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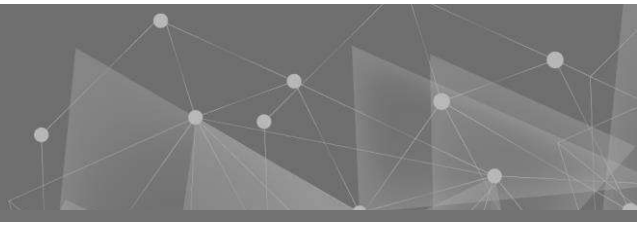

Competence Development of Two Roles at Volvo Group

A Qualitative Study Investigating the Current and Future Competences

Master's Thesis in Quality and Operations Management

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Abstract

As a result of the increasing demand in today's ever-changing world, organizations must continuously manage and adapt their competences in order to remain competitive in the market. Thus, the significance of competence development is essential for achieving success. Accordingly, there was a need for Volvo Group to analyze the current and future competences of the two roles: Logistics Product Project Manager and QJ & Quality Campaign Coordinator within the newly established Product Projects & Quality team.

The purpose of this study is to develop a competence framework that consists of a mapping of the current competences and a vision for the future competences of the two roles. Furthermore, a discussion regarding how to bridge the gap between the current and future state is provided.

This study has been conducted using a qualitative approach through several workshops and interviews with the two roles, team manager and other relevant Volvo Group employees. Furthermore, a literature review was conducted to enhance the researchers understanding of the research topic to make informed decisions.

From the study, a framework was created by combining different internal frameworks and integrating the data collected from the workshops and interviews. The results shows that the two roles do not require new competences for the future, but rather improve the level of the current competences. Moreover, the discussion regarding how to bridge the gap between the current and the future state reveals the importance of creating an organization that fosters learning by considering aspects such as organizational culture and motivation.

Keywords: Competences, Competence Development, Competence Framework, Learning, Motivation, Organizational Culture

Acknowledgment

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Lastly, we would like to extend our deepest gratitude to our supervisor and examiner, Robin Hanson, for his guidance and expertise provided during the course of this master's thesis. The encouragement and insightful feedback have been of the utmost importance for the success of our research.

Sincerely,
Fanny Dang and Denise Wassenius, Gothenburg, May 2023

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Acronyms

Below is the list of acronyms used throughout the report, written in alphabetical order.

AIM	Affinity-Interrelationship Method
DIM	Dealer Inventory Management
PM	Logistics Product Project Manager
SML	Service Market Logistics
QC	QJ & Quality Campaign Coordinator

1. Introduction

In this chapter the background, aim and delimitations of the study will be presented.

1.1 Background

In today's ever-changing world organizations are facing several challenges. The business environment is undergoing a rapid transformation, and organizations must be prepared to adapt and evolve in order to succeed and meet future demand (Wallo et al., 2019). This requires a deep understanding of the current trends and a willingness to embrace change (Škrinjarić, 2022; Wallo et al., 2019). By providing the right competences and working proactively to develop them, organizations can quickly adapt to the changes and remain competitive in the market (Kuruba, 2019; Wallo et al., 2019).

Continuous learning is crucial to the success of organizations since it allows them to keep up with changes in the business environment (Argyris, 1991; Sarder, 2016). There are various strategies for learning including training, education, single- and double-loop, agile learning and knowledge sharing (Argyris, 1991; Armanious & Padgett, 2021; Sarder, 2016, Crossan et al., 1999). Furthermore, there are several factors influencing the ability to learn, one being the lack of knowledge regarding how to learn (Argyris, 1991). Secondly, the organizational culture plays an important role in creating an environment that promotes continuous learning. Lastly, motivation of the employees encourages them to actively participate in developmental initiatives (Malik & Danish, 2010; Sanz-Valle et al., 2011).

To effectively respond and adapt to shifts in the market, it is important to ensure that employees' competences are aligned with the objectives and goals of the organizations (Kuruba, 2019). A structured, systematic and visual way of ensuring alignment between competences and business vision is by using competence frameworks (Palan, 2007, Škrinjarić, 2022; Sultana, 2009). Competence frameworks provide information regarding current competences as well as development opportunities (Sultan, 2009).

However, the concept of competence is complex and it is difficult to establish a clear definition that explains and reconciles the various interpretations and usages of the term (Le Deist & Winterton, 2005). This ambiguity results in people interpreting the term in different ways, highlighting the importance of clarifying the meaning. According to Palan (2007), competence regards an individual's ability to provide skills, knowledge and attitudes required to perform a certain job at a set standard. This definition will be further elaborated in chapter 2.1.

Since competences are essential for an organization's ability to meet future demands, Volvo Group has created an interest to analyze the existing and future competences at a new team named Product Projects & Quality. Volvo Group is a world's leading manufacturing company within the automotive industry (Volvo Group, 2023). The team is a part of Service Market Logistics (SML) which is the department of Volvo Group that aims to design, handle and optimize the whole supply chain. Furthermore, the team focuses on preparing and securing new products and future launches. They consist of seven employees divided in the two roles: Logistics Product Project Managers (Three persons) and QJ & Quality Campaign Coordinators (Four persons).

The Logistics Product Project Manager is responsible for ensuring End-to-End SML deliveries in product projects, coordinating SML activities, evaluating project concept proposals and estimating and managing SML challenges and risks. Additionally, the QJ & Quality Campaign Coordinator is responsible for coordinating and securing new introductions of quality replaced parts and quality campaigns for SML. Since the team is newly formed there are still uncertainties regarding the employees' current competences and which competences that are required in order to remain relevant and proactively respond to the constantly evolving organization and world.

1.2 Aim

The aim of this study is to develop a framework that consists of a mapping of the current competences and a vision for the future competences needed for the two roles: Logistics Product Project Manager and QJ & Quality Campaign Coordinator. In addition, the study will discuss how to transition from the current to the future state and bridge the gap between them. The clarification in the competences of the two roles and the discussion on how to bridge the gap will result in Volvo Group better meeting future demands.

1.3 Delimitations

The scope of this study is limited to examining the competences of the Product Projects & Quality team which consist of a team manager and employees of the two roles: Logistics Product Project Manager and QJ & Quality Campaign Coordinator. However, the research will not analyze the manager's competences and its impacts on the team.

To address the ambiguity surrounding the definition and content of competence, this report will adopt the definition presented by Palan (2007) that: competence regards an individual's ability to provide skills, knowledge and attitudes required to perform a certain job at a set standard.

2. Theoretical Framework

This chapter provides an in-depth review and critical analysis of the relevant existing literature and research.

2.1 Competence

The focus of this chapter is to thoroughly define and explain the term "competence" in order to obtain a comprehensive understanding for this study. This involves a critical examination of the concept of competence.

2.1.1 Clarification of the Term Competence

Due to the confusion of the term competence, there is not a unified definition of what it is that includes the many interpretations of the term (Le Deist & Winterton, 2005). A reason for this presented by several authors is the incorrect and inconsistent use of the terms: competence and competency (Palan, 2007; Vazirani, 2010; Le Deist & Winterton; 2005). Moreover, Palan (2007) and Vazirani (2010) describe how *Competence* (plural *Competences*) and *Competency* (plural *Competencies*) have two generally agreed upon definitions but are nevertheless often used as synonyms. This creates a confusion regarding the terms since they mean different things to different people. Palan (2007) and Vazirani (2010) further highlight that *Competence* can often be defined as a description of a work task whilst *Competency* is a description of a behavior. Palan (2007) clarifies that it means that competence regards an individual's ability to provide skills, knowledge and attitudes required to perform a certain job at a set standard. On the other hand, competency is the "*underlying characteristics of an individual that is causally related to criterion referenced effective and/or superior performance in a job or situation.*" (Palan, 2007, p. 8). In a similar way, Le Deist and Winterton (2005) explains how competence is often related to functional areas whilst competency refers to behavioral areas.

Furthermore, some authors distinguish between threshold and performance competences, where the firstly named are the minimum requirement, whilst the performance competences are those that

separate excellent from average performers (Janjua et al., 2012). Moreover, Kuruba (2019) and Palan (2007) bring forward a similar definition, however, they connect *competencies* to superior performance, which not only includes the knowledge and skills that are needed to perform a job, but also elements such as traits, motives and values that contribute to superior performance (*See Figure 1*). On the other hand, *competences* are viewed as the minimum acceptable level of competencies that are needed in order to perform the work task in their role and are visualized as the tip of the iceberg of competencies in *Figure 1* below (Kuruba, 2019; Palan, 2007).

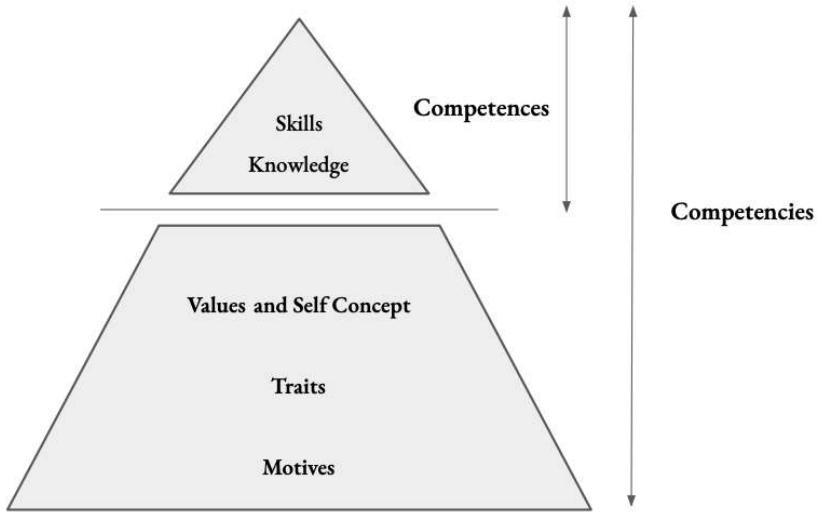

Figure 1. Iceberg model for competence and competencies. Adapted from Palan (2007).

To summarize, there are many different definitions and aspects regarding the terms: competence, competency, competences and competencies. Furthermore, it is important to adapt to the context when defining the terms used. Therefore, the definition of *competence* presented by Palan (2007) is used throughout the study since it is in line with Volvo's interpretations of the terms.

Palan (2007) explains that *knowledge* refers to a person's collected information and learning. Furthermore, Butler (1978) describes knowledge as the informational foundation for developing a particular skill. Continuing, a *skill* can be defined as the ability of a person to successfully perform a specific task, as noted by Butler (1978) and Palan (2007). Butler (1978) further emphasizes that a skill

entails the effective application of knowledge and processes to a task with proficiency. Additionally, skills require the utilization of acquired information and techniques through learning to achieve the successful outcome in a particular task.

2.2 Competence Framework

Competence frameworks are important since they provide a structured and systematic method for identifying the skills and knowledge required to perform well (Škrinjarić, 2022; Sultana, 2009). Furthermore, competence frameworks can identify competence gaps between people and the organization (Sultana, 2009). Managing competences is therefore crucial for organizations to ensure that the employee's current competences are aligned with the business strategies and goals, but also possess competences to meet the future demand (Kuruba, 2019).

Competence frameworks provide visual and systematic models to manage competences and are important since they ensure that the competences and skills of the workforce are aligned with the company's business vision (Palan, 2007). Moreover, competence frameworks are used to pinpoint areas where self-development opportunities exist by identifying and specifying the required skills and knowledge, which can be utilized as career guidance (Škrinjarić, 2022; Sultana, 2009). This can result in the provision of relevant training programs (Sultana, 2009). In line with Sultana, Škrinjarić (2022) highlights how competence frameworks are vital for integrating and aligning education and training with the needs in the market. Furthermore, competence frameworks will lead to better decision making from the management perspective (Kuruba, 2019).

Furthermore, Sultana (2009) explains how competence frameworks can be valuable from an economic point of view since they allow for an efficient way to work with competences and therefore quickly identify the new competences needed in the fast-changing environment that exists in workplaces.

