for *Learning Experience* and its subcategories as a result of the thematic analysis are seen in the Figure 4.7 below.

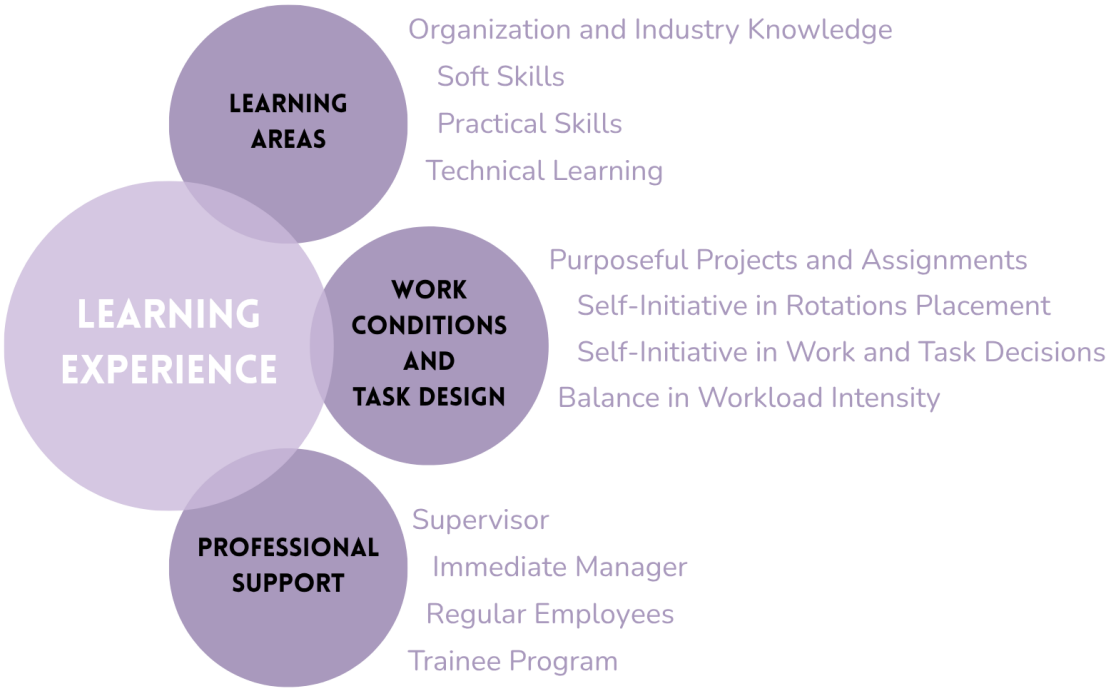

Figure 4.2: The structure of the results for 4.1 RQ1 - Learning experience. The research question is divided into three themes 4.1.1 Learning Areas, 4.1.2 Work Conditions and Task Design and 4.1.3 Professional Support, each of which is further broken down into several subcategories.

The themes identified are *Learning Areas*, *Work Conditions and Task Design*, and *Professional Support*. The first theme describes the different learning areas that were identified in the interviews, showcasing learning activities as well as the trainees' reflections and experiences within these areas. The second theme describes relevant factors concerning the design and structuring of tasks during the trainee program period. The third theme describes how the trainees experienced support in their learning throughout the program and from what sources.

4.1.1 Learning Areas

Learning areas is the first theme under *Learning experience* and refers to the different areas of learning that were identified in the thematic analysis (see Figure 4.3 below). Each section outlines the content of the learning area, how it was taught and the

former trainees' reflections on both challenges and positive aspects related to that area.

Figure 4.3: Overview of the theme 4.1.1 Learning Areas, with the subcategories 4.1.1.1 Organization och Industry Knowledge, 4.1.1.2 Soft Skills, 4.1.1.3 Practical Skills and 4.1.1.4 Technical Learning.

4.1.1.1 Organization and Industry Knowledge

The first learning area, Organization and Industry Knowledge refers to the knowledge that the trainee gains about the organization and its industry during the trainee period.

All trainee programs incorporated, to varying degrees, opportunities for participants to learn about their own organization as well as its clients. The knowledge acquired through learning experiences included insights into the organizational structure, the roles and functions of different departments, business operations, organizational goals and policies, as well as client identities and their ways of working. This provided the trainees with a comprehensive overview of the organization. In programs where rotations extended across multiple departments and clients, trainees gained a broader understanding of the industry as a whole. While rotations that extended within a certain department gave a more delimited insight within that organization. T5 emphasizes how both the connection within the organization and the understanding of its operation is the most valuable assets the trainee experience gave: "The biggest part is the network and the understanding of the organization more than anything else."

All former trainees, with the exception of two, emphasized that the organizational and industry-wide perspective was among the most valuable outcomes of their participation in the program. In the two cases where this was not highlighted, the respective trainee programs did not include rotational elements.

Knowledge about the organization and the industry was acquired through various activities across the different trainee programs. All programs included informative sessions during the introductory week(s), which typically featured lectures and presentations covering topics such as the *organizational structure*, the *core functions of departments*, and *specific projects* carried out by departmental teams. Similar con-

tent was often presented during trainee gatherings throughout the program. These sessions were considered valuable opportunities for trainees to become familiar with the company, gain inspiration from experienced staff, and deepen their understanding of the organization's internal structure. T10 believed that the information of the organizations structure was valuable:

> "I think many of us hadn't realized that we were specifically applying to [certain department], and that there was such a special relationship between [that department] compared to the rest [of the company]. Around day three or so, they drew up the whole corporate structure, and we were kind of all the way out on the far left... So that training was really important in understanding, like, yes — there's a reason for it.". (T10)

A challenge to trainees' learning during trainee gatherings, including the introductory week(s), was the overwhelming amount of information delivered in a short period of time, which made it difficult to absorb and process (T3, T4, T7, T9, T6). Despite this, trainees still appreciated these gatherings and found them beneficial for their learning. As one trainee expressed: "I feel that I've benefited from it quite a bit afterwards as well (...) you've kind of picked something up in the back of your mind, even if you didn't fully understand it at the time." (T1)

One trainee wished specifically that the introduction would have included more about the organizations goals and visions:

> "[During the introduction the trainee program should have presented us with] 'this is how everything works, basically.' 'This is our vision and our goals.' It all sounds very abstract — and I think it probably would have felt that way at the time — but I believe it would've provided even better context for everything we've been doing. And also, how the different business areas are actually quite different. I think it would have been interesting to get that kind of context right from the start. Then I probably would've been able to take in even more of what I learned.". (T1)

Rotations or visits and internships were seen as a key activity for acquiring organizational knowledge (T1, T2, T5, T6, T7, T8, T9, T10, T11, T13). The opportunity to participate in departmental rotations or to observe different parts of the organization, occasionally including visits at clients, provided the trainees with a broader understanding of both the organization and the industry in which it operates. As one trainee described: "So I got to spend time in all three of these different departments, and I'd say I learned the basics in all of them. So it's been really valuable for me as well." (T6). Another former trainee says:

> "I've gained a very broad understanding of the company, and that's something that really helps me a lot in my current role. And I think it's really fun to feel like, 'I understand what's happening over here. I understand what's happening over there.'". (T2)

Everyone except two of the former trainees had designated time set aside to shadow other staff, network, or complete an internship in a completely different department. These trainees were encouraged to explore and network as much as possible during the trainee program. One former trainee explained that this helped them gain insight into the daily work and build knowledge about the organization and the industry, by piecing together an understanding from different smaller components, rather than solely learning about the departments' main goals and functions.

> "I didn't really understand how wind power actually works or anything like that — but now I do, at least partly. And also how the organization is structured, like, 'OK, here's a team that only works with cement,' and 'Here's... rotor blades.' So you end up understanding a lot of those kinds of things too, and how it all fits together.". (T1)

Throughout the program, the trainees acquired knowledge about the organization also helped them developed the ability to navigate the organization effectively, not just understanding the organization. This skill was highly valued. In this report, this organizational navigation is regarded as a soft skill and is presented more in the following section.

4.1.1.2 Soft Skills

Soft Skills, the second identified learning area, refers to competencies related to managing interpersonal and human-centered aspects of work. Seven of the trainee mentioned explicit that of the most valuable competency gained was their ability to navigate the organization (T1, T2, T5, T6, T7, T8, T11). To a question of what the trainee program have given T11 they answers: "Now I know who to contact, how the process works, and who is affected — which departments or business areas are involved.". This skill was developed through two main types of experiences. The first was acquiring knowledge about the organizational structure and operations through rotation, site visits and presentations from experienced staff. The seconds was that these activities simultaneously gave the trainee opportunities to building a professional network. As a result of the knowledge they acquired about the organization and the professional networks they developed, the former trainees were able to identify appropriate contacts, either by understanding which part of the organization was relevant to a particular issue or by already having established connections through their trainee experience. T13 describes it as "you learn quickly how to, like, contact the right people to get your work done". Another trainee stated that:

> "I think the most important part is the network and the understanding of the organization, more than anything else. That's also the part I value the most, and that I feel takes the longest to grasp — especially in a complex organization like [organization]. It's not always obvious how to navigate the landscape.". (T5)

The trainees also reported gaining experience in how to effectively adapt to being

a ”new employee” (T2, T8, T10, T12, T13). As one trainee expressed: ”you’re practicing what it’s like to be new at a job for 1.5 years” (T13). Another elaborated: ”It gave me that... personal development in terms of getting good at ending up in new situations all the time” (T2). A key part of this development involved cultivating soft skills that facilitated adaptation to new environments. One such skill was the ability to ask questions proactively: ”To just ask questions if you want to learn things quickly. So I’ve gotten really good at that — asking questions” (T12), and ”I’ve also realized that it’s actually a really, really good tactic [to ask questions]” (T12). Another soft skill that was mentioned was the ability to establish social connections quickly: ”You also [learn to] get to know people faster because you’ve practiced getting into new roles quickly” (T13).

T13 highlighted and generalized the skill of getting to know colleagues fast to building connections with people in general, not just new colleagues:

> ”You go to lunches with, like, different people from different departments and so on. And [the manager] said, ’that’s great because you build connections that make it easier to collaborate later on.’. So yeah, I think that’s probably the best [Thing I learned], I think.”. (T13)

During the trainee gathering the trainees did different types of courses learning particularly soft skills. A summary of different soft skills areas were: *Leadership*, *Communication*, *Handling Workplace Issues* and *Presentation techniques*.

Ten former trainees (T1, T2, T4, T7, T8, T9, T10 T11, T12, T13) expressed views similar to this quote ”The trainings that were more about personal skills — personal development, really — those were very good and really valuable.” (T2). T9 says: ”I think it’s great that we get to attend leadership training and group development sessions, and that we get to know ourselves better in our professional roles.”. Two of the former trainees (T5, T7) did though expressed a mismatch in their own competences level in especially leadership and the educational level of the trainings, leaving a feeling that ”this was kind of basic.” (T5). T5 feelt like they did not learn any new and that ”It wasn’t all that value-creating, really — apart from the fact that it was fun and we got to build connections. But the educational part wasn’t always the most valuable.”.

Three of the former trainees mentioned how the soft skills are difficult to stage in a realistic or optimal way in courses but still appreciated this theoretical educational element (T1, T7, T10). T1 valued the proactive elements in soft skill training: ”It was really valuable, and some parts were clearly well thought out. We did exercises with acting where we role-played conversations... I thought that was really, really good.”.

Most of the trainees said that both training in soft skills in combination with building trust in the trainee group though this training was highly appreciated by both giving the trainee a chance for personal development as well as building a strong bond in the trainee group. One trainee stated: ”Doing those kinds of trainings within the group

was really valuable, because it led to very honest discussions and conversations. I thought that was really good.".

4.1.1.3 Practical Skills

Practical Skills as the third learning area refers to the learning of practical utilities as different softwares etc.. The practical skills were taught through lectures, courses or at rotations through using a practical utilities (a software for example) in their own work or projects.

Four of the trainees mentioned that they learned practical utilities that they now use in their day to day work (T3, T4, T12, T13). "I work with a certain program, and then, like, I got maybe a one-day training to learn how to handle the program." (T13). T4 was the only one of these trainees that were taught these practical utilities because they were needed for the role (this trainee wanted this role and did not feel the need to change any work features), while the other trainees choose to work with these utilities because they found them helpful after getting aware of these through courses or rotations.

> "[I had] A really good crash course in a system that lots of companies use — I just kind of jumped straight into it and had to learn as I went, because I didn't really have a choice... now I'm working a lot with this system or software in my daily work — and that's something my colleagues in my current team don't really use. It actually helps me a lot; I'm able to understand things much faster because of it. It's definitely something I probably never would've learned if I hadn't been in that department before.". (T12)

4.1.1.4 Technical Learning

Technical learning as the fourth learning area refers to learning that gives more technical depth or knowledge in the trainee's own specialization or to broaden their technical knowledge. Technical depth was mainly taught through optional courses where those trainees who were interested in a certain course took that course or were taught through rotations.

The trainees developed new competences in different technical areas that they did not gain from university. Examples of these competences are logistics, electrical engineering, laws relating to technical fields, electricity grids, energy systems, production processes and production development. These new competences did sometimes tangent the trainee's earlier competence field but were still distinctively different where they needed to learn new skills and ways of thinking.

Some trainees expressed thankfulness that they were put in departments, courses or visits were they did not have any earlier experience in because it broadened their horizon. "You've learned things — and even gotten a bit nerdy about certain topics, like power grid theory" (T12).

Trainees that were specialized in computer sciences, IT and AI did all experience some kind of difficulties from the trainee program or the work place to stimulate or use their proficiency (T1, T10, T11). They all missed someone to discuss and learn more in their technical domain because their department or colleges did not have the right competence. ”I thought it was difficult — well, I would say that most of the time no one could answer my questions, but referred me to someone else or, like, yeah, I thought that was a bit difficult.” (T11).

4.1.2 Work Conditions and Task Design

Work Conditions and Task Design is the second theme under *Learning experience* and presents subcategories of identified concepts that affected the former trainees' experience of learning and satisfaction based on the nature of different tasks and work set-ups. Therefore these concepts could be considered when designing task and work conditions. These subcategories are seen in Figure 4.4 and captures the former trainees' experience of tasks and work conditions in projects, courses and daily work tasks at rotations or at a main department.