2.2.1 Measure Competences

Measuring and monitoring competences is an essential aspect of managing competences with a framework. In order for organizations to monitor and follow the competences of the employees it is important that they are measurable (Kuruba, 2019). By measuring competences, it provides a deeper understanding of the employees' abilities and gives guidelines for where to allocate resources to achieve desired outcomes for the competence development. It allows organizations to identify the gaps between available- and required competences and based on that take meaningful decisions on the areas that require improvement for the benefit of both employee development and business performance (Homer, 2001).

However, Glass and Metternich (2020) highlight the challenges in measuring competences as it is not possible to directly measure it. This is due to the fact that it requires a comprehensive approach to evaluate and assess an individual's competences. Furthermore, Glass and Metternich (2020) explain that if the measurement parameters are clearly defined it is possible for the employees to perform a self-assessment, otherwise a coherent evaluation of competences can be measured by objectively observing through an individual's corresponding actions and knowledge. Regardless, in order to measure and evaluate the competences it is essential to first define them. When the competences are defined, organizations can assess the employees' performance with different levels (Kuruba, 2019). The competence level is a scale that covers a wide range of abilities in the defined competences and helps organizations to organize them into, usually, four or five levels. It is important that the levels are clearly specified to prevent subjective interpretations and to ensure that everyone in the organization understands.

Since competence levels are qualitative characteristics, it can be challenging to convert them into quantitative scales (Kuruba, 2019). However, Kuruba (2019) mentioned that the most important is that the competence levels are specified with as much concrete details as possible, but it should not include redundant information since it can make it more complex to match the competences.

2.2.1.1 The NIH Proficiency Scale

A way to measure competences is with the NIH Proficiency Scale used by the Office of Human Resources at the National Institutes of Health (NIH, 2023). This tool evaluates an individual's abilities across five levels, as outlined in *Table 1*.

1.	**Fundamental Awareness (basic knowledge)**	You have a common knowledge or an understanding of basic techniques and concepts.
2.	**Novice (limited experience)**	You have the level of experience gained in a classroom and/or experimental scenario or as a trainee on-the-job. You are expected to need help when performing these skills.
3.	**Intermediate (practical application)**	You are able to successfully complete tasks in this competency as requested. Help from an expert may be required from time to time, but you can usually perform the skill independently.
4.	**Advanced (applied theory)**	You can perform the actions associated with this skill without assistance. You are certainly recognized within your immediate organization as "a person to ask" when difficult questions arise regarding this skill.
5.	**Expert (recognized authority)**	You are known as an expert in this area. You can provide guidance, troubleshoot and answer questions related to this area of expertise and the field where the skill is used.

Table 1. The NIH Proficiency Scale. Adapted from National Institutes of Health (2023).

2.3 Learning

In order to understand how competences are developed it is essential to understand how to create a learning environment, how people learn using different strategies and factors that influence learning.

2.3.1 Learning Organizations

Due to the rapid changes occurring in the market, such as technological advancements and changing customers' needs, Sarder (2016) explains how companies can benefit from becoming *learning organizations*. Sarder (2016) highlights that companies cannot achieve success by remaining unchanged. Furthermore, organizations that have succeeded have a common understanding regarding

the value of learning. Learning is more than courses and training used to improve skills. Rather, it is integrated everywhere in the organization, from the decision making to the problem identification, organizational structure and physical environment (Sarder, 2016).

Peter Senge defines a learning organization as one where "*people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together.*" (Sarder, 2016, p. 28). Sarder (2016) emphasizes how learning organizations view learning as a crucial aspect for growth and must continuously be prioritized, communicated and valued. Furthermore, the importance of learning is not only communicated but also shown in the provision of the resources needed. Learning organizations encourage questions and reflections regarding topics that affect the employees and they use mistakes as opportunities to learn. This results in competitive advantages since the organizations become quick to respond and adapt to changes (Marquardt, 2011; Sarder, 2016).

Furthermore, learning can come in many different forms and from many different sources (Sarder, 2016). Some examples are training, which often includes learning towards something specific, and education, which is a form of long-term knowledge that provides a foundation for learning. However, learning can also be subconsciously gained from interactions and experiences (Sarder, 2016).

2.3.2 Learning Strategies

In the following subsection, different learning strategies, namely Single- and Double-loop learning, Agile Learning and Knowledge Sharing will be presented.

2.3.2.1 Single- and Double-Loop Learning

Argyris (1991) brings forward the dilemma that success depends on learning, nevertheless people often do not know how to learn. Furthermore, there are two mistakes people tend to make that hinders them from becoming a learning organization. The first mistake is that learning often is seen as problem solving which leads to focus being on identifying and correcting errors. Moreover, Argyris (1991)

highlights the importance of problem solving, but it is also crucial to look inwards and reflect on their own behavior, identify how they unintentionally add to the organization's issues and alter how they act.

The second mistake Argyris (1991) presents is that companies often assume that if their employees have the right attitude and commitment, they will automatically learn new things. As a result, companies tend to focus on creating structures like rewards to motivate their workforce. However, according to Argyris (1991) this is a mistake because the biggest barrier to learning is not lack of motivation, but rather the fear of making mistakes. People may be defensive and avoid admitting ignorance or asking for help, which prevents their ability to learn and grow.

Single-loop and *Double-loop learning* are two concepts that Argyris developed to explain the distinctions above (Argyris, 1991). *Single-loop learning* is the process of learning through adapting one's actions in response to the difference between the expected and actual results, which is visualized in *Figure 2*. Furthermore, it focuses on correcting errors and improving strategies based on feedback without addressing the underlying assumptions and beliefs that guide our actions. On the other hand, *Double-loop learning* is about reflecting and questioning these underlying assumptions that affect people's actions and decisions. Double-loop learning goes deeper than correcting errors based on feedback, it challenges the structures and way of thinking in the individual and organization.

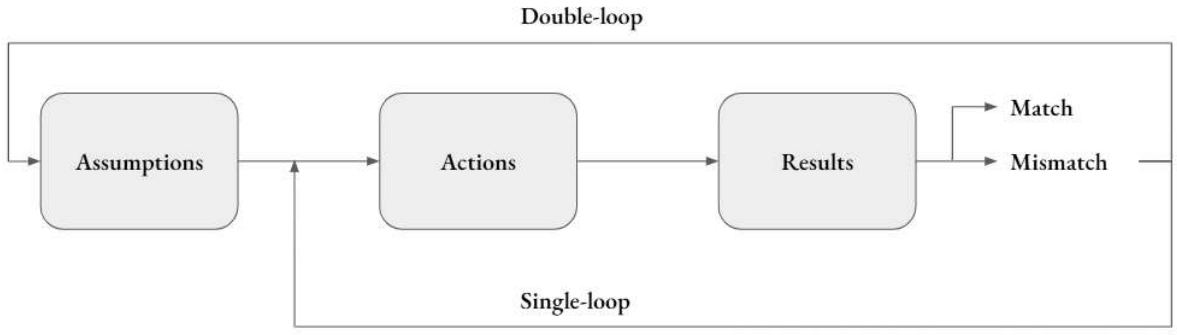

Figure 2. Single- and double-loop learning. Adapted from Robinson (2014).

However, even though individuals are committed to learning and improving, defensive reasoning can limit learning (Argyris, 1991). Robinson (2014) further explains how defensive reasoning can hinder people and organizations from learning from their mistakes. When individuals feel threatened or embarrassed, they are likely to avoid reflecting on what went wrong. This risk is heightened with organizational cultures that prioritize loyalty over admitting mistakes. This stops people from learning and improving, which is why it is important to recognize and address defensive reasoning. Furthermore, Argyris (1991) argues that a way to move past the learning dilemma, that was presented in the beginning of this subsection, is by promoting and enabling Double-loop learning. In order to take away the blocks for learning, organizations can teach employees effective ways to reason and reflect about their behaviors, which can break down the obstacles.

2.3.2.2 Agile Learning

The concept of agility can help organizations to effectively react to the rapid changes (Armanious & Padgett, 2021). Agility relates to organizations' capabilities to quickly respond and adjust to unpredictable changes in order to maintain customer satisfaction and sustain competitive advantages (Armanious & Padgett, 2021; Holmqvist & Pessi, 2005). However, the result of agility impacts the strategic and operational processes of organizations which means that an organization's ability to achieve agility is based on employees' abilities to identify changes and trends (Armanious & Padgett, 2021), but also on the employees' competences and capabilities to learn and evolve with the changes (Van Assen, 2000).

To successfully achieve agility in organizations it is essential to ensure that the employees' competences are relevant and aligned with the business strategies and goals (Kuruba, 2019). This can be done by continuously identifying and developing agile core competences within the organization. Armanious & Padgett (2021, p. 636) explain that the core competences are defined as *"knowledge-based capabilities that rely progressively on knowledge workers and their ability to continuously learn and then respond to changes"*. Furthermore, in order to develop agile core competences, agile learning is important to support employees' in continuously generating relevant knowledge and skills.

DeRue et al. (2012) describe agile learning as the ability and willingness to learn from experiences, with the aim of avoiding repeating the same mistakes and applying the lessons learned to other situations and problems to continuously enhance performance. Furthermore, it entails the ability to quickly work and move across different ideas without getting stuck and spending excessive time on specific problems. The Armanious and Padgett (2021) explain that these strategies create an environment that promotes continuous learning that allows them to understand and interpret complex environments and develop agile core competences.

2.3.2.3 Knowledge Sharing

Crossan et al. (1999) describe *the 4I framework of organizational learning* as a framework that links different levels of learning with dynamic processes that involve feed-forward and feedback processes, see *Figure 3*. This framework explains how learning develops and evolves through various stages. The framework consists of the 4Is: *Intuiting, Interpreting, Integrating and Institutionalizing* (Crossan et al., 1999). These processes operate over three levels: individual, group and organizational, which describe how learning transfers between different stages in an organization.

There exists a tension between the feed-forward and feedback processes since the firstly named regards new learning whilst the other is about using the learnings already existing in the organization. So, whilst the feed-forward process takes new concepts and actions from an individual- to a group-, to the organizational level, the feedback process takes the learning already institutionalized to the group- and individual level, thus affecting their actions and thinking.

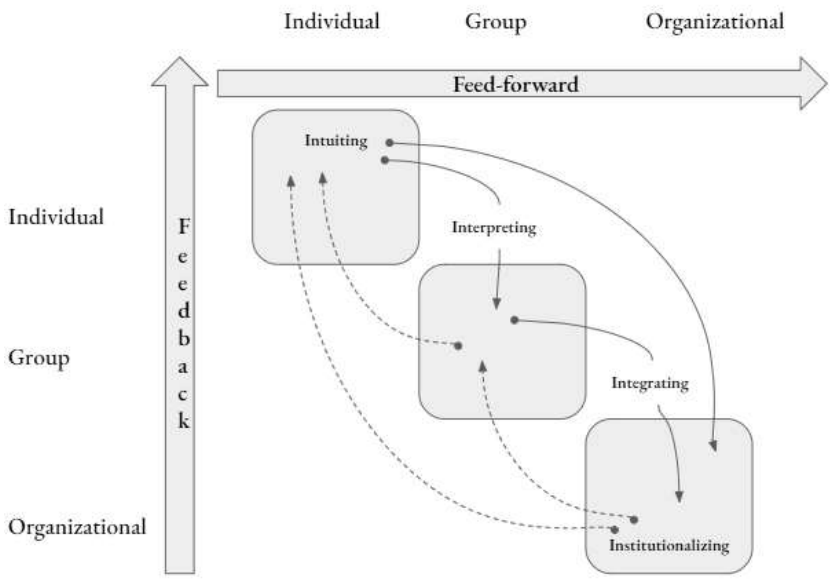

Figure 3. Organizational learning as a dynamic process. Adapted from Crossan et al. (1999).

Intuiting, as defined by Crossan et al. (1999), refers to a subconscious process of pattern recognition and development of insights based on personal experiences and occurs at an individual level. The process of intuiting has an impact on an individual's action and can only through interactions affect other individuals' intuiting-processes. The intuiting process is an initial step in the learning process and serves as a foundation for further development.

Interpreting is a process that occurs at an individual- and group level. It involves the transition from the subconscious insights in the *intuiting* processes to the development of cognitive maps through verbal expressions. This involves articulating feelings, thoughts and sensations into language which allows for externalization and clarification of the internal insights. In order to move from an individual level to a group level, communication is crucial to integrate an individual's cognitive maps with others, leading to a shared understanding (Crossan et al., 1999).

Integrating is a process that regards creating a clear and shared action and occurs at a group- and organizational level. It entails the alignment of different perspectives and understandings of individuals in a group. This is achieved through the exchange of ideas and experiences. During this process

individuals within the group can develop new shared understandings of the ideas which result in individuals adjusting their actions.

Integrating is a group- and organizational level process that involves creating a clear and shared action. It entails the alignment of different understandings and perspectives within a group through the exchange of ideas and experiences. Through this process, individuals in the group can develop new shared understandings of ideas, which may lead to adjustments in their actions.

Lastly, *institutionalizing* is the process of bringing learning from an individual- and group level to an organizational level, meaning that even if the individuals would leave, their learnings would still exist (Crossan et al., 1999). The process regards embedding learnings in systems, structures and routines in the organization and is done by formalizing and institutionalizing learnings.

2.3.3 Factors influencing learning

The following section will discuss two factors that influence an organization's ability to develop a learning environment. These are organizational culture and motivation.

2.3.3.1 Organizational Culture

Nowadays, organizations are encountering an increasing level of complexity and globalization due to the developments and changes of technologies (López et al., 2004). This has impacted the importance for organizations to consider and develop internal employees' skills and capabilities in order to remain competitive in the market. The authors explain that many organizations tend to fail since they are only focusing on improving the technical aspects but are missing the social aspects that are equally important (López et al., 2004). In these situations, organizational culture plays a significant role since it can facilitate both technological innovations but also promotes organizational learning (Sanz-Valle et al., 2011).

Schein (2016, p. 6) describes organizational culture as *"The culture of a group can be defined as the accumulated shared learning of that group as it solves its problems of external adaptation and internal integration; which has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, feel, and behave in relation to those problems. This accumulated learning is a pattern or system of beliefs, values, and behavioral norms that come to be taken for granted as basic assumptions and eventually drop out of awareness."*. Organizational culture can be described as an iceberg divided in three levels, *artifacts, espoused belief and values, and basic underlying assumptions*, based on the visibility of the culture for participants or observers, see *Figure 4* (Tolfo et al., 2011).

Schein (2016) explains that *artifacts* are the elements of culture that are visible and can be seen and noticed by observers. In this level of culture, it is easy to observe but difficult to understand the deeper meaning of it, for example charters and formal descriptions of processes or procedures. Furthermore, the deeper level of *espoused belief and values* are more difficult to observe, and they affect the way organizations make decisions. They are the underlying reasons for the artifacts that can be seen. The *espoused beliefs and values* consist of the organization's agreed upon ideals, values, goals and aspirations (Schein, 2016). Lastly, *basic underlying assumptions* are the implicit assumptions that influence peoples' thoughts, feelings and behaviors. These assumptions come from conscious values within the group which affect the specific behaviors (Tolfo et al., 2011).

Organizational culture is becoming increasingly important for organizations and employees because of the potential to sustain advantages and affect the performances (López et al., 2004). López et al (2004) explain that organizations should invest more on developing the cultural aspects which includes having a culture that promotes learning. This is due to the fact that promoting continuous learning is a long-term advantage for organizations since these factors are difficult to imitate by competitors in comparison to the technical improvements of processes and products which can be easily copied (Lismen et al., 2007; López et al., 2004.).

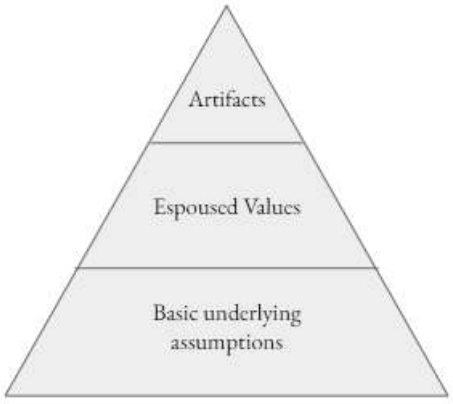

Figure 4. Iceberg describing the three levels of organizational culture. Adapted from Schein (2016).

2.3.3.2 Motivation

Malik and Danish (2010) describe the employee's motivation to learn as a critical aspect of the learning process. An organization's competitive advantages in the market is associated with learning and how motivated the employees are to learn. A high motivation often results in a high level of performance. This is because employees tend to learn effectively when they are driven and want to learn which often leads to positive results of their performances (Malik & Danish, 2010).

Hackman and Oldham (1976) present a model that describes the interaction between characteristics of a job and individuals' performances in a workplace. The model is divided into three levels that are linked together. The first level, *core job dimensions*, impacts individuals' *critical psychological states* which in turn influence their *personal work outcomes*, see *Figure 5*. Furthermore, Hackman and Oldham (1976) explain that employees' growth, needs and strength are additional factors that affect the outcomes.

The critical psychological states include *experienced meaningfulness of the work, experienced responsibility for outcomes of the work* and *knowledge of the actual results of the work activities.* The first one, *experienced meaningfulness of the work*, concerns how meaningful, valuable and worthwhile the individual experience of the work is. Following, e*xperienced responsibility for work outcomes*, regards which degree the individual feels personal responsibility for the outcomes of the work performed.

Lastly, *knowledge of the actual results of the work activities,* entails the understanding of the effectiveness of the results from the job. Hackman and Oldham (1976) explain that individuals that learn from the outcome of the results and feel the responsibility to perform a good job on the tasks that they care about will often result in positive effects on their motivations and performances. Hackman and Oldham (1976) mean that individuals' self-generated motivation would be the highest when all of these three critical psychological states are fulfilled.

Furthermore, Hackman and Oldham (1976) describe the five core job dimensions that contribute to emergence of psychological states. Three of the dimensions, *skill variety, task identity* and *task significance* foster the experienced meaningfulness of the work. *Skill variety* involves the variation of activities in a job, meaning that if employees can use different skills and competences to engage in the work they perform they would find the task more challenging and meaningful. *Task identity* concerns the degree of the completeness of the work. Hackman and Oldham (1976) explain that the more employees can be engaged and experience the whole picture of the work, from the beginning to the end of a project, the more they would find the work meaningful. *Task significance* is related to the extent to which employees perceive their work as meaningful, considering the results and impacts of their job on both the organization and external environment.

Moreover, *autonomy* is one of the five core job dimensions that foster the experienced responsibility for outcomes of the work (Hackman and Oldham, 1976). Hackman and Oldham (1976) highlight the importance of giving the individual the responsibility to take their own initiatives and decisions as well as put in their own efforts when performing their job. This freedom will result in employees experiencing a stronger relationship to the work and therefore experiencing more responsibility for the outcomes. Lastly, *feedback* is an additional important job dimension that needs to be considered in a workplace. Providing feedback on the effectiveness of employees' performance can lead to a greater understanding of the actual outcomes of their work (Hackman & Oldham, 1976).

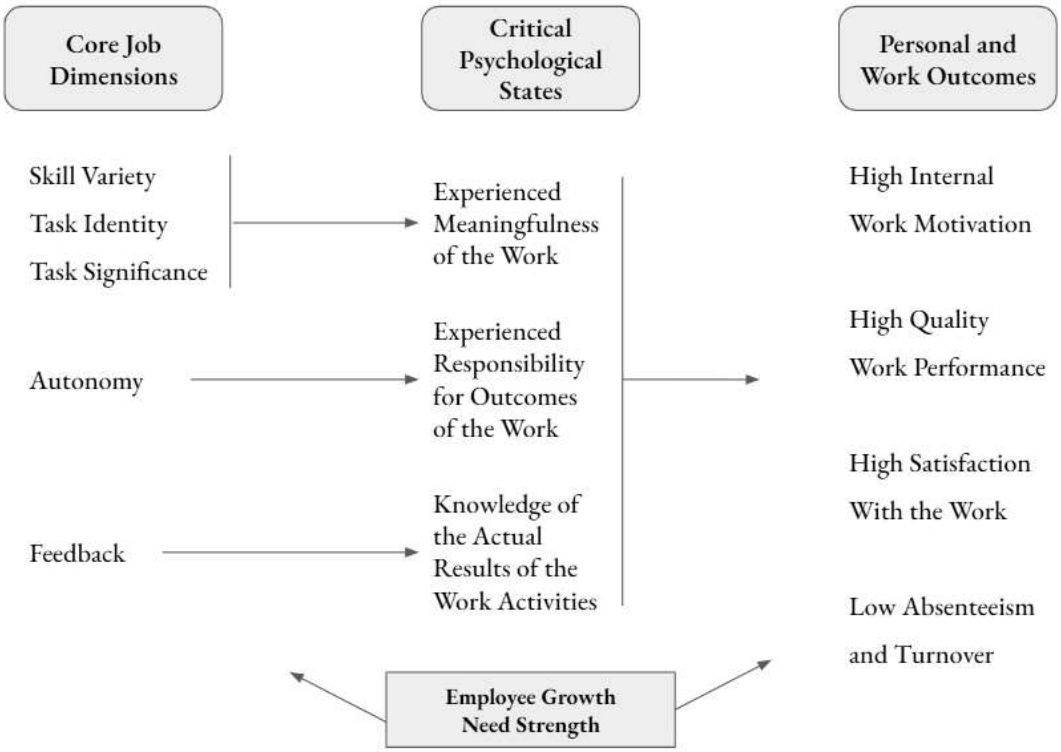

Figure 5. Hackman and Oldham's motivation model. Adapted from Hackman and Oldham (1976).

2.4 Trends in the Automotive Industry

This section will regard trends that are affecting the automotive industry, hence putting pressure on learning and the development of competences.

2.4.1 Technological Trends

The continuous changes due to the increasing pace of digital technologies have significantly impacted the way the market and business operate today (Llopis-Albert et al., 2021). With the rapid changes due to the emergence of new technologies, businesses must adapt in order to remain competitive in the market (Škrinjarić, 2022). This requires organizations to anticipate trends and new customer values, and quickly adapt their operations accordingly to meet these changing needs and maintain customer satisfaction (Škrinjarić, 2022; Wallo et al., 2019).

McKinsey (2022) highlights that technologies continue to be the primary driver of change in the world. Furthermore, they presented a report that described the estimated effects of the technology trends in different industries. Next-level process automation, Applied AI, Future of connectivity, Distributed infrastructure and Future of programming are identified as technology trends that are likely to have a significant impact on the automotive industry (McKinsey, 2022).

Furthermore, Rika (2022) explains that technology trends are resulting in organizations shifting towards a more automated world with reduced reliance on human involvement in the processes. This improves organizations' ability to streamline their operations and reduce costs. The trends can also facilitate the communication and information sharing across the entire supply chain, from the suppliers to the end customers (Llopis-Albert et al., 2021.). These technological advancements will enable organizations to engage more effectively with stakeholders and optimize their experiences.

2.4.2 Sustainability Trends

Sustainability is becoming increasingly important for corporations because of the changing perspectives and trends in society (Rafi, 2021). A current trend is that automotive actors are focusing more on sustainability which can be seen through the development of electrification vehicles (PwC, 2023). These trends are driven both from the increasing awareness of environmental and sustainability aspects but also from the pressure to comply with political legislations and requirements. As a result, organizations must integrate sustainability and the associated challenges in the business in order to meet the constantly evolving political requirements and demands of the customers (Wellbrock et al., 2020).

3. Methodology

The following chapter will explain the methodology for this research.