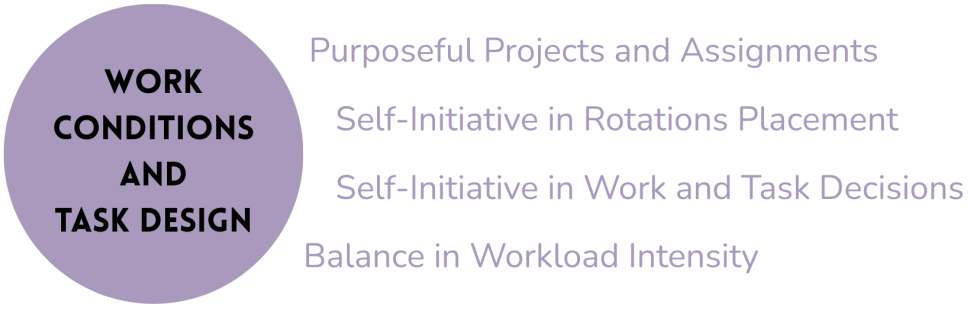

Figure 4.4: Overview of the theme 4.1.2 Work Conditions and Task Design, with the subcategories 4.1.2.1 Purposeful Projects and Assignments, 4.1.2.2 Self-Initiative in Rotations Placement, 4.1.2.3 Self-Initiative in Work and Task Decisions and 4.1.2.4 Balance in Workload Intensity.

The four subcategories, *Purposeful Projects and Assignments*, *Self-Initiative in Rotation-Placement*, *Self-Initiative in Work and Task Decisions* and *Balance in Workload Intensity*, capture key concepts that contribute to a valuable learning experience throughout trainee activities such as rotations, visits and internship where the trainee program did not have full oversight of these activities.

4.1.2.1 Purposeful Projects and Assignments

Purposeful Projects and Assignments, as the first subcategory under *Work Conditions and Task Design*, represents the first concept presented in *Work Conditions and Task Design*. These sections present different work set-ups and learning activities that created a purposeful feeling for the trainee.

All of the former trainees appreciated work tasks and projects that felt purposeful by creating a value for the organization. Read more about the trainees' desire to contribute to the organization in section 4.2.2.1 *Desire to Contribute*. T9 said:

> ”With digitalization, our company is sometimes a bit behind, and since I enjoy that kind of thing, I feel like I can maybe help out in some areas—using parts of my knowledge from university and applying it through digital tools.”. (T12)

Working with a ”real job” alongside the trainee activities could give the trainee the opportunity to learn to manage real work conditions and at the same time contribute. A trainee told:

> ”You have so much energy, and then having to just sit around waiting for someone to give you tasks — it takes a long time to learn enough to actually deliver something. So it was actually pretty nice to have a real job, not just be a trainee.”. (T6)

Four trainees mentioned a challenge in rotation that when gain of momentum in work performance you change department (T2, T6, T10, T12). One trainee describes this:

> ”I would say it was quite clear that it took about [x] months to gain some momentum and really get into things. It often felt like just when you started to become more independent and able to take initiative, it was already time to wrap things up.”. (T2)

Some trainees had presentations at the end of their rotations were they could ”give back” to the organization, by presenting their finding in projects or ”To share our reflections and thoughts — like, how does this department work — and to let the rest of the company also benefit from that.” (T2). Two trainees had as a part of the trainee program for the trainees to give their options about the departments stat in digitization to help them evolve in this matter, wished gave a sort of purpose to the trainee. This sort of presentation can help the trainee in reflecting over their own finding and learning from the department.

Sometimes the former trainee experienced a lack of value in formalized training moments coordinated by the trainee program. Perceived value for the former trainee could lie either in personal learning outcomes or in the contribution of the activity to the organization's goals and interests. T2 said: ”taking an ergonomics course or something more concrete like that — you can do that anytime. It might not really be making the most of the opportunity you have as part of a trainee group.”.

Ambiguities in what the purpose of certain elements was contributed to unsatisfying feeling (T1, T5, T6, T7, T9). As two trainee stated:

> ”Doing the case felt a bit forced — like, we didn't really see clearly how it contributed to the business, and it was more like, 'Here's something you're supposed to do.' I guess I would've wished for a bit more.. I don't

> know, it didn't really feel like there was much interest in what we were doing. And that's totally fine if the purpose is just for us to learn". (T1)

> "Sometimes you were given a task that was a bit more defined and clear, and then you might end up with a better result, too. Some tasks were more like, 'Can you explore this area a bit?' — and then things didn't turn out quite as clear. It didn't feel quite as value-creating either, to be honest.". (T7)

4.1.2.2 Self-Initiative in Rotations Placement

Self-Initiative in Rotation-Placement as the second subcategory under *Work Conditions and Task Design* presents the former trainees' different experiences in being given freedom or having predetermined and dictation elements in *shaping their own work placement* which affected the trainee's opportunity to learn.

All of the former trainees experienced some sort of self-initiative and responsibility in shaping their own work placement during the trainee period. Even the five former trainees that did not have rotations still had ownership in shaping their own role for later employment (instead of choosing rotation) which was appreciated. One of the trainees had a combination of choosing the last rotations while having the two first rotations predetermined.

Three trainees (T1, T8, T13) chose all the rotation placements themselves. They appreciated the process of finding a rotation location because it helped them build their network and learn to navigate the organization when contacting different departments. They although found challenges in navigating the organization in the beginning, especially the first rotation, and would appropriate more help and support in how and who to contact departments for rotations.

Another challenge the former trainee could face was that the departments were poorly informed about the purpose of the trainee. The rotation placement can affect the learning experience and that guidelines towards "subtile" departments could therefore more support for the trainees in finding rotations could help the utilize their time:

> "But [because] when there's a lot of self-initiative involved, I think there could be more support — like, it would help if you were, for example, encouraged to go to a place that's had trainees before and is used to it.". (T8)

One trainee mentioned that the trainees being financed by the trainee program and not the departments themselves facilitated the rotation search, which made the departments more likely to accept a trainee.

Five trainees had the rotations placement chosen for them (T2, T5, T6, T12, T10). These former trainees found that not getting to choose your rotation helped them explore departments they themselves would have never chosen, which was appreci-

ated. A trainee explained that;

> "I don't think it's a good idea to completely assign rotations — it can go wrong and feel irrelevant to some people. But at the same time, I kind of liked it, because it meant you always had to give a department a fair chance. I think it's more about being open and flexible — that people should feel free to switch if something doesn't feel right. But there's still value in trying it first.". (T2)

Either if the former trainees choose or did not choose rotation or if they shaped their future role placement all the former trainees appreciated to have an open communication and support in their choices or wished for more influence and a better dialog in this matter. One trainee that experienced a lack of support stated that:

> "The program wasn't particularly great at supporting us in those kinds of dialogues and discussions [about the future work role placement]. One could debate whether that should be the program's responsibility or not, but we ended up taking a lot of initiative ourselves to make things happen.". (T5)

4.1.2.3 Self-Initiative in Work and Task Decisions

Self-Initiative in Work and Task Decisions is the third subcategory under *Work Conditions and Task Design*. This presents the former trainees' different experiences in being given freedom or having predetermined and dictation elements in shaping their daily work by both managing their own time frames and choosing work tasks. While the section above discussed their freedom in choosing *where* they end up in their rotations or who they shape their future work role, this section discuss their freedom in *what* they end up doing at rotations or the fixed main department and how it effected their learning.

All of the former trainees, except two, had either a trainee-time portfolio between 20-50 % or took part in a rotation concept where they were able to manage their own time. This meant that the trainees could choose what they wanted to do beside fixed daily work tasks or fixed rotation projects. This opportunity was generally appreciated because it allowed them to be flexible and join colleagues and work trips spontaneously. This was seen as valuable for their learning and networking and was mentioned to be a part of the main purpose of many of the trainee programs both within the organization or a main department (T1, T2, T3, T4, T5, T6, T7, T10, T11, T13).

Former trainees reported variations in their ability to make the most of their time within different departments depending on the extent to which departmental staff and managers were informed about the purpose of the trainee. A common challenge described by former trainees was the feeling that their potential was underutilized when staff or managers lacked a clear understanding of how to involve or assign tasks to them. One former trainee extended this concern beyond individual departments,

commenting on the broader organizational awareness, or lack thereof, regarding the role and purpose of trainees. This lack of clarity led to missed learning opportunities, such as joining departmental staff in their daily work or on trips:

> ”But I think we could have gotten even more out of [the trainee’s flexible roll and purpose to learn] if it had been communicated more clearly across the organization. Then you would’ve had more of those coffee machine conversations — people saying, ’Oh, you’re a trainee? Why don’t you come over and I’ll tell you about what I do’, or ’I heard you were just at Supply Chain — could you bring some of that experience to us?’.”. (T5)

At the beginning of each rotation, trainees were often dependent on their supervisor or manager to provide suitable tasks, before they had learned how to navigate the department and learned how to best utilize their time. One trainee described it like this:

> ”With some of the other tasks, it was hard — I felt like I didn’t know enough from the start, so it was a bit difficult to take initiative and say, ’I want to do this.’ But I did take the lead on getting to do something a bit more data-driven, because I felt like the group maybe lacked some competence in that area, and that I could contribute. So I got to do it — though it was a fairly small task.”. (T10)

Some trainees had departments that had prepared for the trainee which could help them to do something that suited them. ”We had already agreed on that. Like, ’This suits me,’ so she had kind of prepared that task for me — they had talked about it, so it was kind of already decided beforehand.” (T10).

Since the trainee period required significant self-initiative to fully benefit from the experience and learning opportunities at each department, one trainee emphasized that more support could be offered to those who are less comfortable taking social initiatives. As T2 noted:

> ”It can also make things easier for someone who finds it a bit uncomfortable [to make initial contact]. I mean, there’s this expectation that a trainee should be very extroverted all the time — and not everyone is like that.”. (T2)

However, both T4 and T11 believed the responsibility lies with the trainee to be proactive and ask questions. When asked about the most important component for a successful trainee experience, they highlighted personal attitude: ”Be open and ask questions — people generally appreciate being asked. Be open, be social, show interest — it’s really important to show interest. I’d say that’s key.” (T4), ”Show interest and have the confidence to step forward.” (T11).

4.1.2.4 Balance in Workload Intensity

Balance in Workload Intensity as the fourth subcategory under *Work Conditions and Task Design*, presents structures within the trainee program to accommodate for a manageable workflow and the trainee's learning experience.

Four trainees described the trainee period as intense (T2, T7, T8, T9), and several others noted that managing frequent workplace changes and meeting new people made it challenging. Additionally, eleven former trainees emphasized that being a trainee requires a high level of self-initiative. Overall, the trainees viewed self-initiative as a crucial factor for successfully navigating this intense period, which is further discussed in section 4.2.3 *Relatedness*.

The following statement from the trainee describes different components that helped the trainee manage the intense trainee period in relation to revile work intensity. One trainee appreciated states how the trainee programs explicit purpose gave an ease in during the trainee period:

> "And I really appreciated the message: 'You're here to learn, you're here to enjoy it. Out in the organization — take time to network, take time to have coffee together. Get to know each other, interview people, try going out into the field or on trips. Do it to learn — not to perform or prove anything.' That mindset was really relieving for me.". (T10)

Another trainee explained how the structure of rotations helped ease the pressure of not being able to preform and give value during the rotations:

> "So it was kind of a nice mindset to have, like, yeah, I'm only going to be here for three months... For me, it was really comforting to know that if I'm not completely satisfied, maybe the next department will be better.". (T12)

For the former trainee that had rotations, another thing that helped with work intensity was the trainee gathering that occurred between rotations. Two trainees explicitly mentioned this as a time to catch up and reflect over the rotation period.

4.1.3 Professional Support

Professional Support is the third theme under *Learning experience* and refers to the trainee program's structural arrangements for providing professional support related to daily work tasks and project responsibilities, as well as the overall design and activities of the program itself. This category does not encompass emotional support, such aspects are discussed separately in section 4.2.3.3 *Emotional Support*. The extent and type of professional support varied across trainee programs and were influenced by factors such as rotation length, whether the trainee had a fixed role from the outset, and other structural components of the program.

This section outlines four subcategories under the theme of *Professional Support*,

referred to as *sources of support*, which former trainees identified as valuable in managing their daily work tasks (see subcategories in Figure 4.5). It describes how these support sources were integrated into the structure of the trainee programs and presents the trainees' experiences, including perceived benefits and challenges associated with each area.

Figure 4.5: Overview of the theme 4.1.3 Support, with the subcategories 4.1.3.1 Supervisor, 4.1.3.2 Immediate Manager, 4.1.3.3 Regular Employees and 4.1.3.4 Trainee Program.

To clarify the distinctions between the various sources of support, *Supervisor*, *Immediate Manager*, *Regular Employees*, and *Trainee Program*, these roles are defined based on their respective functions during the trainee period. The term *Supervisor* refers to the individual who held explicit responsibility for supporting the trainee in their daily work during rotations. While not always formally titled as a *Supervisor* across all trainee programs, this role could also be described as a mentor or, in some cases, coincide with the *Immediate Manager*.

The *Immediate Manager*, as defined here, is the closest managerial role with the authority to decide what tasks the trainee was permitted to undertake. Although the *Immediate Manager* might also assist with daily work, such support is categorized under the role of *Supervisor* in this context.

Regular Employees (also called colleagues) refers to experienced non-trainee colleagues who contributed to the trainee's learning by offering informal support in their daily tasks.

The final subcategory, *Trainee Program*, encompasses the support provided through the program's structure (including rotations, main department placement, site visits, internships, etc.) as well as activities organized by the program itself (such as formalized training sessions, courses, case exercises, and events during trainee gatherings).

4.1.3.1 Supervisor

The *Supervisor* as the first source of support and subcategory under the theme *Professional Support* had the explicit responsibility in supporting the trainee in

daily work task during rotations and answer the trainees' questions which assists them in their learning.

One key advantage of having a designated supervisor was the clear assignment of responsibility for the trainee's experience within the department. This clarity allowed trainees to know exactly who to turn to for support, unlike relying on colleagues or immediate managers who did not have the same explicit responsibility. "So I always had someone on site who was my supervisor, who had set aside time to support me, so to speak. And that was quite nice." (T10)

One aspect that four former trainees explicitly mentioned they valued was having their supervisor physically present, making it easier to ask questions and receive support (T2, T3, T7, T10). In some trainee programs, trainees worked closely with their supervisor on the same projects, while in others, the supervisor's role was limited to weekly check-ins to monitor progress. One trainee that worked closed described it as beneficial to do so:

> "I felt like I was really lucky, or maybe it was just fortunate, that both my manager, my supervisor, and we were all based at the office. So we actually sat next to each other and worked together on a daily basis, which meant, yeah, we had a really good connection there.". (T7)

T1 experienced that they did not need their supervisor because they had an easy time finding support through other resources as in colleagues that had earlier trainee experience and therefore knew how to support the trainee.

The supervisor could also be the one responsibly to pursue the trainee with subtile tasks and sometimes this role was the immediate manager. The efficiency in the assignment of work is discussed in the next sections under 4.1.3.2 *Immediate Manager*.

4.1.3.2 Immediate Manager

The *Immediate Manager*, as the second source of support and subcategory under the theme *Professional Support*, played a key role for how the trainee was able to utilize their time at a department through three aspects, through introducing the trainee to the department, through assigning the trainee with work tasks and through adapting these tasks to trainee activities. These aspects could facilitate the trainee's learning.

To begin with, the immediate manager role of introducing the trainee to the department during rotations could clarifying their purpose helped utilize the trainee's learning experience, as it made it easier for them to explore the department, participate in work tasks, and shadow colleagues in various work assignments relevant to the trainee's interests.

Four of the former trainees felt it was important for the trainee program to inform the immediate manager and establish clear guidelines about the conditions under

which the trainee would be working (T1, T2, T5, T9). As T2 explained:

> ”I think it really depends on what information the managers in those teams have actually received and how they’ve taken it in. You can really tell that even if the information has been shared, not everyone absorbs it in the same way.”. (T2)

T9 had a proposal to help the immediate managers find support from other managers that had trainees too:

> ”Having that network would probably have helped my manager understand how others were doing things. Now that I think about it, maybe that would’ve been something. (...) Yes, some were much more skeptical than others, and if they had had that network, they could have discussed and reached a shared opinion.”. (T9)

Some trainee mentioned that the immediate manager influenced the trainee’s experience, particularly regarding what was expected of them and how tasks were assigned. One trainee stated:

> ”You had the [manager] who was responsible during each of the different rotations, who gave you tasks. So it was a bit of everything, I would say. I was quite lucky to have good managers, and I still got good assignments.”. (T6)

One trainee experience difficulties in being assigned subtile tasks based on their own competence. Three trainees (T9, T7, T12) highlighted the risk of an uneven workflow when expectations regarding the trainee activities were unclear:

> ”It was difficult to prioritize [and manage the workload and expectation from the manager], especially towards the end of the year when you’ve learned your regular tasks and taken on more responsibility. And then you’re supposed to be away for a week (...) And if your manager and colleagues aren’t on board with that, it becomes tough. Some groups — not mine, but others — had the opposite issue: when you return from such a week, sometimes no one expects anything from you, and then you have nothing to do. So, the workload becomes very uneven.”. (T9)

Trainees could find it challenging to take initiative in new departments due to uncertainty about available and suitable tasks (T1, T10). To have engaged supervisor made it easier for the trainee to learn how might. Thereby making the role of the immediate manager who assigned task more important. T8 och T13 explicitly said that the impact both the immediate manager and the supervisor had on the trainees stay were so important that trainees should be recommended to go to departments that are used to having trainees:

> ”But I would say that what you sometimes miss — especially during the weaker rotations — is the level of engagement from the manager and su-

> pervisor. So it partly depends on the placement I chose. (...) Nowadays, [people with knowledge about the trainee program] often recommend choosing a place that has had trainees before, or where the manager has been a trainee themselves, because then they understand what it's like. That makes it easier to understand each other.". (T8)

Five former trainees had good experience of having a manager that knew about the conditions of a trainee program (T5, T6, T7, T11, T13). T13 said:

> "When you have a manager who is used to having trainees, then they can set things up very clearly, like: these are your tasks, this is what we expect from you, and so on. And that makes life much easier than when everything is so undefined.". (T13)

4.1.3.3 Regular Employees

Regular Employees, as the third source of support and subcategory under the theme *Professional Support*, refers to the departmental staff and were an important aspect for the trainees in their learning when the trainee work close in team at the department or to able to shadow and learn form these regular employees.

How well the introduction conveyed the trainee's purpose was seen to influence the overall experience at the department in how regular employees perceived and interacted with the trainee (T2, T5, T6, T10, T11, T12). T2 described it as follows:

> "When you're newly hired, you're usually introduced to the team in a clear and structured way. But when you join as a trainee, it's not always clear how you're supposed to fit into the group.". (T2)

Five former trainees had a good experience when being introduced and taken care of by the regular employees. T6 expressed particular appreciation for the regular employees, highlighting their crucial role in supporting learning. As T6 stated: "I learned so many great things that I still carry with me today - but mostly because my colleagues were really great."

When being receiving help or learning from the regular employees T2 expressed that they want to be helpful, but that they might be blind for what kind of help the trainee needed: "It's more that... a lot of people have worked for many years and have forgotten what it was like to be new — and maybe they forget about the soft values, too" (T2).

T6 had a theory that having rotations within different branches of the department, instead of changing departments, and having longer rotations, this motivates regular employees to invest more time with you as a trainee:

> "This made people invest more time in me. If I'd been a general trainee, I do not think it would have been the same — people probably wouldn't have felt the same ownership over making sure I actually learned". (T6)

4.1.3.4 Trainee Program

The *Trainee Program*, as the fourth and final source of support and subcategory under the theme *Professional Support*, reflects the former trainees' perspectives on how the program contributed to favorable learning conditions, both through organized activities under trainee gatherings and by maintaining a central role in supporting the trainees' development, ensuring they made the most of their trainee period, thus learning as much as possible.

To begin considering the trainee program as a centralized support structure, five former trainees expressed a desire for more guidance and information about what had been done in previous years by other trainees (T1, T2, T5, T8, T13). T13 explained the dissatisfaction in having to "reinvented the wheel":

> "So we kind of reinvented the wheel a bit, because each trainee group had its own way of doing things. They had planned their trips in a certain way and so on. We really would have needed some kind of structure — a more structured setup, like a template to follow". (T13)

An suggestion in the answer for the question "What is the most important component for a positive trainee experience?", asked in the interviews, was: "you receive a trainee handbook (...) a template for how you can structure your trainee period." (T13). This could help eliminate uncertainties and to give the trainee more time in focusing on making the most out of the trainee experience.

Two trainees did not see a need for more support from a centralized support structure from the trainee program. T11 said: "But I set them up myself, like—I wanted these types of support, I needed these types of support." (T11), making sure to receive the needed support dependently.

Former trainees thought that there should be better communication from the trainee program to the departments in the organization to facilitate the trainees' rotations and internships by knowing what terms the trainee work under. T9 said:

> "I think it should be clear from the trainee program and from the trainee coordinator's side what is expected (...) I mean, quite clearly, we can't [have unclear expectations]. Then the trainee program doesn't work. And it was kind of vaguely stated—or to us it was clearly said—that we weren't supposed to have delivery responsibilities during the first year, but I don't think that message reached the managers, or at least not all of them.". (T9)

Moving on to the trainee program's organized activities during trainee gatherings, four former trainees reported that the volume of new information presented during these sessions could be overwhelming (T3, T6, T7, T9). T6, T7, and T9 particularly emphasized that this was most evident during the initial introduction week(s). As T9 explained regarding the introduction period:

> ”Having an introduction to the entire organization compressed into about three weeks, every other day, full days with things like ‘now we’ll go through the entire planning department and what they do’ —it was very overwhelming and difficult to absorb. You’re new. It’s a new place, a new job that you have to learn, new people to get to know, and at the same time, you’re expected to sit through presentations about departments you won’t even be working with. It was a lot to take in.”. (T9)

T6 expressed a proposal of more interactive learning to make the learning activities more efficient while T1 expressed an appreciation for interactive elements during courses:

> ”it was about three full days of presentations, and that’s a lot... It was an overwhelming amount of information. It became really exhausting to sit and listen for that long. It’s more engaging when you actually get to do things yourself. I think you learn more that way —so maybe it should be more about doing rather than just sitting and listening.”. (T6)

> ”We got to do, like, exercises with actors who would pretend, like, ’Now I’m your manager and you’re you,’ and then we were supposed to kind of reenact the conversation. So you really got to try it out.”. (T1)

4.2 RQ2 - Motivation

Unlike the other research questions, RQ2 was analyzed partially deductively using self-determination theory (see section 2.2) as a theoretical framework. As a reminder, SDT describes motivation and postulates that motivation is facilitated by three basic physiological needs. These are the need for *Autonomy*, the need for *Competence* and the need for *Relatedness*. Consequently, these three needs form the thematic structure for RQ2, with trainee experiences illustrating how each need is supported. Each thematic section thus evaluates how the trainee program fosters a motivational climate for the trainees.

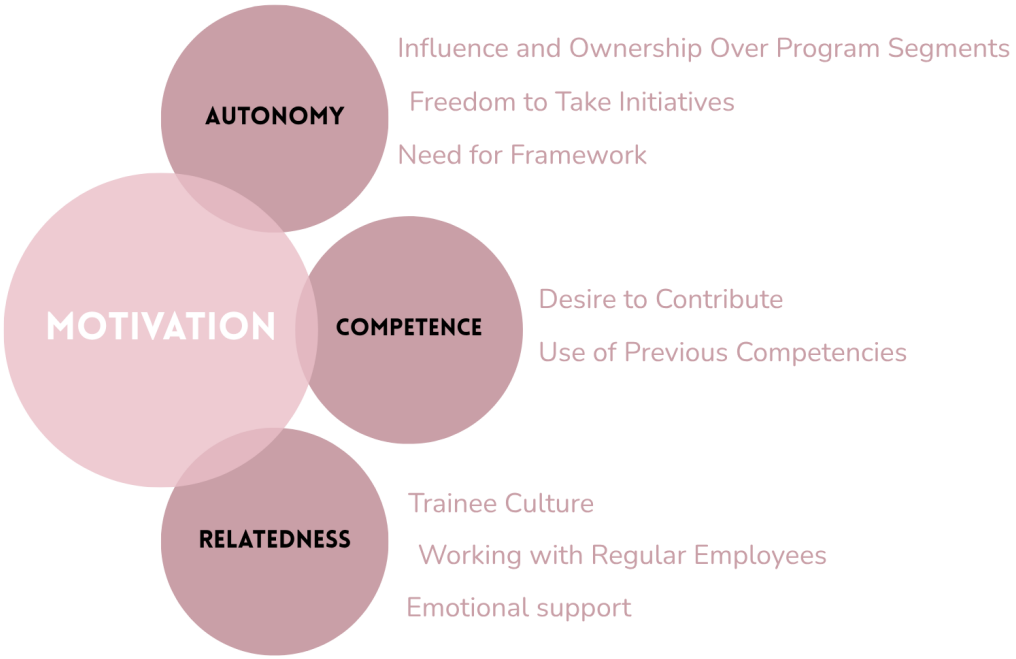

Figure 4.6: The structure of the results for 4.2 RQ2 - Motivation. The research question is divided into three themes 4.2.1 Autonomy, 4.2.2 Competence and 4.2.3 Relatedness, each of which is further broken down into several subcategories.

4.2.1 Autonomy

The theme *Autonomy* explains in which ways the trainee programs creates personal options for the trainees and how it evokes feelings of freedom and autonomy. This is one of the most emerging themes, with all trainees reported having the opportunity to shape their own roles to varying degrees during the trainee program, and did for example select either the tasks, projects, or rotations they engaged in.

This theme is divided into three subcategories. One of them is *Influence of Trainee Program Structure*, describes in which ways the trainee program gives influence over the overall structure. Another subcategory is *Freedom to Take Initiative*, highlights

a tendency that trainee programs enable freedom and trainee initiative in everyday activities. These two subcategories describe different methods by which trainee programs facilitate autonomy, however, doing so requires a clear framework. This leads to the final subcategory, *Need for Framework*, that describes former trainees' appreciation for clear structure, support and expectations.

Figure 4.7: Overview of the theme 4.2.1 Autonomy, with the subcategories 4.2.1.1 Influence and Ownership Over Program Segments, 4.2.1.2 Freedom to Take Initiative and 4.2.1.3 Need for Framework.

4.2.1.1 Influence and Ownership Over Program Segments

Many of the former trainees reported influence over some trainee program segments, such as place of rotation and visits, and all of them had some influence over their role. The former trainees that had rotations as part of their trainee program could, in most cases, influence the place of rotation. This was done in multiple approaches with varying degree of influence. In one approach the trainee contacted optional department and asked for a place of rotation (T1, T8, T13). In another, the trainee program presented a proposed rotation schedule and the trainee could influence that schedule (T5, T6), as T5 explained "There was a plan when I arrived and then we discussed it through" (T5). There was also an alternative where the trainee could wish for place of rotation and then the program matched the trainee to a suitable department (T10, T12).

In general, former trainees appreciated having a say in the selection of their rotation placements. This was highlighted by one trainee's reaction when that opportunity was lacking:

> "I still think that you can have a moment of discussion. I don't think it's good to just assign because it can be wrong and it can feel irrelevant.". (T2)

However, this does not mean that having a choice was the only appreciated aspect. Being assigned to certain rotations had beneficial aspects, as it encouraged trainees to give each department a fair chance: "But then I still like it because it meant you always had to give a department a chance" (T2).

Moreover, for the trainee programs that enabled visits to different parts of the organization, it was common that the trainee group decided these together (T7, T8, T9, T11, T13). Commonly, these visits were planed by the trainee groups as T9 explained "We planned the trips ourselves as a group". Thereby, these trainee were given influence over the trainee program.

4.2.1.2 Freedom to Take Initiative

The subcategory *Freedom to Take Initiative* as part of the theme *Autonomy* describes the tendency that trainee programs expect the trainees to take initiative. The trainee programs encouraged the trainees to focus on learning, explore different tasks or networking (T2, T5, T10, T13). The encouragement made the trainees more confident in prioritizing these types of activities that demand self-initiative. As T13 describes "I would say that it is very much own initiative (...) you are encourage to contact managers" (T13).

The trainee programs enabled the trainees to focus on learning, exploration and networking by giving freedom in there everyday work. Around half of the trainees explicitly stated that they had a lot of freedom during the trainee programs. As T1 explained

> "If I didn't do anything, nothing would have happened and maybe no one would have really followed up either, so it was a lot, so it was a lot of my own initiative.". (T1)

Other former trainees had experiences similar to T1, such as "We have a lot of freedom during the year to take our own initiatives" (T9). Therefore, it is clear that trainee programs, generally, allow the trainees to have control and autonomy over their daily work. Furthermore, this can be illustrated by a former trainee's explanation for what would happen if there was a lack of initiative "[You] wouldn't have had to do that much if you didn't want to" (T12). The same trainee still described a willingness to preform, which indicate that the former trainee felt free rather than controlled.