3.1 Research Process

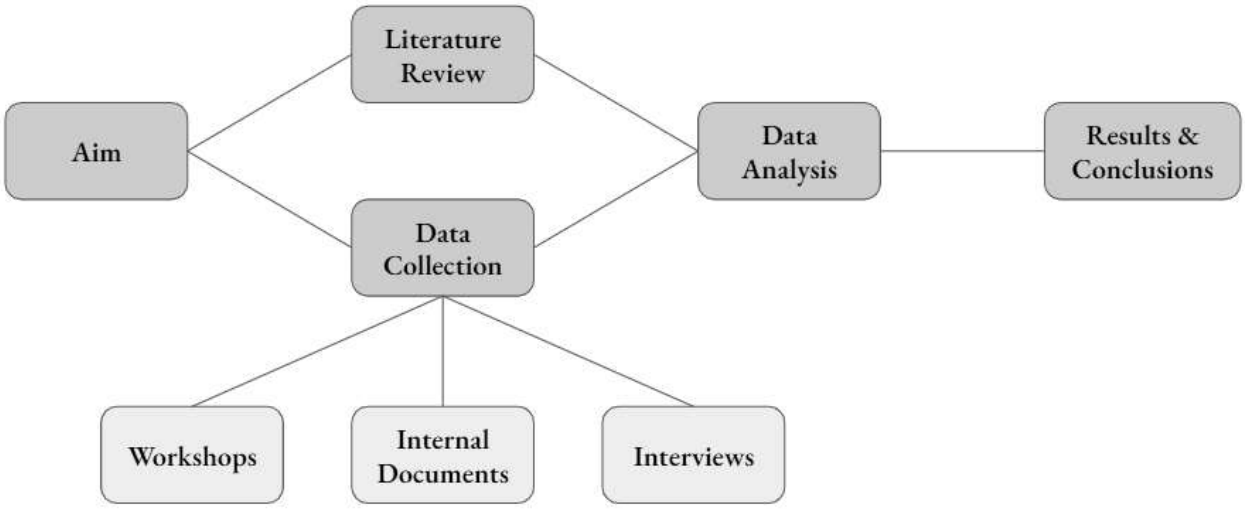

Figure 6. Research process flow chart.

This study has followed the above shown process, see *Figure 6*. The first step was to create a clear and focused aim for the study. Secondly, a literature review was conducted to review relevant literature in order to gain a deeper understanding of the topic parallel to the collection of data. The data was collected using different methods such as workshops, analysis of internal documents and interviews. Following, the collected data was analyzed by categorizing it as well as making sense of it. The purpose was to classify the data into different categories based on similarities and differences, which made it easier to identify themes and patterns that would contribute to gaining a deeper understanding of the findings. Lastly, conclusions were drawn based on the findings and the results.

3.2 Research Strategy

According to Bell et al. (2019), it is crucial to acknowledge and consider ontological and epistemological perspectives in order to carry out research that results in a thorough understanding of reality. Bell et al. (2019) define ontology as the study of the fundamental nature of reality and how it

works. The ontological assumption helps to guide what one aims to understand through research, and there are two perspectives: *objectivism* and *constructionism*. *Objectivism* sees reality as having a set of fixed, independent features that are not impacted by people or researchers. Moreover, this view assumes that the world is objective, existing independently and having an impact on social actors. In contrast, *constructionism* believes that social actors shape and create the world through their actions and behaviors. Whilst objectivism assumes that the world is not influenced by human factors and can be replicated, constructionism holds that the world is indeed influenced by social factors and cannot be considered stable or reproducible.

While ontology regards what one aims to understand with our research, Bell et al. (2019) highlights that epistemology refers to the approach taken to conduct the research and varies based on the ontological assumption. Epistemology has two main perspectives: *positivism*, stemming from objectivism, and *interpretivism*, following from constructivism (Bell et al., 2019). *Positivism*, rooted in objectivism, assumes that data can be objectively collected using the appropriate tools. On the other hand, *interpretivism*, which stems from constructionism, holds that the world cannot be measured using natural science methods because the world is shaped by social actors. Therefore, the focus with interpretivist assumptions lies in the meaning-making process in order to gain knowledge (Bell et al., 2019).

Furthermore, Bell et al. (2019) describe two main research strategy approaches, *qualitative* and *quantitative* research strategy, based on the epistemological- and ontological assumptions. *Quantitative* research is a research strategy that often involves quantified data collection to test hypotheses and answering the research question through statistical analysis. This approach often entails a deductive approach that aims to test the existing theories by the collection of numerical data. A deductive approach has an objectivist view of reality and a positivist approach to the study. On the contrary, *qualitative* research focuses on words and images instead of quantified data in order to interpret the social reality. Qualitative research strategy often adopts an inductive approach in the relation between existing theory and research, meaning that the researcher emphasizes creating new

theories based on the collected data. It views the world through an interpretivist position and constructivist approach (Bell et al., 2019).

Due to the fact that the researchers view the world as formed by social actors it means that this study has a constructivist position. From this position an interpretivist approach was followed with the purpose to investigate and uncover the reasons behind human behavior. Based on these assumptions in combination with the aim of the study, it showed that a qualitative research strategy with an inductive approach would be more appropriate. This approach focuses on human interactions and collaborations which allows for a deeper understanding of the phenomenon through in-depth interviews, interpretations of workshops and other non-numerical data collection.

3.3 Research Design

The research design provides a framework for carrying out the research methods and analyzing data (Bell et al., 2019). It is chosen based on the aim of the study as well as which type of data that is being collected. The case study design is the most appropriate when in detail analyzing a single case since it can provide valuable insight and contribute to a better understanding of the studied case (Bell et al., 2019). Due to the thesis concerning specific employees in a certain team and in a single organization, a case study design was the most suitable and would allow for in-depth analysis of the complexity of the context.

3.4 Literature Review

A literature review involves gathering existing information about a research topic (Bell et al, 2019). This is important since it forms the foundation for empirical investigations and gives a deeper understanding on how to approach the research topic. According to Bell et al. (2019), there are two main approaches when conducting a literature review, which are *systematic* and *narrative*. The first one follows a systematic and repeatable process to examine all the existing studies related to the aim and research questions of the project. Through this process it enables the researcher to follow a certain set of steps to critically evaluate and systematically sort and filter out the studies that are irrelevant. The

opposite to the systematic literature review is a *narrative* literature review that does not adhere to any process, instead it enables the researcher to act iteratively, meaning that it is possible to adjust the direction and boundaries of the research based on the evolving understanding from the literature (Bell et al., 2019).

Since this study has a qualitative approach the narrative literature review was applied to get a more comprehensive and deeper understanding of the research topic. Furthermore, it allowed for an increased flexibility in the research since it was possible to work in an iterative process, depending on the literature and findings. This was done by reading and examining scientific articles that were related to the topic from platforms such as ScienceDirect, Google Scholar and Chalmers Library. To ensure credibility of the sources, a critical evaluation was performed by comparing different sources and primarily using first-hand sources.

3.5 Data Collection

In this chapter, the various methods of data collection will be introduced and thoroughly explained.

3.5.1 Sampling Strategy

The research question provides guidelines for researchers in their choice of sampling strategy (Bell et al., 2019). It helps the researchers to understand and determine the most appropriate sample groups and guide them in which methods to use when sampling. Bell et al. (2019) explain that *purposive sampling* is a method that mostly applies in qualitative research. The aim of purposive sampling is to strategically and intentionally select participants that are relevant for the study based on the criterion researchers have in order to answer the research question. However, when using a purposive sampling strategy, it often involves a combination of multiple approaches (Bell et al., 2019). One example that Bell et al., (2019) mention is that it is common to start with a purposive sampling in order to select the most suitable participants and thereafter followed by a *snowball sampling*, meaning that the initial participants help to reach out to additional participants that could be relevant for the study.

Since the aim of this study is to investigate the current and future competences of the two roles and guide them to the future state, the sample group consisted of employees of the team which included the two roles. Therefore, a combination of purposive sampling and snowball sampling strategy was applied to collect data. This was done by conducting workshops and interviews with the employees with the two roles in order to understand their current competences and the perceived needs and competences that are required to meet the future demands. Furthermore, the initial participants helped to identify and find additional contacts that would be useful for this study since they have a better understanding of the organization and a broader network that helped to select suitable participants. The additional contacts were employees that have been working with competence frameworks and possess expertise within the area.

3.5.2 Workshops

The main way to collect data in this study has been through various forms of workshops which have been conducted parallel with the two roles, as can be seen in *Figure 7*. Nevertheless, the workshops had the same structure, content and questions for the two roles.

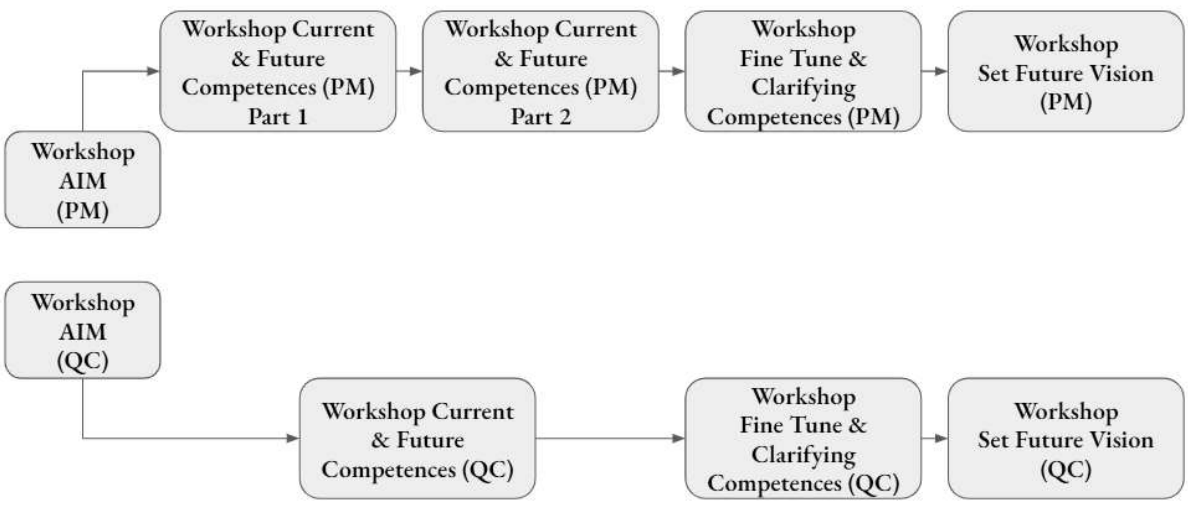

Figure 7. Workshop process flow chart.

Initially the workshops were conducted using the Affinity-Interrelationship Method (AIM), which is further explained in the next paragraph. Thereafter less structured workshops were held. The reason for conducting workshops is due to the fact that it can be difficult for individual employees to understand and articulate comprehensive thoughts regarding their role and competences. Therefore, brainstorming and discussion in groups can provide more and deeper information. Furthermore, the researchers value the group's opinions and saw it as important to include the team members in the process of their competence development. The purpose of the workshops was to clarify, organize, brainstorm and analyze the two roles and the current, as well as future competences of the employees.

The Affinity-Interrelationship Method is a problem-solving tool for analyzing qualitative data and is a merge between two management tools: Affinity diagram and Interrelationship diagrams (Alänge, 2009). Affinity diagramming is a method for organizing, externalizing and making meaning of large amounts of qualitative data that is unstructured and diverse (Lucero, 2015). Interrelationship diagrams are used to clarify the cause-and-effect relationship between factors (Cavalline et al., 2021). Furthermore, they provide insight into complex relationships and help understand the relationships between various factors by identifying a target variable and brainstorming ideas related to it.

Due to the structured way to handle data and uncertainties in AIM workshops, it was used initially to understand the purpose and content of the two roles in the team, which was in the beginning not clear. This was an important step in order to be able to map the current competences and those needed in the future. Two *AIM workshops* were conducted, one with each role. The *AIM workshop* revolved around a question that was formulated by the researchers with the purpose to create a shared understanding regarding the employees' role. The question for the *AIM workshops* was: *What is the purpose & content of our role?*

After the initial step with the *AIM workshops*, less structured workshops were held in order to openly discuss and brainstorm which competences existed and which were needed in the future, named *Current & Future Competences workshops* in *Figure 7*. The AIM workshops contributed by providing

the employees with a foundation of understanding regarding their roles and the scope of it. Each role had initially one workshop regarding the current competences and required future competences. During the first part of the workshop the focus was on the current competences. The employees started with the brainstorming sessions regarding their existing competences. The intention with the brainstorming was to encourage free flowing ideas without being influenced and limited by the researchers. Afterward, the results from the AIM workshops were presented to give inspiration regarding the competences that are used when performing their work but might have been missed. Thereafter the employees clustered the gathered competences which resulted in some general headings that were used in the competence framework. The headings were created with inspiration from internal frameworks used at Volvo Group.

The second part of the *Current & Future Competences workshops* was to discuss and gather data regarding the competences that might be needed or improved in the future. Similarly, this part started with a brainstorming session followed by some questions prepared by the researchers which were based on an analysis of the literature study regarding the future trends in the automotive industry. The purpose with the questions was to guide and stimulate thoughts of the competences that might be needed or improved in the future in order to successfully perform the work of the two roles. Furthermore, the workshop with the PMs took longer than expected and was therefore divided in two parts, one discussing the current competences and the other one discussing the future competences.

The third workshop, *Fine Tune & Clarifying Competences*, was conducted with the purpose to clearly define all the gathered competences to ensure a shared understanding and interpretation, not only for existing employees but also for future employees. Furthermore, the workshop was used to screen competences that could not be consistently measured by using the NIH Proficiency Scale. During the session the employees described and defined each of the competences which resulted in the defined competences in the final framework.

The last workshop, *Set Future Vision*, was about using the results from the second workshop, *Current & Future Competences*, to create a vision for the future state. This was done by ranking the levels estimated needed for each competence in the future.

3.5.2.1 The Process of an AIM Workshop

The process of analysis is divided into four stages, each building upon the previous to reach a comprehensive understanding of the issue at hand (Alänge, 2009). First, *Identifying the Issue to Analyze and Collecting Data*, this involves pinpointing the problem or challenge and gathering all relevant data to support the analysis. Next, *Securing Quality of Data and First Level Grouping takes place*, this stage is crucial as it entails checking the accuracy of the data and grouping it into similar categories or themes. The third stage, *Higher Levels of Abstraction*, delves deeper into the relationships between different factors. This involves further grouping and categorizing the data to gain a clearer picture of the situation. Finally, *Evaluation and Conclusion* brings the process to a close. This stage involves evaluating the results of the analysis and drawing conclusions based on the findings. It provides a clear understanding of the issue and helps inform decision-making.

3.5.3 Interviews

Interviews is a commonly used data collection method in business research to obtain information from the participants by asking questions (Denscombe, 2014). There are three types of interviews: *structured, unstructured* and *semi structured interviews*. The difference between the various types of interviews is based on the flexibility the respondents have when answering the questions (Bell et al., 2019). In *structured* interviews the respondents' answers are more limited as the interviews are more standardized. The purpose with structured interviews is to give all the respondents the same context of questioning, which is more useful in quantitative research, since the answers are more precise and can therefore easily be used to do comparison and analysis (Denscombe, 2014). This can in turn help to increase the validity and reliability of the research. On the other hand, *unstructured* interviews are more associated with qualitative research as it is not aiming for specific answers. This approach tends to be more flexible since the researcher has a general topic that will be discussed but can adjust and respond

based on responses received during the interview. Lastly, a *semi structured* interview is a combination of structured and unstructured interviews.

Both unstructured and semi structured interviews have been used as supplement to the workshops in this study in order to explore and get more in-depth information regarding the two roles and their competences. Unstructured interviews were more in the form of informal conversations with team members, while in semi structured interviews, the researchers had a predetermined set of questions to the respondents and could during the interview ask follow-ups questions on the topics of interest. The semi structured interviews were also conducted with three Volvo Group employees that possessed expertise within competence development at Volvo Group. During the interviews, notes were taken as well as recorded to ensure that no important information would be missed out. The combination of these two approaches enabled for a more detailed data collection that provided valuable insight and inspiration of competence frameworks.

3.5.4 Internal Documents

In addition to workshops and interviews, internal documents were used as a source of data. In case studies, organizational documents can be used to get important background information of the organization and its past (Bell et al., 2019). Furthermore, Denscombe (2014) explains how in qualitative research internal documents are used by interpreting the documents which can provide insight of the organization's culture and values. The documents have been provided by Volvo Group and were used mainly for benchmarking with other teams and departments at Volvo Group that have analyzed competence development. During this research the internal documents provided intel regarding the job descriptions for the two roles as well as different current competence frameworks used at Volvo Group.

By taking consideration to the internal documents and the frameworks already created by Volvo Group, and specifically the department of Service Market Logistics, the deliverables from the study can be more adaptable, suitable and useful for the team and the company in the future.

3.6 Data analysis

Due to the large and complex data collection that comes from qualitative research it is necessary to be careful when doing the data analysis. Bell et al. (2019) explain that it can be challenging to analyze a large amount of data and understand what data is relevant for the research. Based on this, researchers can risk missing out on critical information or get caught up in details that are out of the scope. In consideration to this, the steps that the researchers took when conducting the data analysis are presented below.

The first step of the data analysis process involved managing the collected data. That included reviewing the recordings together with the notes taken during the interviews. When it comes to the workshops, the data was already partly analyzed together with the participants during the sessions, since it was a part of the process during the workshops. The next step of the data analysis was to analyze the data by categorizing it and dividing it based on the topics. Thereafter, the researchers started to identify themes and patterns in the data. This was done by examining the collected data and searching for patterns such as topics that occurred multiple times and core topics stemming from the literature study. The following step was to analyze the identified themes and patterns to understand the meanings behind the findings and compare it with the literature theory. This was done by reviewing the literature related to the findings followed by evaluating the alignment between them. Lastly, the data analysis resulted in a discussion and conclusion regarding the findings.

3.7 Research Quality

When conducting business research, it is important to integrate quality assessment (Bell et al., 2019). It is crucial for researchers to evaluate the quality of the research in order to get insights in how to conduct and drive a successful research study. For readers, the evaluation of quality provides a deeper understanding of how trustworthy and reliable the research is.

Bell et al. (2019) present common quality criteria that can be applied when assessing research: reliability, replicability and validity. However, these quality criteria are better suited for quantitative research since they are based on the ability to measure with natural science methods and a view of reality that is objective. Instead, quality criteria such as credibility, transferability, dependability and confirmability are more appropriate since they can capture the social phenomenon of qualitative research (Bell et al., 2019).

Credibility relates to the trustworthiness of the research findings and entails to ensure that the researchers have correctly interpreted and understood the participants during the data collection (Bell et al., 2019). In order to ensure credibility in this study, the findings were presented and shared to all the participants to verify that the information was accurate. In addition, since most of the data collection and results are based on the discussions and findings from the workshops the credibility could already be established during the sessions. However, the results from the workshops were presented to the participants to allow them to go through and assess the trustworthiness of the results.

The second quality criteria used by the researchers in this study was transferability. The criteria relate to which extent the findings can be generalized and applied to other contexts (Bell et al., 2019). Due to the researchers' choice to use a combination of already existing internal Volvo framework it will be easier for others within the organization to use the same framework with some adaptations.

Moreover, dependability refers to the extent to which the findings and conclusions of a study are consistent and reliable over time and across different contexts (Bell et al., 2019). Dependability includes the ability in which others can follow and reflect on the research process, in order to ensure that the findings are based on sound data and analysis. Furthermore, Bell et al. (2019) explains that it is impossible to act fully objective when conducting research. Confirmability helps to ensure that the research findings are not biased and affected by personal values. In this research study, *Triangulation* was used in order to ensure trustworthiness and reliability. The concept is to use multiple sources of data such as workshops, interviews and document analysis to verify the findings (Bell et al., 2019).

3.8 Ethical Consideration

When conducting research, ethical considerations are of the utmost importance. The ethical issues should be revised continuously since they can appear at various stages of the research study (Bell et al., 2019). By being aware of ethical issues and taking consideration to them, the integrity of the study will be protected, which is the aim of this chapter and ethics in research.

There are four major ethical principles: *avoidance of harm, informed consent, protection of privacy through confidentiality,* and *preventing deception* (Bell et al., 2019). The first principal regards assessing and reducing harm to participants as much as possible. Since this is a qualitative study, based on a small sample group it can be challenging to maintain anonymity and confidentiality. However, the researchers have managed the data in a careful way in order to minimize the risk of victimization. Furthermore, since the main data collection method has been workshops, the information would be spread through the team and openly discussed. During interviews the researchers kept the information as anonymous and confidential as possible, by not disclosing any names.

The second ethical principle, *informed consent*, is about providing the participants with enough information regarding the research for them to make an informed and voluntary decision regarding their participation in the study (Bell et al., 2019). This research, its aim and execution has been transparent towards the participants and there was consent from everyone. Furthermore, the participants were aware that they could take their consent back if they wish. This applied especially during interviews, where information could be more personal and result in harm if not respected. When recordings or pictures were taken the researchers asked for consent from the respondent-/s.

The third principle, *protection of privacy through confidentiality*, is about protecting the participants' privacy (Bell et al., 2019). To consider this ethical issue the researchers were clear about the participants' option to skip a question that they did not want to answer. Finally, *preventing deception* concerns portraying the research for what it is and therefore not deceit. Due to the nature of the

research, there was no reason to deceit the participants and transparency was maintained throughout the study.

4. Development of Competence Framework

This chapter presents the results of the study conducted to address the aim of the research. It begins by presenting different competence frameworks used internally at Volvo Group, followed by a section that describes the mapping of the current competences for the PM and QC role. The next section regards the vision for the future state and concludes by presenting the final framework that merges the previous sections.

4.1 Internal Volvo Group Competence Frameworks

An interview was conducted with an HR representative who had experience working with competences. The purpose of the interview was to gain insight into different internal frameworks for mapping competences. During the interview, the HR representative presented two options that were used at Volvo Group.

The first framework, called Personas, involved creating fictional characters with various competences and attributes. The aim of this framework is to develop a vision for employees based on the competences of these fictional characters. Furthermore, the interviewee emphasized the importance of the team's collective competences, rather than individual knowledge. However, the HR representative also raised a concern about the ability to measure competences using this framework, as it is currently being developed and adjusted. Therefore, it is not currently possible to fully map and rank competences using the Personas framework. Moreover, the HR representative stressed how a competence framework is useless if it does not lead to actions. Therefore, any competence framework used by an organization must result in concrete actions that can be taken to improve the competences of the employees.

The second framework was an Excel Sheet with competences listed and organized into different categories. The employees were able to assess themselves using this framework, based on a ranking

system. According to the HR representative, this type of framework is concrete, as it allows for a comprehensive overview of all employees' competences and their respective levels.

Two additional interviews were conducted with employees who had relevant experience of competence frameworks. The first interview was with a manager from the department of Dealer Inventory Management (DIM) at SML who had implemented Personas in their team, while the second interview was with an IT Chapter Lead from Volvo Group.

During the interview with the manager, a similar explanation of Personas to what had been presented by the HR representative was given. However, the manager also emphasized the potential benefits of using Personas to a greater extent, highlighting the possibility of using it on a regional level in a more generic manner. The manager's vision was to create a more comprehensive and consistent approach to the use of Personas across different teams and departments. Moreover, the manager emphasized how Personas also included the importance of creating a work environment that inspires employees to have a strong desire and willingness to learn.

During the interview with the IT Chapter Lead, they introduced a framework similar to the Excel Sheet presented by the HR representative, but with the addition of a spider web diagram. The IT Chapter Lead explained that the Spider Web framework provides a clear and visual mapping of employees' current competences. Furthermore, the framework enables the identification of areas that require improvement and ensures that appropriate competences exist in a good way.