To summarize, the former trainees described that the trainee programs encouraged them to take initiative by giving freedom in their day-to-day work.

4.2.1.3 Need for Framework

The subcategory *Need for Framework*, as part of the theme *Autonomy*, focuses on the importance of a framework to enable autonomy. There were moments during the trainee programs many of the former trainees felt limited despite being free. In these cases, the former trainees expressed that they felt a lack of structure. An example of where the freedom felt limiting was when a former trainee had to decide their first rotation. The former trainee wanted "support before the first rotation so you don't waste it" (T8), but did not get it. The limiting feeling was a consequence of not knowing enough of the organization in the beginning to make an educated decision.

Although the former trainees valued the program's freedom, they still welcomed a certain level of structure and expectations. As T12 noted, clear demands actually spurred productivity:

> ”Because otherwise it would have been too free rein, so I think for me it might not have always been so productive.”.

For the trainee programs that enabled the trainee to plan their own trips, there was sometimes a lack of logistical framework. For T1, there were logistical problems related to traveling, which caused frustration and therefore complained that ”there were no guidelines or support.”. In a similar fashion, T13 explained:

> ”We would have needed some kind of structure (...) a framework to follow, because we were like 'OK, but how the hell are we going to plan our trips?' We have no idea what to even start with.”.

Furthermore, T13 proposed a trainee handbook with information on how previous trainees had planed the visits.

In a few cases, situations appeared were the communication between the programs and the trainee was lacking. This was seen as problematic by the trainees, and as in one case where the expectations were uncertain ”things were unclear, it became chaotic” (T12). Furthermore, T11 and T5 both expressed problems with the communication from the trainee programs. This lead to struggles in balancing between trainee program centered activities, such as lectures and courses, with more day-to-day tasks. Therefore, clear communication and expectations is of importance, because lacking clarity became a hindrance for some of the former trainees.

4.2.2 Competence

The theme *Competence* is about how the trainee programs evoke feelings of capability, effectiveness and mastery. It describes how trainee programs created opportunities for former trainees to apply their competence and how the programs supported this process. One way competence is shown in trainee programs is through learning, and therefore, the whole result in 4.1 is relevant for this theme, but excluded to minimize repetition. Nevertheless, keep in mind that learning is a used method within trainee programs to evoke feelings of competence.

This theme is divided into two subcategories called *Desire to Contribute* and *Use of Previous Competencies*. *Desire to Contribute* highlights that the former trainees, in general, preferred tasks that contributed to the organization and *use of Previous Competencies* describes cases where competencies learned at university was applied. These are seen in Figure 4.8 on the next page.

Figure 4.8: Overview of the theme 4.2.2 Competence, with the subcategories 4.2.2.1 Desire to Contribute and 4.2.2.2 Use of Previous Competencies.

4.2.2.1 Desire to Contribute

Desire to Contribute is a subcategory of the theme *Competence*. The subcategory points to the former trainees' desire to do tasks that are meaningful for the organization. One way the trainee programs boosted trainees' sense of contribution was by having them share what they'd accomplished during each rotation (T2, T8). In the trainee programs investigated in this thesis, these presentation have either been for anyone at the organization that wanted to see them, for the other trainees or for the department of rotation. About the presentations, T2 thought it was of value to present to anyone at the organization that wanted to see, because it spread the knowledge of departments within the organization. A process T2 described as "I think it's fun to feel that there is a benefit to the [organization]".

In general, the former trainees valued doing tasks and assignments that felt contributing to the organization. As T11 explains "So it felt good because then you feel meaningful and like you're contributing something". The feeling of contribution was, among other things, facilitated by working in your future role as part of your trainee program. One former trainee explains that "You quickly get into a real role that you are going to work with" (T3) is motivating. The desire to contribute was also evident when the trainees got tasks that felt meaningless for the organization, which was evident in the following statement by T9: "Doing cases felt a bit forced. We didn't see very clearly what this contributes to the organization.".

In the trainee programs that had rotations, there were challenges with feeling valuable. Due to the rotational structure of the trainee programs, some trainees expressed a sense of frustration, as they were often relocated just as they began to feel productive and had learned how to navigate the new workplace. When the trainees were new at a department, it was common to shadow their manager, which one trainee described as good for learning about the department, but also that "It's clear that some days I feel like I'm not contributing anything"(T5). Another trainee appreciated having tasks during the rotations, "So it was quite nice to have a simpler task during the entire [rotation] period so (...) you felt like you were actually doing something, not just drinking coffee" (T6).

Moreover, seven of the former trainees (T4, T5, T6, T8, T10, T11, T13) mentioned a longing to ”start working for real” (T13). T5 explained that ”I felt pretty much done with the trainee program and just wanted to get out and do the real work, 100 percent with full responsibility and everything that comes with it”, which further shows, the former trainee's desire to contribute.

4.2.2.2 Use of Previous Competencies

Use of Previous Competencies is another subcategory of the theme *Competence* describing the situations in which the former trainees had the ability to use skills they learned from university.

For most of the trainees, it was the more soft skills that were of use, with people highlighting leadership, problem solving skills and organizational theory. The former trainees that experienced that they used more technical skills from university during the program, enjoyed applying them (T10, T11, T13).

> ”Then I had my own project that I kind of ran myself because I thought, well, this is fun and I have some competence in this area, so let me give it a try, you know.”. (T10)

Moreover, in the cases where the opportunity to use previous competencies was lacking, the former trainees also missed them. As T1 explained ”I know machine learning and all these cool things and advanced methods, but yeah... then you end up just sitting there in Excel”.

4.2.3 Relatedness

The theme *Relatedness* explains in which ways the trainee programs facilitates the feeling of affinity to other people at the organization. According to SDT, the need for relatedness is the need to feel like you belong with the people close to you. To provide the trainee with support can help build stronger connections between trainee program coordinator, managers, regular employees and supervisors. Therefore, the results presented in section 4.1.3, Professional Support, are relevant to this theme, and readers are encouraged to consult that section for further insights into how support can be facilitated for trainees to enhance their sense of relatedness.

Mainly, the trainees felt relatedness towards the other trainees, colleagues at the organization and through supportive practices. Therefore, this theme is divided into three subcategories are *Trainee Culture*, *Working with Regular Employees* and *Emotional support*. Among the theme's subcategories, *Trainee Culture* stands out as the most prominent for the former trainees.

Figure 4.9: Overview of the theme 4.2.3 Relatedness, with the subcategories 4.2.3.1 Trainee Culture, 4.2.3.2 Working with Regular Employees and 4.2.3.3 Emotional support.

4.2.3.1 Trainee Culture

Trainee Culture is a subcategory of the theme *Relatedness* and is about the cohesion in the group of trainees, which is considered one of the most important aspects of the trainee programs according to over half of the trainees (T1, T2, T3, T7, T8, T9, T10, T11, T12).

In many cases, a strong sense of trainee culture emerges from the very beginning of the program with a week or weeks of introductions and team building. A former trainee thought that ”meeting physically is really key, especially in the beginning” (T12). As T12 alluded to, meeting physically is important for creating a trainee culture. T5 and T6 also specified the importance of physical meetings, even though these two did not highlight the need of a trainee group as especially important during the trainee period (both had a trainee group that was geographically spread out).

Furthermore, there were several efforts to strengthen the trainee culture, one of them was to have the trainees travel together. These travels were to visit other parts of the organization or industry. T7 described how these travels strengthened their cohesion.

> ”We stayed in hotels and usually you book the same hotel [as the other trainees] and then it kind of happened that we went out and had dinner together in the evenings and we got quite close quite quickly, because it gets quite intense, we hung out a lot”. (T7)

Another targeted effort to strengthen the culture was to having structured talks about more complex topics. T1 describes that ”It felt like it strengthened our cohesion so much because you get into such deep topics” (T1).

To summarize, trainee culture is one of the most important aspects of trainee program according to over half of the trainees. A positive trainee culture can be facilitated by an introduction with focus on team building and meeting physically on a regular basis.

4.2.3.2 Working with Regular Employees

The subcategory *Working with Regular Employees*, part of the theme *Relatedness*, is about the cohesion the former trainees felt towards their non-trainee colleagues.

Three of the former trainees highlighted a good cohesion to regular employees in their respective organization during the trainee program (T3, T4, T6).

In general, the trainees that worked at a department part time during the trainee program were closer to their colleagues. T6 experienced that the opportunity to build a connection with departmental colleagues was an important part of the trainee program, to compensate if the trainee cohesion was not there:

> "[when not connecting with the trainee group] then it was important to feel a sense of belonging to something. And if you have both the trainee group and your department, then you have two chances to find a sense of connection.". (T6)

Five trainees experienced some kind of barriers between the trainee and the regular employees (T1, T2, T5, T9, T10). As one trainee explained:

> "One could say that what's occasionally been missing is a shared understanding of what it actually means to be a trainee. (...) there's a bit of a barrier to overcome, especially when trainees are away on trips and such, that can sometimes cause friction with regular employees.". (T9)

When a former trainee had a rotation at a department where many colleagues worked remote, the cohesion was lacking. "I don't really get to know as many people in the department as I did before [on previous rotations]" (T12).

4.2.3.3 Emotional support

The subcategory *Emotional Support* is part of the theme *Relatedness*. Most of the trainee programs had specific roles that helped the trainees with emotional support. This subcategory describes the connectedness the former trainees had towards people with these roles, often called mentors, buddies and other supervisors.

The emotional support was especially valued by former trainees that hade multiple of them. Such as T7, that valued to always have someone to talk to in case something bothersome appeared. The same was true for T9, who described: "My experience was that it worked very well, that I had many people around that supported me.".

Mentors as emotional support were mostly, but not always, successful. The former trainees that appreciated them, highlighted their importance for numerous reasons. One of the reasons was a substitute in case the trainee group hade weaker cohesion and another valued having someone to talk to. However, two of the trainee thought that the mentors did not fit them personally, and one of them suggested that there should be possible to switch mentors in order to facilitate better support (T1, T6).

4.3 RQ3 - Transition to Employment

To answer the third research question, thematic analysis was conducted using the interview data, enabling themes to be identified. The themes related to the research question are *Role Change Process*, *Connection to Organization* and *Continuous Progression*. These themes have been further divided into subcategories that are illustrated in Figure 4.10.

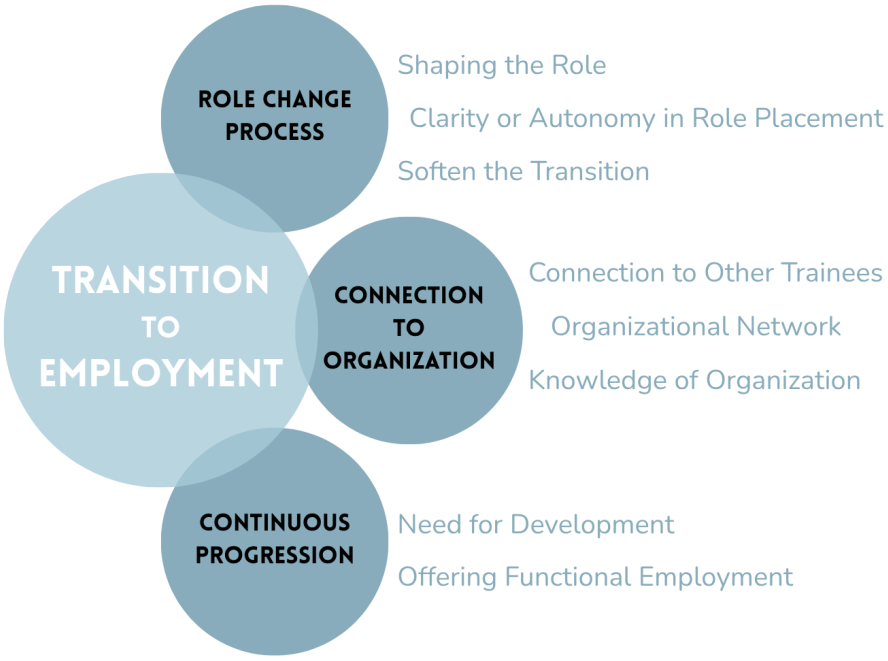

Figure 4.10: The structure of the results for 4.3 RQ3 - Transition to Employment. The research question is divided into three themes 4.3.1 Role Change Process, 4.3.2 Connection to Organization and 4.3.3 Continuous Progression, each of which is further broken down into several subcategories.

4.3.1 Role Change Process

The theme *Role Change Process* is about how the role changed in the transition to employment and how the former trainees experienced the process. This process varies significantly, not only from organization to organization, but from trainee to trainee. In general, there were three approaches to how the trainees' transitioned. The first approach was that the trainee applies for a new role at the company at the end of the trainee program. The second approach was that the trainee is hired for a specific role in the beginning of the trainee program and has trainee program activities alongside working at that role. Finally, in the third approach, the trainee was assigned a target role at the start of the program, without needing to apply for it, while still participating in trainee program activities that may not be directly related to that role.

The theme *Role Change Process* has been further divided into three subcategories. These are *Shaping the Role* describing ways of tailoring the future role to the trainee, *Clarity and Autonomy in Role Placement* describing that the trainees want to have clarity and feel in control over their transition and *Soften the Transition* which highlights how some organizations strive to make the transition as seamless as possible. The different approaches for transitioning have advantages and disadvantages and thus, any single approach is relevant across multiple subcategories.

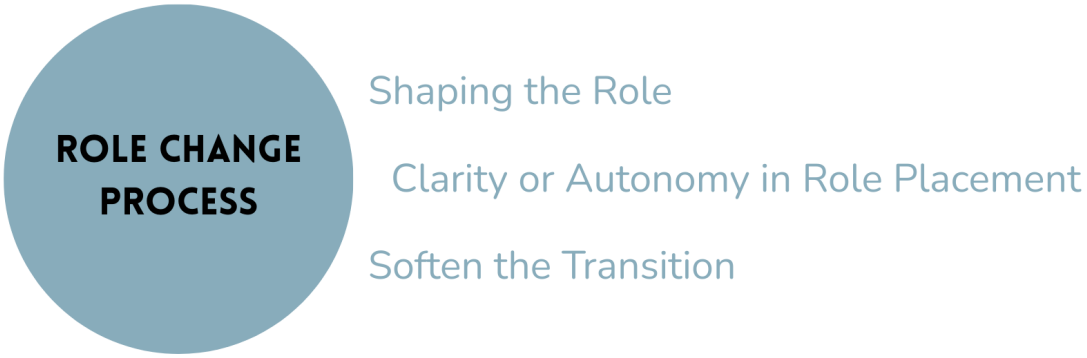

Figure 4.11: Overview of the theme 4.3.1 Role Change Process, with the subcategories 4.3.1.1 Shaping the Role, 4.3.1.2 Clarity or Autonomy in Role Placement and 4.3.1.3 Soften the Transition.

4.3.1.1 Shaping the Role

In the role change process from trainee to employee, many of the former trainees expressed appreciation for being able to shape their future role. This was especially apparent for the former trainees who applied for a position at the end of the program. These trainees explained that they liked that they had the opportunity to see much of the organization before deciding where they wanted to work: ”I thought it was nice that it was very free to choose where you wanted to be afterwards” (T13) and ”I thought it was so nice that there was such an open entry” (T10). Another trainee believed that ”I have been given very good conditions to work in a position where I enjoy it and that is also why I am staying” (T2) as a result of being able to apply for a position at the end of the program.

The organizations enabled the trainees to see many parts of the organization and, thereby, made it possible for the them to make educated decisions when applying for new positions. This was primarily achieved through job rotations, as well as site visits. Moreover, it was also appreciated to have networking events where the mangers presented the roles to gain a clearer understanding of what each role involved (T8).

Furthermore, shaping the role was not limited to the former trainees who chose a position at the end of the trainee program, but also occurred in one case where a trainee held a role alongside the program (T3). In contrast, this did not occur through a formal application process for a new position but rather through talks with managers. These conversations enabled some form of role adjustment for the

trainee, although still within the same department.

> ”There have been follow-up meetings with your manager and mentor, and in those situations it becomes a bit more emotional, you talk about what you think of the role and what kinds of projects and roles you’re interested in.”. (T3)

4.3.1.2 Clarity or Autonomy in Role Placement

The subcategory *Clarity or Autonomy in Role Placement* explores how the former trainees wanted either clarity or autonomy in the placement of their future roles. The role placement was, in more general terms than the description found under 4.3.1 *Role Change Process*, done in two ways, either the trainee gets a role at the beginning or at the end of the trainee program. In the case where the trainees received a position at the beginning of the trainee program, what they could expect was clear. Otherwise, when the former trainees had the opportunity to apply for the new role at the end of the trainee program, they experienced greater autonomy but also more uncertainty.

Former trainees differed in whether they appreciated the clarity of a predetermined role or felt constrained by it. Some trainees, such as T7, appreciated the clarity that came with a predetermined role.

> ”Of course, it would have given me perhaps more freedom afterwards, but I still felt somehow that it suits me well to know a little bit about what comes after the trainee program.”. (T7)

In other cases, such as for T6, the fact that the role was set felt somewhat limiting, and explained that ”It is an advantage, if you don’t have such a clear position, that you might get a few different offers” (T6).

In 5 out of the 13 interviews (T2, T8, T10, T12, T13), all of which applied for new roles at the end of the trainee program, the former trainees described a sense of competition for the new roles.

> ”It sometimes turns into a bit of a competition between the trainees, which can be a bit tough since you might want the same thing, but only one person can get it.”. (T8)

The competitiveness led to uncertainty about what the future role would be. As one of them described ”it felt a bit uncertain, being in a situation where I didn’t really have control” (T2), which the former trainees struggled with. Similar, another one explained that ”It was a relief when the new position was confirmed” (T13). This was especially apparent in the cases where the trainees, instead of applying for a role to the manager, had to wish for a role to the trainee program coordinators. This created a feeling that another person was in control. In contrast, the trainees that had the opportunity both to apply for a new role directly to the managers and visit their department, experienced less uncertainty.

Despite the uncertainty, these five trainees appreciated having the opportunity to influence their future decision, as is described in the subcategory *Shaping the Role*. This indicates that the trainees tolerated the uncertainty in exchange for more autonomy regarding their future.

4.3.1.3 Soften the Transition

Soften the transition is a subcategory focused on how the trainee program ease the transition to employment. The focus on a smooth transition was common in many of the trainee programs, but especially common for the trainees that worked in a role at a department alongside the trainee program. Generally, these trainees experienced a marginal role change when the programs finished (T3, T4, T7, T11). As one of them described, "There wasn't much of a transition, that's the short answer" (T4). Furthermore, T7 also believed that the transition was smooth as a consequence of working partly at that role before the transition.

T5 had a target role, and the program was structured so that the final rotation took place in the same department as that role. This made a smooth transition possible, as described by T5:

> "I started to take over more and more things from some of my colleagues at the time [of my last rotation] that I put on my desk so that I could do it instead. So that when the day came when I transitioned from trainee to a regular person, I already had a lot of things that were on my desk, that were mine.".

Similarly, some of the former trainees that applied for a position at the end of the trainee program picked a department where they had been on a rotation.

There were also cases where the transition did not feel soft due to a contrast between supportive practices during and after the trainee program. When transitioning to employment supportive aspects of the trainee program, such as mentorship, disappears.

> "You have a mentor, you have a group that you regularly talk to and reflect with and that part and then you start working and there you don't have this at all anymore.". (T2)

Therefore, it was proposed to have some aspects of that support left even in the initial period after the trainee program.

4.3.2 Connection to Organization

One reason the trainees stayed in the organization after the trainee programs had finished was the connection they felt towards the organization. This was described throughout the interviews, but the reasons for feeling connected varied. Therefore, this theme is further divided into the subcategories *Connection to Other Trainees*, *Organizational Network* and *Knowledge of Organization*. These subcategories rep-

resents how the former trainees felt connection to the organization as a consequence of the trainee program.

Figure 4.12: Overview of the theme 4.3.2 Connection to Organization, with the subcategories 4.3.2.1 Connection to Other Trainees, 4.3.2.2 Organizational Network and 4.3.2.3 Knowledge of Organization

4.3.2.1 Connection to Other Trainees

One of the reasons the former trainees chose to stay was the strong sense of connection with other former trainees. Three of the trainees (T2, T7, T9) highlighted this as one of the reasons for staying at the organization after the trainee program. As one of them described ”Socially, we really have a very strong foundation from having gone through the program” (T2). Similarly, another trainee said that the reason for staying at the organization afterwards was ”I was very satisfied with the trainee program, I felt that I had that security in my fellow trainees” (T9).

Many of the other former trainees, despite not explicitly mentioning the other trainees as a reason for staying, still had regular contact with the other trainees in their organization after the program (T1, T4, T5, T6, T7, T10, T12). This ongoing interaction indicates an appreciation for having other former trainees as colleagues.

The trainee programs facilitated the initial connection, but after the program, it was mainly the former trainees themselves that took the initiative to stay in contact. Therefore, the sense of connection is more a consequence of the efforts built during the trainee program, see Relatedness (4.2.3), than of any social events arranged by the organizations afterwards. This underscores the important role that the trainee program plays in fostering these connections.

4.3.2.2 Organizational Network

During the trainee programs, the trainees gradually built a network within the organization of both former trainees and other colleagues, and after the programs, some felt that this network motivated them to stay. As T2 explained, ”I think it’s so fun to walk around the office because I feel like I know people everywhere, so that feeling is really fun” (T2).

Moreover, it is not simply the presence of a network that fosters a connection, but rather the ability to use that network. Therefore, the willingness to stay in the organization can be diminished if the network is not useful. As T1 explained, one reason for eventually leaving the organization was:

> ”It felt like I now have such a big network. I kind of know a lot of stuff, but I can’t really use it maybe as far as I could do like I see others do.”. (T1)

During the trainee program, the network is built through a combination of rotations, visits and being encouraged to meet and talk to people in the organization. In multiple programs, networking was an explicitly stated purpose.

4.3.2.3 Knowledge of Organization

Most of the former trainees thought that they got a good understanding of the organization because of the trainee program (T1, T2, T5, T6, T7, T8, T9, T10, T11, T12). Two of them highlighted their understanding of the organization as one of the reasons for wanting to stay (T6, T7). The possibilities to make use of the understanding was especially highlighted as important. A former trainee explains that ” I know [the organization] very well” (T6), and this is useful in every day work, ”You know which leavers to pull to make stuff happend” (T6). Likewise, T7 explained the usefulness of knowing the organization.

> ”I’ve gained a good overall understanding of the organization, which has been useful in my current work.”. (T7)

The trainee program facilitated this understanding in various ways, mainly through lectures, rotations and visits.

4.3.3 Continuous Progression

The theme *Continuous Progression* highlights that the trainees wanted to keep being challenged and having a sense of progression after the programs are finished. This theme is not so much about the trainee programs themselves, but rather about what type of employment the trainees expect after the program. Therefore it is relevant for how the trainees’ experienced the transitions and, thus, relevant for what types of roles trainee programs should lead to.

Furthermore, this theme is divided into two subcategories: *Need for Development* and *The Importance of Offering Functional Employment*. The subcategory *Need for Development* covers that the trainees want to have roles where they keep being challenged and learn. *The Importance of Offering Functional Employment* highlights that some trainees found it difficult to fill their working hours with meaningful tasks.

Figure 4.13: Overview of the theme 4.3.1 Connection to Organization, with the subcategories 4.3.3.1 Need for Development and 4.3.3.2 Offering Functional Employment.

4.3.3.1 Need for Development

One of the main reasons for staying at the organization half of the trainees highlighted was the ability to develop further. This was explicitly mentioned by 6 of the former trainees (T2, T3, T5, T8, T11, T13). Specifically, the former trainees appreciated the chance to both continuously learn and feel challenged in their new roles.

Learning new things after transitioning to employment was valued by the former trainees. T8 explains an appreciation for getting responsibilities as it leads to learning:

> ”He put a lot of responsibility on me, and at the time I was like, ‘Why isn’t he doing it himself?’ But looking back, I’m really glad he did, because it meant I got to learn so much.”.

This was further emphasized by another former trainee, who said, ”[I] feel like I want to learn more because I know there’s a lot to learn in this field” (T3). This former trainee also highlighted a need to feel that learning is possible ”I want to feel like I can get better at what I’m doing” (T3). Similarly, another former trainee described ”[The organization] strongly encourages learning and continued learning even after the trainee program” (T13).

Other former trainees did not specify learning but rather refer to challenge and development in general. For example, T5 sees opportunities for further development as an important factor in employment after the trainee program:

> ”There are further development opportunities for me to take advantage of as well. I want to push my development”.

Some of the former trainees not only value being challenged, as in the case of T11, who goes so far as to say ”I’ll stay as long as I feel that I’m developing and being challenged” (T11). Similarly, another former trainee explains that ”What would make me leave is when I feel like I’m not progressing” (T2). The opinions by T2

and T11 illustrate that trainees can expect challenging and developmental roles within the organization.

4.3.3.2 Offering Functional Employment

A subcategory of the theme *Continuous progression* is the importance of offering functional employment after the trainee programs finished. Although this might seem obvious, it was not the case for two of the trainees (T6, T9). Both trainees worked with trainee program activities alongside their intended future role, and both experienced a lack of tasks in their new role.

> ”I had this job on the side, you know, and they thought I should just keep doing that. And I was like, but I’ve been doing that on sort of half-speed”. (T6)

In both the case for T6 and T9, they did not get more tasks after the programs finished despite that they had more time, which caused frustration for both of them. As one of them explains, ”Yeah, so I was kind of doing some completely different things on the side because I needed to fill my hours with something” (T9).

This may be a consequence of the organizations struggling to anticipate long-term staffing need. As one trainee put it ”A lot can happen in a year and a half, so the idea that was there in the beginning might not really be relevant anymore” (T5).

4.4 ORQ - Overarching research question

The sections above presents key factors for a successful trainee program within the three dimensions by answering the three research questions, *RQ1 - Learning Experience*, *RQ2- Motivation* and *RQ3 - Transition to Employment*. This sections presents overarching key factors to answer the ORQ. The last section, 4.4.5 *Overview of Key Factors*, summarizes the result of this thesis. Figure 4.14 shows the themes for overarching key factors where each theme represents an important aspect for the overall experience of a trainee program according to the former trainees.

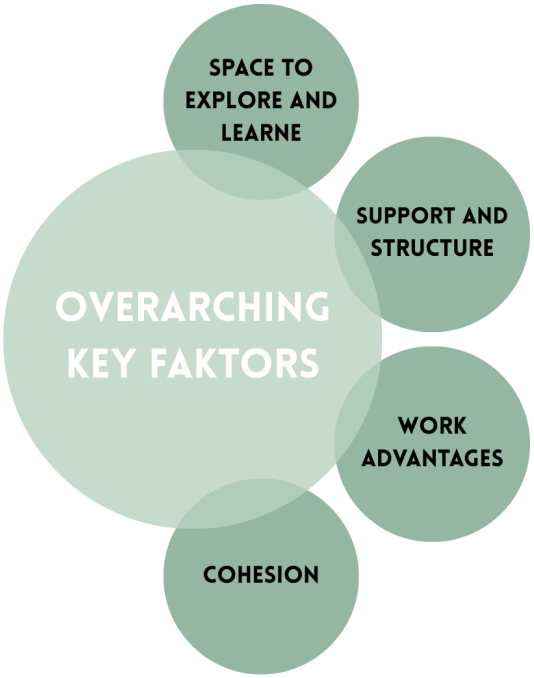

Figure 4.14: The structure of the results for 4.4 ORQ - Overarching Research Question. The result is divided into four themes; 4.4.1 Space to Explore and Learn, 4.4.2 Work Advantages 4.4.3 Support and Structure, and 4.4.4 Cohesion.

The sections below present the overarching key factors in a more summarized form than the result in the earlier sections of RQ1, RQ2 and RQ3, and do in general present positive aspects and not occurring challenges to these.

4.4.1 Space to Explore and Learn

Space to Explore and Learn refers to the opportunities and the appreciation that the trainee program gave the former trainee to explore and learn within the program. This sections presents the trainees' appreciation for these opportunities and what it gave them. *Personal responsibility and influence over the program* was seen as one of the most important components of the trainee program by 4 out of 13 former trainees and *Highlighting the purpose of learning* was another important component which 2 out of 13 former trainees mentioned.