4.2 Mapping of the Current Competences

During the first part of the *Current & Future Competences* workshops the current competences for the PMs and QCs were collected. The results of these workshops are presented in *Table 2* for the PMs and *Table 3* for the QCs. During the workshops the employees created a list of the current competences and then categorized them into different groups with the researchers providing inspiration on ways to cluster and create generic headings. As a result, both groups ended up with similar groupings on their

competences. For the PMs, the resulting headlines were *General Skills, Core Skills, Domain Knowledge, Leadership Skills,* and *Methods & Tools,* whilst for the QCs, they were *General Skills, Core Skills, Domain Knowledge,* and *Methods & Tools.*

In the *Fine Tune & Clarifying Competences* workshops, the employees provided definitions and explanations for the headings and competences. The team manager highlighted the significance of defining and concretizing the competences and headlines to establish a shared and comprehensive understanding among all current and future employees, thus ensuring consistent interpretation. This is especially crucial as the framework relies on self-assessment.

Categories	Competences	Definitions
General Skills *refers to general skills used in the role*	**VPS Mindset**	Having a Volvo Production System mindset includes having a focus on problem solving and root cause analysis. Understand why things are happening and find solutions. This skill is based on the number and quality of the initiatives.
	Stakeholder Management	Managing relationships with different stakeholders with different interests in the organization and handling conflicts when they arise.
	PM Methodology	Includes general methodologies such as waterfall, agile and hybrid methods.
Core Skills *refers to skills that are essential for the role in order to perform*	**Planning Skills**	The ability to organize and manage time, resources and tasks to achieve goals. This involves the capacity to plan both short term and long term, create realistic timelines and deliver on deadlines. This requires a level of organization and structure.
	Adaptability	Adaptability refers to the ability to adjust to new and changing circumstances, especially in situations that are volatile, uncertain, complex, and ambiguous (VUCA). This involves being able to quickly understand and make sense of new information, respond flexibly to changing conditions, and remain productive and effective even in the face of uncertainty and ambiguity.
	Risk Management	The process of identifying, assessing and prioritizing risks or uncertainties that may affect a project. It involves developing strategies to mitigate or avoid risks and implementing measures to monitor and control.
	Networking	The ability to build and maintain relationships with stakeholders, team members and other relevant parties that are involved in the project.

	Communication	The ability to effectively convey information, ideas and expectations to project stakeholders, team members and other relevant parties. This involves using different ways of communication, such as verbal, written and nonverbal.
Leadership Skills *refers to skills that enable individuals to effectively manage and lead others*	**Prioritization Skills**	The ability to assess tasks or projects and determine their relative importance or urgency, in order to allocate time and resources effectively. This includes setting priorities for both projects and deliveries and the ability to manage the competing demands.
	General Leadership Skills	General leadership skills involve the ability to inspire and motivate others to achieve common goals, while ensuring accountability for performance and results. This includes setting a clear vision for the organization or team, communicating that vision effectively, and providing guidance and support to team members.
Domain Knowledge *refers to specific knowledge or expertise regarding Volvo Group*	**Process Knowledge**	The understanding of how the organization works including its structure, workflows and dependencies. It involves knowledge of who performs specific tasks and how they are connected and might affect the role. This includes knowledge about mainly SML but also AMT and GTP.
	Product Offering Knowledge	Information regarding existing and new products.
	Supply Chain Management	Knowledge of the links of the supply chain (ex. material planning, back order management etc) and how these links are interconnected.
Methods & Tools *refers to techniques and technologies needed for the role*	**VPS Toolbox**	Ability to use tools related to Volvo Production Systems (VPS)
	Microsoft Office:	-
	Excel	Ability to use Excel
	Word	Ability to use Word
	PowerPoint	Ability to use PowerPoint
	System Knowledge:	-
	Rhelp	Ability to use Rhelp
	Spot	Ability to use Spot
	Glops	Ability to use Glops
	Kola	Ability to use Kola
	Jira	Ability to use Jira
	Data Storytelling:	-
	Power BI	Ability to use Power BI for data mining, analysis and visualization

Table 2. Mapping of the PMs' Competences.

Categories	Competences	Definitions
General Skills *refers to general skills used in the role*	**Adaptability**	Refers to the ability to adjust to new and changing circumstances. This involves being able to quickly understand and make sense of new information and respond flexibly to changing conditions.
	Stakeholder Management	Managing relationships with different stakeholders with different interests in the organization and handling conflicts when they arise.
	Problem Solving Skills	Refer to an individual's ability to identify, analyze, and resolve problems in a creative and effective manner. It involves a combination of analytical, critical thinking, and decision-making skills.
	VPS Mindset	Having a Volvo Production System mindset includes having a focus on problem solving and root cause analysis. Understand why things are happening and find solutions. This skill is based on the number and quality of the initiatives.
Core Skills *refers to skills that are essential for the role in order to perform*	**Coordination Skills**	Refer to the ability to manage and organize multiple tasks, people and resources to achieve a common goal. This involves abilities such as time management, organization, prioritization, communication and collaboration.
	Networking	The ability to build and maintain relationships with stakeholders, team members and other relevant parties that are involved in the project.
	System Knowledge:	-
	Business Object	Ability to use Business Object
	Rhelp	Ability to use Rhelp
	GPS	Ability to use GPS
	QRAFT	Ability to use QRAFT
	UCHP	Ability to use UCHP
	XTR	Ability to use XTR
	Excel	Ability to use Excel

Domain knowledge *refers to specific knowledge or expertise regarding Volvo Group*	**Organizational Knowledge**	The understanding of how the organization works including its structure, workflows and dependencies. It involves knowledge of who performs specific tasks and how they are connected and might affect the role.
	Supply Chain Management	Knowledge of the links of the supply chain (ex. material planning, back order management etc) and how these links are interconnected.
Methods & Tools *refers to techniques and technologies needed for the role*	**Power BI**	Ability to use Power BI
	Python	Ability to use Python
	Qlikview	Ability to use Qlikview
	SQL	Ability to use SQL
	VBA Macro Script	Ability to use VBA Macro Script

Table 3. Mapping of the QCs' Competences.

4.3 Vision for the Future State

During the course of interviews with PMs, it was revealed that their work performance was impacted by insufficient levels of certain competences. This, in turn, created a dependency on colleagues from other departments. Additionally, the team manager highlighted the necessity of staying up to date on the constantly evolving automotive industry, in order to maintain competitiveness. Consequently, it is essential to identify the areas where development resources should be allocated.

The purpose of the second part of the *Current & Future Competences* workshops was to understand and identify if there were more competences needed for the future, beyond those the employees currently possessed. The workshops concentrated not only on recognizing lacking competences but also on predicting potential industry trends that may affect the team's work. The workshop discussions revealed that the employees did not require entirely new competences, but rather improvements to the existing competences. The competences that were deemed important to improve for the future are found in *Table 4*.

Improvement Areas (PMs)
Stakeholder Management
PM Methodology
Adaptability
Risk Management
Process Knowledge
Product Offering Knowledge
All competences within the category of Methods & Tools
Improvement Areas (QCs)
Adaptability
Coordination Skills
Networking
All System Knowledge competences
Organizational Knowledge

Table 4. Improvement areas for the future state.

In order to develop a vision for the future state, the two roles ranked the competences needed for the future together with the team manager. This was conducted during the *Set Future Vision* workshops where the employees of the two roles together with the team manager used the NIH Proficiency Scale to rank each competence from 1-5 depending on the level of competence needed in the future. As mentioned earlier, the workshops revealed that the team did not require new competences to meet the changing demand. Instead, there is a need for a higher level of expertise in the existing ones. The final rankings of the competences for the PMs and QCs are presented in the green column in *Table 5* and *Table 6*, respectively. The tables provide a comprehensive overview of the desired competences for the two roles in the future. The ranking will be used as guidance for the roles, clarifying which competences they need to focus on in order to reach the level of competences for the future vision.

Competences	Definitions	Ranking: 1-5
		Future
VPS Mindset	Having a Volvo Production System mindset includes having a focus on problem solving and root cause analysis. Understand why things are happening and find solutions. This skill is based on the number and quality of the initiatives.	**4**
Stakeholder Management	Managing relationships with different stakeholders with different interests in the organization and handling conflicts when they arise.	**4**
PM Methodology	Includes general methodologies such as waterfall, agile and hybrid methods.	**3**
Planning Skills	The ability to organize and manage time, resources and tasks to achieve goals. This involves the capacity to plan both short term and long term, create realistic timelines and deliver on deadlines. This requires a level of organization and structure.	**4**
Adaptability	Adaptability refers to the ability to adjust to new and changing circumstances, especially in situations that are volatile, uncertain, complex, and ambiguous (VUCA). This involves being able to quickly understand and make sense of new information, respond flexibly to changing conditions, and remain productive and effective even in the face of uncertainty and ambiguity.	**4**
Risk Management	The process of identifying, assessing and prioritizing risks or uncertainties that may affect a project. It involves developing strategies to mitigate or avoid risks and implementing measures to monitor and control.	**4**
Networking	The ability to build and maintain relationships with stakeholders, team members and other relevant parties that are involved in the project.	**4**
Communication	The ability to effectively convey information, ideas and expectations to project stakeholders, team members and other relevant parties. This involves using different ways of communication, such as verbal, written and nonverbal.	**5**
Prioritization Skills	The ability to assess tasks or projects and determine their relative importance or urgency, in order to allocate time and resources effectively. This includes setting priorities for both projects and deliveries and the ability to manage the competing demands.	**4**
General Leadership Skills	General leadership skills involve the ability to inspire and motivate others to achieve common goals, while ensuring accountability for performance and results. This includes setting a clear vision for the organization or team, communicating that vision effectively, and providing guidance and support to team members.	**3**
Process Knowledge	The understanding of how the organization works including its structure, workflows and dependencies. It involves knowledge of who performs specific tasks and how they are connected and might affect the role. This includes knowledge about mainly SML but also AMT and GTP.	**3**
Product Offering Knowledge	Information regarding existing and new products.	**3**

Supply Chain Management	Knowledge of the links of the supply chain (ex. material planning, back order management etc) and how these links are interconnected.	**5**
VPS Toolbox	Ability to use tools related to Volvo Production Systems (VPS)	**3**
Microsoft Office:	-	**-**
Excel	Ability to use Excel	**3**
Word	Ability to use Word	**3**
PowerPoint	Ability to use PowerPoint	**3**
System Knowledge:	-	**-**
Rhelp	Ability to use Rhelp	**2**
Spot	Ability to use Spot	**3**
Glops	Ability to use Glops	**1**
Kola	Ability to use Kola	**1**
Jira	Ability to use Jira	**3**
Data Storytelling:	-	**-**
Power BI	Ability to use Power BI for data mining, analysis and visualization	**4**

Table 5. Future ranking for the PMs.

Categories	Competences	Definitions	Ranking: 1-5
			Future
General Skills *refers to general skills used in the role*	**Adaptability**	Refers to the ability to adjust to new and changing circumstances. This involves being able to quickly understand and make sense of new information and respond flexibly to changing conditions.	**4**
	Stakeholder Management	Managing relationships with different stakeholders with different interests in the organization and handling conflicts when they arise.	**3**
	Problem Solving Skills	Refer to an individual's ability to identify, analyze, and resolve problems in a creative and effective manner. It involves a combination of analytical, critical thinking, and decision-making skills.	**3**
	VPS Mindset	Having a Volvo Production System mindset includes having a focus on problem solving and root cause analysis. Understand why things are happening and find solutions. This skill is based on the number and quality of the initiatives.	**3**

Core Skills *refers to skills that are essential for the role in order to perform*	**Coordination Skills**	Refer to the ability to manage and organize multiple tasks, people and resources to achieve a common goal. This involves abilities such as time management, organization, prioritization, communication and collaboration.	**4**
	Networking	The ability to build and maintain relationships with stakeholders, team members and other relevant parties that are involved in the project.	**3**
	System Knowledge:	-	-
	Business Object	Ability to use Business Object	**4**
	Rhelp	Ability to use Rhelp	**4**
	GPS	Ability to use GPS	**3**
	QRAFT	Ability to use QRAFT	**3**
	UCHP	Ability to use UCHP	**4**
	XTR	Ability to use XTR	**4**
	Excel	Ability to use Excel	**4**
Domain knowledge *refers to specific knowledge or expertise regarding Volvo Group*	**Organizational Knowledge**	The understanding of how the organization works including its structure, workflows and dependencies. It involves knowledge of who performs specific tasks and how they are connected and might affect the role.	**3**
	Supply Chain Management	Knowledge of the links of the supply chain (ex. material planning, back order management etc) and how these links are interconnected.	**3**
Methods & Tools *refers to techniques and technologies needed for the role*	**Power BI**	Ability to use Power BI	**4**
	Python	Ability to use Python	**3**
	Qlikview	Ability to use Qlikview	**3**
	SQL	Ability to use SQL	**3**
	VBA Macro Script	Ability to use VBA Macro Script	**3**

Table 6. Future ranking for the QCs.

4.4 Final Framework

A competence framework was developed based on interviews and internal benchmarking at Volvo Group. The framework is a combination of the Excel Sheet and Spider Web framework discussed during the interviews and has inspiration from the Personas framework. The team manager highlighted the lack of understanding regarding the competences of the two studied roles, making it difficult to prioritize and develop them. To address this, a structured, concrete and visual framework is necessary which is provided by the Excel Sheet and Spider Web framework. Nevertheless, the Personas framework provides a vision for the future state and the mindset that will permeate the developed framework. The mindset revolves around understanding that every employee within the roles does not necessarily have to possess the same level of competence. Instead, it is important to recognize the skills and competences that each individual brings to the group, with a focus on ensuring that the collective group possesses the required competences. This is embedded in the final framework in the form of different ways to rank the different competences on a role level, which will further be explained later in this section. This has resulted in a comprehensive framework shown below in *Figure 8* and *Figure 9*.

Logistics Product Project Managers				
Categories	**Competences**	**Definitions**	**Ranking: 1-5**	
			Current	**Future**
General Skills *refers to general skills need in the role*	**VPS Mindset**	Having a Volvo Production System mindset includes having a focus on problem solving and root cause analysis. Understand why things are happening and find solutions. This skill is based on the number and quality of the initiatives.	1	4
	Stakeholder Management	Managing relationships with different stakeholders with different interests in the organization and handling conflicts when they arise.	1	4
	PM Methodology	Includes general methodologies such as waterfall, agile and hybrid methods.	1	3
Core Skills *refers to skills that are essential for the role in order to perform*	**Planning Skills**	The ability to organize and manage time, resources and tasks to achieve goals. This involves the capacity to plan both short-term and long-term, create realistic timelines and deliver on deadlines. This requires a level of organization and structure.	1	4
	Adaptability	Adaptability refers to the ability to adjust to new and changing circumstances, especially in situations that are volatile, uncertain, complex, and ambiguous (VUCA). This involves being able to quickly understand and make sense of new information, respond flexibly to changing conditions, and remain productive and effective even in the face of uncertainty and ambiguity.	1	4
	Risk Management	The process of identifying, assessing and prioritizing risks or uncertainties that may affect a project. It involves developing strategies to mitigate or avoid risks and implementing measures to monitor and control.	1	4
	Networking	The ability to build and maintain relationships with stakeholders, team members and other relevant parties that are involved in the project.	1	4
	Communication	The ability to effectively convey information, ideas and expectations to project stakeholders, team members and other relevant parties. This involves using different ways of communication, such as verbal, written and nonverbal.	1	5
Leadership Skills *refers to skills that enable individuals to effectively manage and lead others*	**Prioritization Skills**	The ability to assess tasks or projects and determine their relative importance or urgency, in order to allocate time and resources effectively. This includes setting priorities for both projects and deliveries and the ability to manage the competing demands.	1	4
	General Leadership Skills	General leadership skills involve the ability to inspire and motivate others to achieve common goals, while ensuring accountability for performance and results. This includes setting a clear vision for the organization or team, communicating that vision effectively, and providing guidance and support to team members.	1	3
Domain Knowledge *refers to specific knowledge or expertise regarding V'olvo Group*	**Process Knowledge**	The understanding of how the organization works including its structure, workflows and dependencies. It involves knowledge of who performs specific tasks and how they are connected and might affect the role. This includes knowledge about main's SML but also AMT and GTP.	1	3
	Product Offering Knowledge	Information regarding existing and new products.	1	3
	Supply Chain Management	Knowledge of the links of the supply chain (ex. material planning, back order management etc) and how these links are interconnected.	1	5
Methods & Tools *refers to techniques and technologies needed for the role*	**VPS Toolbox**	Ability to use tools related to Volvo Production Systems (VPS)	1	3
	Microsoft Office:	-	-	-
	Excel	Ability to use Excel	1	3
	Word	Ability to use Word	1	3
	PowerPoint	Ability to use PowerPoint	1	3
	System Knowledge:	-	-	-
	Risslp	Ability to use Risslp	1	2
	Spot	Ability to use Spot	1	3
	Glops	Ability to use Glops	1	1
	Kola	Ability to use Kola	1	1
	Jira	Ability to use Jira	1	3
	Data Storytelling:	-	-	-
	Power BI	Ability to use Power BI for data mining, analysis and visualization	1	4

Ranking on role level is based on: **Mean**: (Example: (1+2+3) /3 = 2) **Highest Ranking**: (Example: 1, 2, 3 – 3)
Mean
Mean
Mean
Mean
Mean
Mean
Mean
Mean
Mean
Mean
Highest Ranking
Mean
-
Mean
Mean
Mean
-
Mean
Mean
Mean
Mean
-
Highest Ranking

Figure 8. Final competence framework for the PM role.

QJ & Quality Campaign Coordinators				
Categories	**Competences**	**Definitions**	**Ranking: 1-5**	
			Current	**Future**
General Skills *refers to general skills used in the role*	**Adaptability**	Refers to the ability to adjust to new and changing circumstances. This involves being able to quickly understand and make sense of new information and respond flexibly to changing conditions.	1	4
	Stakeholder Management	Managing relationships with different stakeholders with different interests in the organization and handling conflicts when they arise.	1	3
	Problem Solving Skills	Refer to an individual's ability to identify, analyze, and resolve problems in a creative and effective manner. It involves a combination of analytical, critical thinking, and decision-making skills.	1	3
Core Skills *refers to skills that are essential for the role in order to perform*	**VPS Mindset**	Having a Volvo Production System mindset includes having a focus on problem solving and root cause analysis. Understand why things are happening and find solutions. This skill is based on the number and quality of the initiatives.	1	3
	Coordination Skills	Refer to the ability to manage and organize multiple tasks, people and resources to achieve a common goal. This involves abilities such as time management, organization, prioritization, communication and collaboration.	1	4
	Networking	The ability to build and maintain relationships with stakeholders, team members and other relevant parties that are involved in the project	1	3
	System Knowledge:	-	-	-
	Business Object	Ability to use Business Object	1	4
	Rhelp	Ability to use Rhelp	1	4
	GPS	Ability to use GPS	1	3
	QRAFT	Ability to use QRAFT	1	3
	UCHP	Ability to use UCHP	1	4
	XTR	Ability to use XTR	1	4
	Excel	Ability to use Excel	1	4
Domain knowledge *refers to specific knowledge or expertise regarding Volvo Group*	**Organizational Knowledge**	The understanding of how the organization works including its structure, workflows and dependencies. It involves knowledge of who performs specific tasks and how they are connected and might affect the role.	1	3
	Supply Chain Management	Knowledge of the links of the supply chain (ex. material planning, back order management etc) and how these links are interconnected	1	3
Methods & Tools *refers to techniques and technologies needed for the role*	**Power BI**	Ability to use PowerBi	1	4
	Python	Ability to use Python	1	3
	Qlikview	Ability to use Qlikview	1	3
	SQL	Ability to use SQL	1	3
	VBA Macro Script	Ability to use VBA Macro Script	1	3

Ranking on role level is based on:
Mean: (Example: (1+2+3)/ 3 = **2**)
Highest Ranking: (Example: 1, 2, 3 = **3**)
Mean
Mean
Mean
Mean
Mean
Mean
-
Highest Ranking
Mean
Mean
Highest Ranking
Mean
Highest Ranking
Highest Ranking
Highest Ranking
Highest Ranking
Highest Ranking
Mean
Mean
Highest Ranking
Highest Ranking
Highest Ranking
Highest Ranking
Highest Ranking

Figure 9. Final competence framework for the QC role.

The framework consists of various competences that are divided into different categories, as described in section 4.2. Furthermore, it consists of two columns, one blue and one green. The blue one assesses the level of the current competences, whilst the green column provides a vision for the future state. The assessment for the future state was conducted during the *Set Future Vision* workshops, as explained in section 4.3. Furthermore, the study does not include the assessment of the current competences. However, when ranking the current competences, it will be based on self-assessment and discussions with the team manager. The team managers discussion will ensure that the ranking of the employees is not biased and is conducted with the same premises for everyone. Currently, all the current competences are ranked with the value of 1 in the framework above to illustrate how the level of the current competences relate to the level for the future vision. These values of both current and future competences are visualized in the spider web diagram, where the blue area represents the current level of competences, and the green line represents the future vision. The spider web diagram serves as a visual aid to illustrate the levels of both the current and future competences. It makes it easier to identify competences that require improvement and provides an overview of all competences and their corresponding level. This facilitates the process of allocating resources in a more effective manner, allowing for the development of competences that will meet future demands.

When applying the framework to evaluate the level of the current competences, the employees will rank themselves from 1-5 using the NIH Proficiency Scale. The calculations of the competences on a role level will vary depending on the competence, as mentioned in the beginning of this section. During the *Set Future Vision* workshops conducted with the team manager and employees within the specific roles, it was decided that some of the skills will be evaluated by the *mean* level of the employees' competences, whilst other competences will be assessed based on the *highest ranking*. This can be seen in the yellow column on the right in *Figure 8* and *Figure 9*. The reason for using a *mean* to calculate the level of competence on a role level is because the competence is required for each of the employees at a certain level. However, assessment on a role level with the *highest ranking* entails that it is a competence that is not necessary for every employee to possess on the same level. In such cases, it is sufficient for

only one person in the group to have the required level of competence, whom the other employees can consult when needed.

Due to personal information regarding the individual employees' competences, the framework will be handled by the manager. The individual competences will be input for the ranking of the competences on a role level. The individual sheet will be evaluated by self-assessment followed by a discussion together with the team manager to ensure that the evaluation is not biased and is ranked with the same premises for all employees, as outlined above. The framework will allow for the ranking of the current competences in a clear way. Furthermore, it shows the relation of the current and future state which will be used to identify improvement areas to bridge the gap between the two states.

5. Discussion

In this chapter the results from the study and the literature will be discussed and analyzed. This chapter comprises two sections, where the first section focuses on the developed competence framework, and the second section discusses strategies to bridge the gap between the current and future state.

5.1 Evaluation of the Competence Framework

The Product Projects & Quality team are currently lacking a clear understanding of their competences due to the newness of the team. This makes it challenging to gain an overview of the current situation and identify areas to focus on in the future. The risk of not having a clear view of the competences is that the team can struggle in identifying and meeting future demand and adapt to the changing business environment. Palan (2007), Škrinjarić (2022) and Sultana (2009) explain how a competence framework can be used to enable management of competences in a visual, structured and systematic way. Furthermore, Kuruba (2019) highlights the importance of managing competences to ensure that they align with organizational goals.

With the developed framework consisting of a mapping of the current competences and a vision for a future state, it will make it easier to identify competence gaps. However, as stated by the HR employee during an interview "*a framework is useless if it does not lead to action*". In the discussions in this chapter, it is important to acknowledge that a competence framework does many things, such as visualize competences, identify improvement areas and monitor development (Kuruba, 2019; Palan, 2007; Škrinjarić, 2022; Sultana, 2009). However, what it does not do is the actual development work. Hence, a competence framework provides a foundation for understanding and sheds light on the situation, but in the end, it is up to the users to create value through the framework.