Figure 4.15: One of four themes for the overarching key factors: 4.4.1 Space to Explore and Learn.

When T5 answers the question of "What is the most important component for a successful trainee experience?" the answer gives an good description and representation for what the former trainee felt about the trainee experience overall:

> "It's the opportunity to truly, without any preconditions, gain an understanding of the organization and its operations. That there were so many occasions where I was simply allowed to be there with the sole purpose of learning and that's incredibly valuable, because it's very, very rare once you're actually out working for real.". (T5)

The ability to explore and develop during the trainee period was seen as a unique advantage, offering insights and experiences that participants believed would not have been possible through a conventional entry-level position. These benefits were perceived as long-term assets in their continued professional development. One trainee summarizes this:

> "When you become a regular employee, you usually jump straight into your role and start doing your tasks, and then you gradually learn along the way. So I would say that you shouldn't take for granted that even if your closest colleagues have worked there for a long time, they might not have as good an understanding as I have, given the opportunity I've been given.". (T11)

4.4.2 Work Advantages

Work advantages refers to a sense of advantages in work aspects that the former trainee experience after the trainee program. This sections presents these advantages and gives examples of how the trainee program manages to assist in creating the possibility of developing these. *Learning and understanding of the organization* was seen as one of the most important components of the trainee program by 6 out of 13 former trainees.

Figure 4.16: One of four themes for the overarching key factors: 4.4.2 Work Advantages.

All of the former trainees expressed gratitude for the experiences gained through the program, which they are now able to apply in their work and career development. Recurring areas that provided advantages in later work included the former trainees' acquired knowledge of the organization and industry, navigation skills, adaptability, and increased competence.

To begin with, it was common for former trainees to feel that they had an advantage compared to colleagues who had not participated in a trainee program. These advantages were particularly evident in their ability to understand and navigate the organization and its industry. This was facilitated not only by their acquired knowledge but also by the strengthened internal networks developed during the program. As one trainee stated: "it's much easier to put things into context and understand, like, what's happening in the company overall and why and what?" (T1). Trainees voiced that they experienced that these gained skills and knowledge made it easier for them to execute certain work task compared with regular employees, as one trainee stated:

> "I noticed that compared to those who didn't do the trainee program and maybe just started in a regular role — it's not that easy to understand. You don't really have any connection to it, so it kind of just flies over your head. But it's much easier to put things into context and understand what's going on in the company at large, why things happen, and what they mean.". (T1)

Other advantages was seen in navigating and adapting to new circumstances. T13

frames this: ”you quickly learn how to reach out to the right people to get your work done, and you get to know people faster because you’ve practiced getting into a new role quickly.” and also said that ”I think the whole point of the trainee program is to build a broad network that you can use later in your career and role. So, it’s about getting practice in networking.”.

Organization and industry overview, navigation and adaptation skills, are clearly a part of the former trainee’s increased competence but it did also expand outside of these areas. Compared with the competence they had after graduating and when entering the trainee program, they gained competence both in soft skills, practical skills and theoretical knowledge. The trainee for example gained experience in different work strategies from participating or shadowing teams at the departments and learned whole new theoretical subjects outside of their own engineering expertise.

4.4.3 Support and Structure

Support and Structure captures the former trainees’ appreciation of clear frameworks and guidance. *Structure, clarity, and planning* was seen as one of the most important component of the trainee program by 5 out of 13 former trainees.

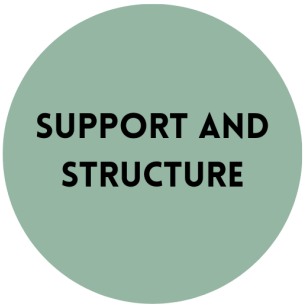

Figure 4.17: One of four themes for the overarching key factors: 4.4.3 Support and Structure

Support and Structure were particularly valued by the trainees in situations where the program placed significant responsibility on them. Former trainees emphasized that having a clear framework was helpful in optimizing their time and minimizing unnecessary uncertainty. As T12 said: ”I think it’s very important to have a clear program [plan], and that there is some kind of good structure and [make sure] that everyone is on board.”.

Ensuring that the working environment was suitable for trainees involved fostering awareness of their roles and setting appropriate expectations:

> ”I think it should be clear from the trainee program and from the trainee coordinator’s side what is expected (...) The trainee program doesn’t work [if the expectations of the trainees are unclear].”. (T9)

It was also important that the trainee had someone to turn to in times of uncertainties:

> ”With my manager, it was sometimes just quick check-ins, like ’how’s it going’ or ’what am I working on’, just so they could keep track of things. Then with my supervisor, I could talk more about things I was thinking about or if something felt like too much — it varied between big and small topics. And then with my mentor, I could ask more specific things, like what to do when you travel for work and things like that.”. (T11)

4.4.4 Cohesion

Cohesion refers to the trainees’ need for a sense of belonging, support, and being genuinely cared for during the trainee experience. This was highlighted as one of the most important aspects of the trainee program by 9 out of 13 former trainees.

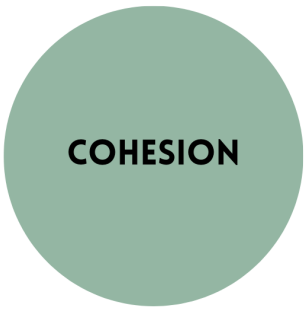

Figure 4.18: One of four themes for the overarching key factors: 4.4.4 Cohesion.

The former trainees believed that it was valuable having a group belonging when being in the unique situation of being a trainee:

> ”Throughout the year, it’s been really great to hang out with the trainee group, because when you’re new, all you really want is someone who’s in the same situation as you. It’s really valuable to have that.”. (T12)

All trainee programs contributed to building a sense of community within the trainee group, which was considered an important aspect for the program to facilitate. As one trainee expressed it: ”To enable group cohesion, having a trainee program that only takes in one person? No. I think that’s a waste.” (T8)

The community gained significance for many former trainees as the realities of the trainee position became more tangible. T10 stated:

> ”This sense of community among the trainees is really important. I feel that it was the foundation for me getting through my rotations — that I felt a sense of security with my core group from the start. It was clear

> from the beginning, and they did a really good job during those three weeks, truly investing time in bringing us together as a group.". (T10)

T1 also said:

> "I think the most important component is this sense of togetherness. I also believe that's probably what makes people stay, along with the opportunities within the organization.". (T1)

T6 stressed the importance of being given other sources of support as well, as stated:

> "It was important to feel a sense of belonging to something. And if you have both the trainee group and your department, then you have two chances to find a sense of connection.". (T6)

4.4.5 Overview of Key Factors

This section provides a summary and overview of the results. It begins with synthesizing the former trainees' responses to the question: "What is the most important component of a successful trainee experience?". This question asked for the one singular important component, but the former trainees gave multiple factors of important aspects of a trainee program, presented in Tabel 4.1 below.

Important Component for a Trainee Program	Qty
Group cohesion and sense of community	9
Learning and understanding of the organization	6
Structure, clarity, and planning	5
Personal responsibility and influence over the program	4
Networking within and outside the organization	4
Rotations and variation in assignments	3
External elements (e.g., study trips, internships)	3
Highlighting the purpose of learning	2
To be driven as a trainee (not a program component)	2

Table 4.1: A summary of the 13 former trainees' answers to the question "What is the most important component for a successful trainee experience?". In the responses: 2 mentioned 1 component, 5 mentioned 2 components, 2 mentioned 3, 3 mentioned 4, and 1 mentioned 5.

Figure 4.14 illustrates how the themes and subcategories from all three research questions intersect and contribute to addressing the overarching research question. It links each subcategory to the overarching key factor to which they are most relevant.

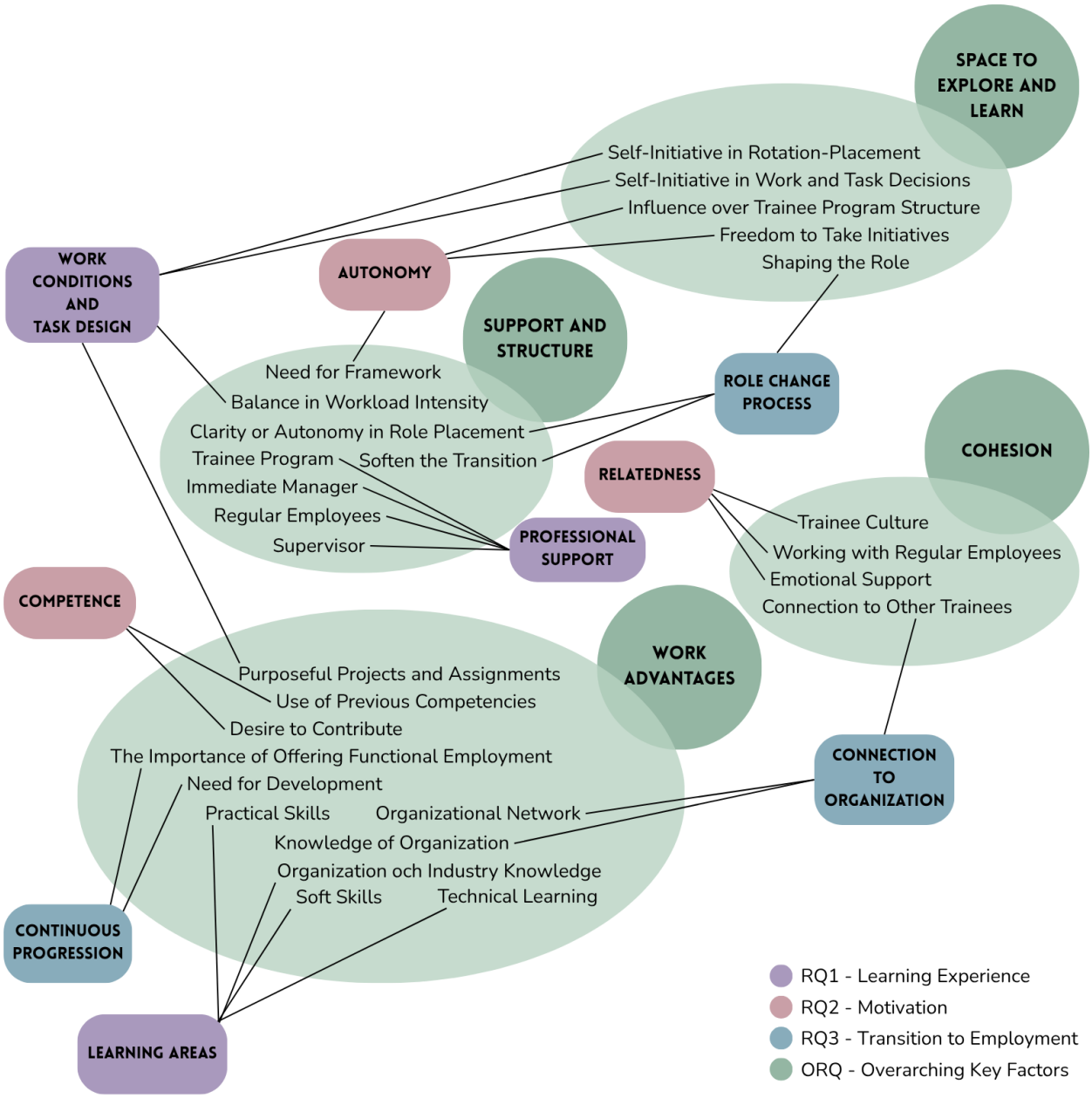

Figure 4.19: An illustration of connection between the overarching key factors for a successful trainee program and subcategories from results within the dimensions of the three research questions RQ1, RQ2, and RQ3.

5

Discussion

This chapter presents the discussion and analysis of this study. It begins with a comparison between the results of this thesis and previous research, continuing with presenting implications for practice stemming from the results. Lastly, this chapter finishes with suggested future research which includes improvements of methodology.

5.1 Discussion and Analysis of Results

This section presents the discussion and analysis of the results in relation to previous research presented in chapter 2 *Theoretical Framework and Previous Research*. The analysis focuses on broader themes and insights rather than detailed aspects of the specific trainee program designs. More details about the design of the trainee programs are discussed in section 5.2 *Implications for Practice*.

5.1.1 Learning in STEM Fields

As a reminder, the first research question was:

RQ1. *What aspects of trainee programs facilitate the trainees' learning to acquire the skills necessary to perform tasks within the organization?*

The aim was to examine how trainee programs support newly recruited engineers in bridging the skill gap between industry needs and competencies acquired during their formal education. Accordingly, the following sections, *Skill Gap* and *Mentoring and Experiential Learning*, are discussed and analyzed below.

5.1.1.1 Skill Gap

The findings of this thesis indicate that a trainee program helps trainees to develop skills regarded as essential and lacking in today's industries (Koch et al., 2025). Therefore, it is useful to compare the four learning areas identified in this thesis with industry skill demands and the so-called *skill gap* between engineering graduates' competencies and employers' expectations. The learning areas found in this thesis were: *Organization and Industry Knowledge*, *Soft Skills Practical Skills* and *Technical Learning*. These learning areas represent knowledge and skills the trainees gained

during the trainee period and can be seen as competencies the trainees "missed" during their education and got the opportunity to develop through the trainee program.

To begin assessing the skill gap and how a trainee program seem to help bridged this gap, the World Economic Forum's report (2025), *The Future of Jobs Report 2025*, identified the top *core skills* predicted to be most valued by employers by 2030. These skills reflect current industry demands and are expected to grow more important in the coming years and are shown below:

- AI and big data
- Technological literacy
- Creative thinking
- Resilience, flexibility, and agility
- Curiosity and lifelong learning
- Leadership and social influence
- Talent management
- Analytical thinking
- Systems thinking
- Motivation and self-awareness

Many of these skills can be linked to the six categories summarizing the skill gap between industry demands and engineering education competencies, namely: *problem solving*, *communication*, *teamwork*, *ethical perspective*, *emotional intelligence*, and *creative thinking* (de Campos et al., 2020).

To start with assessing *Soft Skill*, as a learning areas identified in the results, the need for soft skills is seen as a necessity by today's industry. Many of the top ten core skills (World Economic Forum, 2025) were soft skills, including: *resilience, flexibility and agility*, *curiosity and lifelong learning*, *leadership and social influence*, *talent management* and *motivation and self-awareness*. The fromer trainees described *self-initiative* in constellating rotations, shadowing colleagues, visits and internships which gave them learning opportunities to interact with people in the organization and in the industry. This could be seen to accommodate the core skills from *The Future of Jobs Report 2025* (2025) that relate to human interactions, such as *leadership and social influence*. Furthermore, the trainees also worked with different teams with varied competences which could make the them learn more about team dynamics and methodologies for more effective *teamwork*.

The overall most valuable advantages according to the trainees was their proficiency to navigate and understand the organization and its industry. This was done by acquiring knowledge about and to build a network within the organization and with its clients. This bridge between the two learning areas *Organization and Industry Knowledge* (know how the organization and the industry operates) and *Soft Skills* (navigating and adapting to new circumstances and within the organization) seem to also be a great fit for what Industry 5.0 is requiring from engineers according to Koch et al., 2025:

> "...the role of industrial engineers is steadily evolving: They are expected to be proficient not just in engineering practices but also in navigating complex business environments." (Koch et al., 2025)

Studies says that embedding a mindset of continuous learning is key in preparing graduates to evolve with shifting industrial expectations, thereby not only contributing to technological innovation but to sustainable societal progression (de Campos et al., 2020; Koch et al., 2025). This mindset is seen as a necessity when both looking at the industry requirements (World Economic Forum, 2025) and the skill gap (de Campos et al., 2020; Koch et al., 2025;). This thesis shows that the trainees want the opportunity to continuously develop and have challenges, which is a wanted skill. However, it is hard to assess if the trainee programs create this mindset or if this mindset is filtered through when selecting the trainees.

Findings by Koch et al. (2025) highlights that technical knowledge continues to be important but that the ability to combine it with strong abilities in soft skills and methodological competencies is critical for managing the multifaceted, cross-disciplinary problems facing today's industries. For the two last learning areas, *Practical Skills* and *Technical Learning*, this thesis shows that the trainees do acquirer both of these in their later employ where some trainees took advantage of practices and theoretical knowledge that they gained as a consequence of opportunities given during a trainee program.

For the core skill *talent management* (World Economic Forum, 2025) it can be interesting to, instead of looking at the trainees gained knowledge and skills, evaluated how the trainee programs manages to catch the trainees competences. A finding from this study is that trainee programs sometimes struggled to accommodate for graduate engineers with high competences in data science, artificial intelligences and information technology. This indicates that trainee programs tend to assist the trainees better in acquiring soft skills rather than other competences. That is not to say that the trainees do not gain new theoretical knowledge, but that the trainees who have specialized competences had a harder time making use of it, and wished for better opportunities during the trainee period to do so.

5.1.1.2 Mentoring and Experiential Learning

When looking at studies on mentoring within the engineering field, these reveals several benefits for mentees in their professional development (Akerele et al., 2019; Santora et al., 2013). However, within the context of a trainee program, the conditions under which mentoring occurs may differ significantly from the conditions of studies under more conventional mentoring conditions. Thus, this study does not examine the benefits of mentoring for the trainees, but rather captures the trainees own experience of the collective support from the supervisors, mentors, other trainees and trainee buddies (a trainee buddy is a former trainee who reportedly supports the trainee). As such, the applicability of findings from conventional engineering mentorship research may or may not be transferable to the mentorship and support in trainee program settings.

To begin with, the term mentor was not always used in all trainee programs, but looking at the benefits from mentoring: *experiential learning*, *skill development* and *career development* (Akerele et al., 2019), these can still be seen in the result of this study. For the two first benefits, *experiential learning* and *skill development*, the trainee program structure have the potential to meagerly expose the trainee to experiential learning and to help their skill development by giving the time to explore and contribute to an organization. For *experiential learning* specifically, segments in the trainee program, as trainee gatherings, can give the trainee time to reflect and share experiences. Other segments as the enabling of gained insight and more understanding of the industries operation as a whole, as rotation, involvement with clients, and being a part of multiply teams, can help the trainee reflect on these experiences and gain in sights of the organization in a holistic view. *Experiential learning* is also highlighted by Tembrevilla et al. (2024) as part of a paradigm shift in engineering education, emphasizing the training of future engineers to address societal needs and contribute to the public good which Industry 5.0 demands.

For *career development*, from Akerele et al. (2019), this thesis did not capture how the former trainee experienced guidance through the trainee program in this matter. Therefore, it can not be established how the traditional mentoring approach are accommodated by the trainee program. The traditional mentor guides where the mentor direct the mentee by seeing their competencies and thereby knowing how to utilize these in the organization might be at risk of not being as efficient when a trainee program has rotational segments. This could make the guiding harder by not being able to closely follow the trainees progression when changing work placement. Although, a trainee program might rather help the trainee in their career development by giving the trainee a chance to discover their own potential and interests in different work rolls through rotations, as expressed by former trainees in this study.

Although the different contexts of collective support within a trainee program and traditional mentoring, a study about mentorship that gives a progressive model for mentoring in science and engineering might give insight into how different levels of mentoring can fit for engineering graduates (Santora et al., 2013). This model stresses the different types of mentoring rolls and how these can benefit the mentee by multiple levels of mentoring. The collectivity support of other trainees, supervisors, mentors and trainee buddies might therefore be supported by this model to provide mentoring benefits for graduated engineers as an alternative to working close with a single mentor.

5.1.2 Motivation

As a reminder, the second research question is:

RQ2. *What aspects of trainee programs are important to keep the trainees motivated throughout the programs?*

The findings suggest that the trainee program effectively sustains participants' motivation by fulfilling all three basic psychological needs identified in SDT: autonomy, competence, and relatedness.

5.1.2.1 Autonomy

Many of the trainee programs in this study, especially the eleven programs that were not considered introduction programs, fostered autonomy. This was done by giving the trainees a lot of freedom and self-initiative when navigating the organization during their trainee periods. The other two programs still gave the trainees influence in shaping their role, but had no further focus on self-initiative. Although the trainees enjoyed the freedoms, they still wanted frameworks from the trainee program to facilitate their need for support. The results shows that the self-initiative was valued but that support in moments of ambiguity was either missed or appreciated. Knowing where to turn for support was essential to avoid creating unnecessary uncertainties in practical matters.

5.1.2.2 Competence

The former trainees were seen to use their educational background when shaping their future work rolls, but the trainee did not explicitly believe that the education gave theoretical knowledge that were applicable to the work they ended up with. During the trainee period the former trainees appreciated purposeful work tasks that created a value for the organization. They could also experience a longing to start "working for real", to be able to really contribute. A dilemma involves the contradiction between, on one hand, being given the opportunity to learn without pressure to deliver results, and on the other hand, the desire to contribute meaningfully to the organization. The results from this study stresses the importance of both of these opportunities, thereby suggesting that the design of a trainee program is able to find a balance and accommodate for both these needs. This becomes particularly relevant when the trainee possesses a higher level of competence than the department.

Three trainee with competences within data sciences, artificial intelligence and information technologies did all express negative experience of having a higher competence level than the departments they ended up at during the trainee period. This could be experienced as non-stimulating for the trainees or a feeling of not being able to utilize their knowledge. Even if the difference of competence level could be disappointing, the trainees could, when given the right facilities and opportunities at the department, still utilize their competences. Thereby giving the trainee a chance to provide the department with valuable knowledge or systems upgrades.

The industry does demand technical competence from the engineers along with other skills (Koch et al., 2025). The result of this study might suggest that the use of a trainee program to hire graduate engineers needs to accommodate for how to stimulate and provide opportunities to utilize the trainees competences to fill the industry's needs. These competencies reflect how engineering education fos-

ters technical knowledge but may lack in developing social skills, both of which are essential in today's industry. Therefore, these gaps should be addressed when graduate engineers enter the workforce. As Koch et al. (2025) mentioned in their study about preparing engineering students for Industry 5.0, the skill demand might not be shifting but rather expanding:

> "(...) reflecting the need for a holistic skill set in Industry 5.0. This suggests that while technical expertise remains essential, the integration of methodological and social skills is critical to navigating the complex, interdisciplinary challenges of the modern industrial landscape." (Koch et al., 2025, p. 2227)

An interesting aspect of changes in the demand of competences for engineers' is how this change influence the engineers work ethics and work environment which then might influence their need for the work place to accommodate for the enginees' motivation. As seen in the result of this thesis, the former trainee demands need for further development in their professional career to be motivated to continue in their professional role. Earlier research by Denti and Hem- lin (2016), which explored engineers' individual contributions to innovation through leader–member exchange, suggested that there is little need to foster engineers' internal motivation, as they are typically driven and accustomed to overcoming complex challenges. However, the portrayal of innovation in Denti's study (2016) does not have the same focus on soft skills as a part of the innovative progression as newer research. For example, de Campos et al. (2020) argues that soft skills in engineering are often overlooked and taken for granted, despite their growing importance.

One of the core skills identified by the World Economic Forum (2025) is motivation and self-awareness. This competency, closely tied to lifelong learning, is also highlighted in the identified skill gap between engineering education and industry demands (de Campos et al., 2020). Several studies emphasize that fostering a mindset of continuous learning is essential to prepare graduates for the rapidly evolving expectations of the industry. Rather than focusing solely on technological advancement, this mindset enables engineers to contribute both to technological innovation and to meaningful, sustainable progress in society (Koch et al., 2025; de Campos et al., 2020). This might foster a different typ of engineer than the technically solution-oriented engineers that participated in Denti and Hemlin's (2016) study.

As the industry shifts from Industry 4.0 to Industry 5.0, is placed greater value on human-centric competencies, it becomes increasingly relevant to reconsider how organizations support and retain this new generation of engineers. These engineers must not only be technologically proficient but also possess strong soft skills. A work environment that nurtures motivation and holistic competence could be essential to attracting and retaining such talent. In this context, trainee programs may play a crucial role in bridging the gap, particularly if STEM education continues to fall short in cultivating these emerging industry demands.

5.1.2.3 Relatedness

Many of the former trainees in this study experienced a strong bond within the trainee group, creating a sense of belonging. 9 out of 13 former trainees mentioned that *Group cohesion and sense of community* (see Table 4.1) was one of the most important aspects of the trainee program. For programs that include rotations, the trainee period can be an intense experience, requiring a high level of self-initiative from the trainee, with the trainee group often serving as the only stable source of support. Therefore, the trainee group was an important aspect of relatedness. Especially if the trainee was not given the opportunity to build connections with other staff, because of rotations or remote work. In comparison with other programs where the trainee do not rotate, there are better chances to accommodate relatedness through colleagues at the department.

A risk with a strong trainee culture is that it can build a barrier between the regular employees and the trainees (Král et al., 2022). This is highlighted since the authors of this study believe that there might be a risk when establishing and making a trainee program, that it is seen as a separate thing to the organization's operations. Trainees seem to thrive better when being a part of the organization, rather than something alongside it. The effects of the trainee programs integration in the organizations is seen in trainees' appreciation of interaction with earlier generations of trainees in the organization and that the expectations and purposes of the trainees are known to the departments. Thereby making it easier for the departments to utilize the trainees and easier to accommodate the need of relatedness.

5.1.3 Transition to Employment

As a reminder, the third research question is:

RQ3. *How do trainee programs affect the trainees' experiences of transitioning to regular employment?*

The findings related to RQ3 share several similarities with previous research. One such similarity is that former trainees seek continuous development. This aligns with earlier studies indicating that trainees expect ongoing development after completing the program, and that such opportunities can reduce their intention to leave the organization (Cesário and Chambel, 2017; Jonsson and Thorgren, 2017). The alignment between previous studies and this thesis suggests that it is of great importance to offer trainees roles where they have the opportunity for continued development. In conclusion, it is important for the organizations to expect that the trainees want to be able to develop after transitioning. This can be made possible by giving trainees roles that enable further learning and challenge.

However, the results of RQ3 also reveal other similarities compared to previous research. During the transition to regular employment, the trainees in this study gen-

erally highlighted their continued connection with fellow former trainees as a reason for staying in the organization. This is in line with findings from a previous Czech study, which suggested that the dissolution of the trainee group was a contributing factor to leaving the organization (Král et al., 2022). Establishing continuous connections between former trainees by ongoing engagement in the trainee program can positively impact trainees' willingness to stay with the organization after finishing the program. Such engagements may include reunions, serving as trainee buddies, or mentoring future trainees. This study also finds that involvement from earlier generations of trainees benefits current trainees, creating a win-win situation for all parties involved.

In general, much of the results in RQ3 had not been found to be previously investigated. There is no research evaluating different forms of role change processes with trainee reaction. In general, the trainees felt that this was a period of uncertainty and they valued understanding the process and having freedom to choose their permanent role. Furthermore, the findings describe the ways the former trainees feel connected to the organization by their organizational network and understanding of its structure and operations has not been found to be elaborated by other studies.

5.2 Implications for Practice

This section captures the key insights from this study and is tied to the overarching research question. As a reminder, the overarching research question is:

ORQ. *What are key factors in a successful trainee program anchored in the perception of trainees?*

The analysis conducted in this study identified four key factors for a successful trainee program: *Space to Explore and Learn*, *Work Advantages*, *Support and Structure*, and *Cohesion*. These four themes emerged during an initial, inductive phase of the data analysis. This inductive approach was deliberately applied first to avoid being influenced by the more deductive analyses that followed. The subsequent analyses focused on the three dimensions: *Learning Experience*, *Motivation*, and *Transition to Employment*. In the final part of this thesis work, Figure 2.1 was created, where the connections between subcategories led to the re-emergence of the four key factors. Thereby, this map can be used as a guide for supporting the four overarching key factors by identifying the subcategories (i.e., key components) that contribute to each one. For instance, To take part of the result relevant for the overarching key factor *Cohesion*, one can read the subcategories linked to this found in Figure 2.1, being *Trainee Culture*, *Working with Regular Employees*, *Emotional Support*, and *Connection to Other Trainees*.

As a complement to the chart in Figure 2.1 a more comprehensive list has been made with implications for practices when designing a trainee program. Before presenting this list, the following statements below needs to be made.

There is a variety of trainee programs and no single one is identical to another. The different trainee programs have different purposes and, thus, vary in how they are structured. Some programs aim to prepare trainees for a specific role, while others equip them with broad knowledge so they can choose a role later on. Certain programs recruit for technical expertise, whereas others prioritize strong soft skills. Moreover, organizations are structured differently, which also effects the design of the trainee program.

Therefore, these results are not a universal checklist for creating a positive trainee experience. Instead, the findings should be interpreted as factors to take into consideration when improving or creating a trainee program. The relevance of a single factor is very dependent on the structure of the organization, and the purpose of the trainee program.

However, some key insights that are seen as valuable aspects which should be accommodated by a trainee programs are summarized below. Example for how a program can accommodate for these are also given.

- A trainee group boosts motivation, offers peer support, and encourages reflection. This could be accommodated by: organizations nurture of community, by organizing regular meets and group trips, and focusing on team building activities. Place emphasis on this at the beginning of the trainee period.

- The trainees recognized a value of the unique position of being a trainee through being present in the organization with the primary purpose of learning. This could be accommodated by: clearly communicating the trainees' learning-focused role to both the trainees themselves and the departments they interact with.

- A tightly packed lecture schedule may lead to information overload. To prevent this: consider spacing out the delivery of information to allow for better absorption and reflection during trainee gatherings, visits and introduction weeks.

- Trainees learn soft, practical and technical skills during the trainee period. This could be accommodated by: trainee gatherings including lectures, courses, team work practices, departmental rotations and individual trainee projects, together with visits and internships within the organization and at its clients.

- Trainees report that trainee programs enhance their understanding of the organization and help them build an effective internal network. This, in turn, improves their effectiveness in their professional roles after completing the program. This could be accommodated by activities such as: job rotations, site visits, and explicit encouragement from the program to actively build a network and to plan visits and internships within the organization and at its clients. Additionally, having the trainees financially supported by the trainee program may increase the likelihood that departments are willing to accept trainee rotations.

- Trainees appreciate stimulating tasks that allow them to feel that they are contributing to the organization. This could be accommodated by: giving projects were the trainee can use their own engineering competences to help a department, or by presenting project results for manager or the department, giving the outcomes clear visibility and value.

- Trainees appreciated the benefits that came with taking personal responsibility for their own development and in general saw this as an important factor for success in their future professional roles. To further support this: it could be beneficial to foster a culture of self-initiative by designing the program to not only allow but also expect trainees to actively shape their learning journey and explore different parts of the organization.

- Trainees value supportive structures from the trainee program that help with practical information as well as emotional support. This could be accommodated by: ensure approachable and well-structured support contacts within the organization, such as mentors, managers, supervisors, buddies, or former trainee in addition to clearly stated expectations and a well-defined framework with practical information provided by the trainee program coordinators.

- Trainees wanted support in making the most of their trainee period by ensuring equal conditions and opportunities. This requires that managers are well-informed and aware of the framework and expectations of the program. One way to accommodate this is by: establishing a shared network among managers, enabling knowledge exchange and consistent support across departments.

- The organizations should anticipate that trainees want to continue their development and feel challenged after the trainee programs are finished. Therefore, the roles the trainees get after the programs should reflect those ambitions. This could be accommodated by: ensuring suitable positions are available at the end of the program that meets these requirements.

- To avoid ambiguity and uncertainty, trainees value having a clear sense of control over their transition from trainee to employee. This can be supported by ensuring that: the transition from trainee to employment is governed by clear frameworks and fair conditions. Additionally, open communication and direct contact between trainees and managers, as well as initiatives like internal job fairs, can be beneficial for both trainees and managers.

- To strengthen trainees connection to the organization after finishing the program and increase their willingness to stay, it may be beneficial to establish continuous engagement between former trainees and the trainee program. This can be supported by activities such as: reunions, trainee buddy systems, or mentoring programs for future trainees. Such engagement from earlier generations of trainees is also found to be beneficial for current trainees.

5.3 Future Research

The suggestions for future research are divided into two parts: proposals for new areas of study, and recommendations for improving the current study's methodology if similar research is conducted again. Accordingly, the first part of this section outlines our suggestions for new research directions, while the second part focuses on methodological improvements.

5.3.1 Proposals for New Areas of Research

An advantage of interviewing former trainees is that they can reflect on the program as a whole. However, a drawback is that their opinions may be influenced by their subsequent career choices or simply by the passing of time. Therefore, it could be of interest to examine trainees' experiences during the program instead of after.

Another suggestion is to focus on the perspective of managers and those responsible for the trainee programs at the organizations rather than the trainees. In a previous study that explored trainee program from both perspectives found differences i expectations between trainees and managers (Jonsson and Thorgren, 2017). This suggests that if the overarching research question of this thesis was to be applied to mangers, new insights could be found.

Furthermore, future research could take a more narrow approach. The result of the thesis is extensive and all themes related to the research questions identified in the results could be the subject of further research.

Moreover, another area of research could involve applying different theoretical frameworks for motivation. In this thesis, RQ2 explored motivation during trainee programs through the lens of SDT. However, there are other theories describing the origins of motivation using different aspects than autonomy, competence and relatedness. One such theory is McClelland's Need Theory, a theory that presents other needs for motivation labeled achievement, power and affiliation (1988). Theories like McClelland's may have illustrated other perspectives in regards to the trainee experience, adding to the understanding of trainees' needs and experiences.

5.3.2 Improvements of Methodology

In this study, areas of improvement in the methodology have been identified related to the selection of the trainees, the semi structured interviews and the thematic analysis.

When selecting former trainees, we risked introducing bias because we had difficulty finding candidates without going through their organizations. In many cases, this had the consequence that the organizations themselves picked out a few former trainees that we could contact and, thus, we can not know their reasons for selecting them. This is not considered optimal, and although we did not notice a bias in the data, it is hard to rule out. Therefore, we can not exclude the possibility that

the organizations selected former trainees based on who they thought would be charitable to the organization. In an improved methodology, all the former trainees should have been selected independent of the organizations (Esaiasson et al., 2017).

Furthermore, while semi-structured interviews offer valuable flexibility, they also present certain limitations. One key benefit with semi-structured interviews is that they allow for the exploration of unpredicted topics (Leech, 2002), which was deemed necessary in this study. However, this flexibility comes at the cost of reduced comparability when quantifying the number of trainees throughout the result. As an example from the results, the statement that 10 of the former trainees believed that the trainee program gave them a good understanding of the organization, does not imply that the three other trainees opposed that view. The conversations varied and in some cases, since the same follow-up questions were not asked every time, the former trainees' beliefs about certain aspects were not discussed. The variety in the interviews enhanced the qualitative data, but it limited our ability to quantify participants' opinions. To enable precise quantification of the data, we propose a complement to the semi-structured interviews, such as a survey, that could help accurately quantify their opinions.

Another possible improvement to the methodology is related to the analysis stage of the research. Thematic analysis as a method of analysis is not independent of the researchers conducting the analysis (Braun and Clarke, 2006), as no research is. It is impossible to remove all "theoretical and epistemological commitments" of the researchers (Braun and Clarke, 2006, s. 84). Researchers' expertise is an advantage, but it can also introduce bias. To minimize bias, it would have been an improvement to the methodology if an independent analysis was conducted on the same data set. This task would have been very time consuming for a person to conduct. However, there exists AI tools that identify codes in the data which could enable other perspectives to be shown. When using AI, the authors argue that AI tools should be employed only *after* the analysis has been conducted by the researchers, in order to avoid potential bias introduced by AI-generated results.

6

Conclusion

This chapter presents the conclusion of the thesis including the main findings together with the implication of the results in addition to suggestions for further research.

This thesis set out to identify key factors for a successful trainee program, and thereby enable organizations to improve the trainee experience and facilitate bridging the university-industry skill gap. This was done through analyzing trainee experiences with a focus on the dimensions *Learning Experience*, *Motivation* and *Transition to Employment*.

For a successful learning experience, the former trainees highlighted key learning areas, effective methods for learning, and the importance of supportive practices. The trainees reported gaining mainly soft skills and insights in organizational and industry operations but they also acquired more technical depth. All of which support the trainee in bridging identified gaps between academia and industry. This was primarily achieved through experiential learning in addition to having a supporting structure from the trainee program. The findings can help organizations understand what the trainees learn and how the learning is facilitated.

Trainee programs boost motivation by offering freedom to take initiative and shape the experience. They also cultivate a desire to learn, apply skills within the organization, and feel a genuine sense of contribution. Additionally, trainees experienced strong cohesion, with the trainee program fostering a trainee culture playing a particularly important role. These findings can guide organizations in how to support trainees with motivational practices.

In the transition to employment, the trainees appreciated having influence over their future roles and clarity in the role change process at the end of the program. A successful transition also enabled them to continue their development in their new positions. The trainees expressed that the programs helped them feel connected to the organization, which in turn motivated them to remain within it. Overall, these findings indicate that well-designed trainee programs can reduce trainees' intentions to leave.

Although it is not possible to highlight every factor that the trainees consider impor-

tant, there are reoccurring patterns in their experiences spanning all three dimensions. One such pattern is that the former trainees values when trainee programs create the opportunity to explore and learn while they have influence over that process. Moreover, the former trainees also value the work advantages they got during the trainee program that became useful afterwards, as exemplified by how much they value their understanding of the organization. The former trainees also appreciate in the importance of supportive structures during the program, and the cohesion in the trainee group.

In the findings we identified what parts of the trainee program experience that is of value for the trainee. Therefore, these results can be used to both improve trainee programs of organizations as well as support the construction of new trainee programs. The result of this thesis are extensive and therefore we propose that future research narrows the scope and focuses more in depth on each area. Another topic of further research is to evaluate trainee programs form the perspective of the organizations rather than the perspective of the trainee in order to see a more whole perspective.

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A

Interview guide

1. Skulle du vilja beskriva dig själv?

    - Namn
    - Utbildning
    - När började du traineeprogrammet?
    - Hur långt var programmet?

2. Vill du berätta om traineeprogrammet?

    - Vilka olika moment bestod programmet av?
        - Fördelning av moment
        - Vad tyckte du om momenten? Bra/dåligt?
        - Skulle du vilja ha gjort det på något annat sätt?
    - Varför började du på traineeprogrammet?
    - Vad upplevde du att syftet med traineeprogrammet för företaget var?
        - Var detta tydligt eller mer implicit? På vilka sätt märktes detta?
    - Hur mycket fick du själv välja vad du skulle göra? Hur mycket var du styrd?

3. Vill du beskriva vad du lärde dig under programmet?

    - Vill du beskriva hur du lärde dig? Vilka moment fanns?
        - Vilka färdigheter fick du träna regelbundet / enstaka tillfällen?
    - Fanns det ett tänkt mål, delmål eller slutprodukt i momenten/programmet?
    - Var det någon som hjälpte/stöttade dig?
        - Hur gick det till?
        - Fanns det ramar för mentorskapet? Tillgänglighet?
        - Vilken typ av stöd fick du? Emotionellt? Praktiskt?
        - Hur var relationen till mentor?
    - För ditt lärande, vilka fördelar ser du med upplägget på traineeprogrammet?
    - För ditt lärande, vilka nackdelar ser du med upplägget på traineeprogrammet?
    - Tror du lärandet kunde ha skett på ett bättre sätt?

- Kände du att du fått användning av dina kompetenser från din utbildning eller från tidigare jobb?
  - Ämneskunskaper/mjuka kompetenser
  - Kunde du uppfylla förväntningarna företaget satt på dig?
  - Upplevde du några utmaningar med att gå traineeprogrammet och i så fall vilka?
    - Hur klarade du utmaningarna?

4. Hur skulle du beskriva sammanhållningen på programmet?

   - Hur var sammanhållningen mellan traineerna?
   - Hur arrangerar traineeprogrammet sammanhållning mellan er?
   - Kan du beskriva hur kontakten med resten av de anställda som trainee?
   - Hur upplevde du sammanhållningen på företaget i stort?
   - Vad gjordes för att stärka kontakten (traineer/anställda)?
   - Saknade du mer kontakt mellan traineer/anställda?

5. Hur var övergången från trainee till “en vanlig” anställning?

   - Hamnade du där du ville?
   - Upplevde du nya utmaningar?
   - Hur förberedde traineeprogrammet för din nya roll?

6. Vad var den viktigaste komponenten för att få en lyckad trainee upplevelse?

B

Use of AI tools

ChatGPT has been used to assist in writing this report by suggesting improvements in grammar, spelling, synonyms and word order. ChatGPT have also been used to aid translating the quotes from former trainees. AI tools have not been used to generate new text, but rather to improve existing text. Chalmers AI Portal's function *meeting transcriptions* has been used to simplify finding information in interviews.

C

Consent form

CHALMERS

Research project about trainee programs in collaboration with RISE Research Institute of Sweden AB

Consent form for research participants

We have asked you to participate in a master thesis study. In this document, you will receive information about the project and what it means to participate.

What kind of project is it and why do you want me to participate?

The aim of this master thesis is to identify key factors for a successful trainee program from the trainee's perspective. This knowledge can be used to enable companies to improve the experience for STEM trainees, making the programs more rewarding for the trainees in both the short and long term. The successfullness of trainee programs will be evaluated in relation to learning, motivations and how suited they are to prepare the trainee for future employment. This will be investigated from the perspective of the trainee, which makes it essential to get your experience through an interview.

What happens during the research study?

As a participant in this study, you will take part in a semi-structured interview (approximately 1 hour) where you will be asked questions regarding the trainee program and its contribution to the experience of learning, motivations and how suited

it was to prepare the trainee for future employment .

Data collection and privacy

The personal data collected in this study may include your gender and information regarding your educational history and employment. The data will only be used for research purposes within this project. This study does not aim to collect sensitive personal information. Any identifying information will be anonymized in the analysis, and all results communicated (e.g., in publications and presentations) will be anonymized.

No immediate risks or consequences for participants have been identified.

Data collection will continue throughout the project, which is expected to conclude in May 2025.

As a data subject, you have the right to request access to information about how your data is processed. You may revoke your consent at any time and request correction, restriction of unnecessary processing, or deletion of your data.

For inquiries regarding your rights or data processing, you may contact the researchers responsible for the study, Madelene Törnkvist and Joel Nilsson, at madtor@chalmers.se or joelnils@chalmers.se.

Voluntary Participation

Your participation is voluntary, and you may withdraw at any time without providing a reason. Withdrawing from the study will not affect you in any way. If you wish to cancel your participation, please contact the researchers responsible for the study.

Responsible for the Study

The researchers responsible for this study, which is part of a Master thesis project, are Madelene Törnkvist and Joel Nilsson, students from Chalmers University of Technology.

Email: madtor@student.chalmers.se and joelnils@student.chalmers.se

Thank you for your participation!

Your Consent

I have had the opportunity to ask questions, and any questions have been answered. I have received a copy of the written information about the research study. By signing this informed consent, I confirm that:

- I understand the procedures described above and agree to participate in this study.
- I agree to the handling of my personal information as described in this document.

_____

(Name of Participant)

_____

(Signature of Participant) (Date)

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