To ensure that the competence framework actually helps to take action, it needs to be easy to use, applicable and consistently used. However, a challenge with competence frameworks is that they must be measurable in order to be effective (Kuruba, 2019). To achieve this, the competences need to be

well-defined and easy to understand. Therefore, the headings, competences and measurement scale were clearly defined and discussed together with the employees to establish a common interpretation (Crossan et al., 1999). By defining all the parts of the competence frameworks as well as providing a clear definition of the different levels in the measurement scale, it enables employees to assess their competences through self-assessment, as explained by Glass and Metternich (2020). Furthermore, Glass and Metternich (2020) highlights how competences can be assessed by observing employees' actions and knowledge. Therefore, to make the framework as correct and reliable as possible, the team manager, who has insights into the employees' level of competence through observations, holds meetings to discuss the self-assessment conducted by the employees. This by providing feedback on the assessment and ensuring that the employees are assessed in the same way.

The increasing importance of sustainability has led to new demands and requirements for businesses and can be seen in the automotive industry (PwC, 2023; Rafi, 2021). In order to remain relevant and meet the changing demands organizations need to integrate sustainability in their businesses (Wellbrock et al., 2020). With the competence framework, the two roles in the Product Projects & Quality team will have an overview of their competences and the level of it. By using the competence framework, Volvo Group can ensure that their employees have the necessary knowledge and skills to integrate sustainability into their business operations. Furthermore, by continuously working with the framework Volvo Group can quickly identify and adapt to areas that need improvement in order to keep up with the fast-changing demands of sustainability trends.

Involving the employees in the development of the competence framework can lead to an increased motivation and ownership of the outcomes. This can be linked to Hackman and Oldham's motivation model (1976), which suggests that providing *autonomy* in a task can lead to greater responsibility for the outcomes. By involving employees in the creation of the framework and giving them freedom in the development of it, they are more likely to be motivated to ensure its successful implementation. The increased motivation can then lead to a stronger connection to the outcomes which could encourage a consistent use of the framework (Hackman & Oldham, 1976). Furthermore, Hackman

and Oldham (1976) argue that involving employees in the process from beginning to end can result in greater responsibility for the outcomes.

The competence framework developed in this study is based on a combination of two internal frameworks, the Excel Sheet and the Spider Web, and draws inspiration from the Personas framework. While the existing frameworks at Volvo Group have their merits, they are lacking in certain aspects. For instance, the Personas framework is useful for creating visions and goals, as stated during interviews, but is not suitable for monitoring and following up on competences due to its lack of measurability (Kuruba, 2019). Nevertheless, the framework does provide inspiration by emphasizing the importance of organizational culture and motivation in fostering a learning environment, which is discussed further in the following section.

Therefore, a combination of the frameworks was applied. Since the frameworks are internal, other departments within Volvo Group are already accustomed with parts of the developed framework. The framework can therefore be more easily implemented to those parts of the organization. However, there may be a need to make some modifications to the headings, competences, and descriptions to ensure that they are relevant and applicable to the specific team or department. The reason for the required adaptation is due to the fact that the data has been collected through the individual employees within the two specific roles, making the results tailored to the roles and therefore difficult to directly transfer to other contexts.

However, the developed framework can still provide valuable contributions in context beyond Volvo Group. The provision of structure, visibility and the ability to assess competence gaps makes the framework useful in various settings. Nevertheless, adaptations of the framework's content will be necessary to be applicable to other contexts.

5.1.1 Improvement Areas of the Competence Framework

While the developed competence framework provides valuable insight into the current and future competences for the two roles, there are some limitations to address. One potential criticism of the developed framework is based on the calculations of the rankings at a role level. Currently, the framework relies on either the *mean* or *highest ranking* to determine the level of competences at the role level. However, using the highest level of a single person to rank the roles' competences can limit the framework's usefulness. Relying on a single employee's competences can be riskful for the organization if the employee chooses to leave, since this would result in a loss of that competence for the group and organization. Therefore, it could be beneficial to investigate if more than one person should be considered when calculating the competences using the highest level, an example could be to use the mean of the two employees with highest level.

This can be connected to Crossan et al. (1999) that explain learning as a dynamic process at three levels: individual, group and organizational. In order to mitigate the risk of losing competences, Crossan et al.'s (1999) theory can be used to argue for the value of transferring competences from an individual- to a group- or organizational level. This can be conducted by integrating the competences of an employee at an organizational level in the form of system, structures and routines (Crossan et al., 1999). As a result, the organization is not dependent on specific individual employees since their competences exist even if the employee leaves. Another approach to consider could be to include a lower limit for the individual competences in the framework. This approach would ensure that even if not everyone has the highest competence ranking, the role's competence level would not suffer significantly if the highest-ranking individual were to leave.

Another potential critique of the developed framework is its exclusion of competences that are not easily defined. As mentioned earlier, a challenge with a competence framework is that it needs to be well defined in order to be effective. For instance, the framework in this study does not include *competency* as defined by Palan (2007, p. 8) as "*underlying characteristics of an individual that is*

causally related to criterion referenced effective and/or superior performance in a job or situation". As competency is often associated with superior performance and behavioral areas (Janjua et al., 2012; Kuruba, 2019; Palan, 2007), it is worth exploring how to incorporate it into the framework without compromising the applicability of the framework. Despite this, the currently developed framework is still a valuable tool for assessing employees' competences and could with adaptations be applied in other teams and departments in the organization.

5.2 Bridging the Gap Between the Current and Future State

As discussed in the previous section, a competence framework does not develop the competences of the individuals but instead creates an understanding regarding which competences to focus on. However, to actually develop and improve the competences of the two roles, it is important to acknowledge that there are several aspects affecting the potential of improvement. These aspects regard the learning environment, learning strategies and factors that affect learning. By discussing these factors, insight can be gained in how to create optimal conditions to promote learning and hence, competence development for the two roles. Furthermore, since this study does not include the ranking of the current competences, the discussion will be based on general competence development rather than development of specific competences.

Armanious and Padgett (2021) argue that agility is useful for reacting to rapid changes in the business environment. The reason is that agility enables organizations to quickly respond and adapt to unpredictable changes (Armanious & Padgett, 2021). However, an organization's ability to achieve agility depends not only on employees' ability to identify changes and trends, but also on their competences and capability to learn and develop (Armanious & Padgett, 2021; Van Assen, 2000). The findings from the workshop *Set Future Vision* revealed that both the PMs and QCs ranked adaptability highly with a future ranking of 4. This indicates an understanding of the importance and prioritization of the ability to adapt, to be agile. Nevertheless, achieving agility requires an environment that promotes learning and developing, which aligns with the principles of learning organizations.

Similarly, Sarder (2016) highlights the importance of becoming a learning organization. In order for the employees within the two roles to develop their competences and bridge the gap between the current and future state it is important that the organization provides the employees with resources and the opportunities to learn (Sarder, 2016). This can be done in the form of providing relevant training and education which can be identified through the competence framework. Another criterion for learning is to create an environment where employees feel comfortable making mistakes and using them as learning opportunities (Argyris, 1991). This highlights the importance of Volvo Group establishing an organizational culture that promotes learning and allows mistakes to be made. When employees feel comfortable making mistakes without fear of embarrassment or threat, they are more likely to reflect on their actions and use their experiences to learn and develop (Argyris, 1991). Argyris (1991) explains this as Double-loop learning where the employees are reflecting on the underlying assumptions and correcting errors based on the feedback. On the other hand, in organizations that do not accept mistakes, employees may be afraid of taking risks and embrace challenges which can in turn affect their development and growth (Argyris, 1991).

From Crossan et al. (1999) learning is explained as a dynamic process with different levels: individual, group and organizational. Crossan et al. (1999) describes that learning can be transferred from individual- to group level through knowledge sharing among the group. This could be seen as another learning strategy to develop competences and it is based on the idea that people can learn from each other. This is further emphasized by Sarder (2016) that highlights that learning can be gained through interactions and experiences. For Volvo Group, this means that it might not be necessary for all the employees to take the same training and education to develop competences. Instead, a single employee from the group could receive training in a specific competence which could then be shared with the rest of the group. This approach could allow the group to benefit from the expertise of a single individual and save time and resources that would otherwise be needed for all members of the group to receive the same training. The same argument exists for the competences that already exist within specific individuals in the group, as sharing their knowledge with others can further enhance the group's overall competence level.

Organizational culture is crucial for an organization's ability to develop competences and create a learning environment (López et al., 2004). A positive organizational culture that takes into consideration social aspects can improve learning, innovation and promotes organizational learning (Sanz-Valle et al., 2011). Furthermore, organizations that encourage a culture that sees mistakes as opportunities for learning and having employees that support each other can facilitate organizations' ability to sustain competitive advantages (Argyris, 1991; López et al., 2004). This is due to the fact that culture and social aspects are difficult for competitors to copy and can therefore be a source of competitive advantage for the organization (Lismen et al., 2007; López et al., 2004).

Furthermore, Hackman and Oldham (1976) highlights how motivation is essential for effective learning. Employees who are motivated and driven to learn tend to perform better (Hackman & Oldham, 1976). Based on Hackman and Oldham's (1976) model for motivation, there are certain characteristics and states that affect employees' level of motivation. With the use of the developed framework in this study, it can help to increase the employees' motivation.

Firstly, by having an understanding regarding one's individual competences employees gain an overview of their competences. This can create motivation since they know what competences to focus on that are relevant and meaningful for the future of their role. According to Hackman and Oldham's (1976) model for motivation this can be related to *task significance* since the employees can ensure that their time and efforts are invested effectively, creating meaningfulness in the development work. This contributes to *experienced meaningfulness of the work* which affects the internal work motivation. In contrast, irrelevant training and education can decrease motivation as it is not meaningful for their development or job.

Following, the framework can contribute to the *experienced responsibility for work outcomes* by providing *autonomy* through the framework. By having an overview of their individual competences, development areas, progress, and a clear vision to strive towards, employees can take initiative and

responsibility for their own development work. In line with Hackman and Oldham's (1976) motivation model, this contributes to an increased motivation since they have a greater sense of purpose and control over their own growth. When employees feel more motivated and take responsibility for their work, they tend to become more engaged which often results in better performance (Hackman & Oldham, 1976).

Furthermore, *feedback* leads to *knowledge of the actual results of the work activities* which can be gained using the framework (Hackman & Oldham, 1976). The feedback provided by the framework can help employees to identify areas where they need to improve and give them guidance on what to focus on in order to achieve their goals. When employees consistently use the framework to monitor their progress and receive feedback, they can see how their efforts contribute to bridging the gaps between the current and future state. The tangible evidence of progress can contribute to an increased motivation since employees are able to see the impact of their efforts.

To summarize, even though motivation is important to foster learning, Argyris (1991) highlights that it is not the biggest barrier to learning. Rather it is the fear of making mistakes, as mentioned earlier. Hence, it is not enough to enhance motivation, organizations also need to secure an organizational culture that promotes learning through feedback and letting them critically think of the organization's structures and assumptions. Furthermore, this is in line with what the manager of DIM stressed during an interview, namely that motivation and culture are the foundation of a functioning competence development since learning is based on these factors. Due to this, it would be beneficial for Volvo Group to investigate how the organization is currently working with these aspects to understand how to move towards becoming a learning organization where employees effectively learn and develop.

6. Conclusion

The lack of a comprehensive understanding regarding the current competences of the Product Projects & Quality team at Volvo Group hinders them from identifying which competences to prioritize for the future. This can affect their ability to meet future demand and succeed in the changing business environment. To address this, a competence framework was developed and a discussion regarding how to bridge the gap between the current and future state was provided.

The framework comprises a mapping of the current competences, providing an overview of their current status, as well as a future vision expressed through a ranking system that describes the desired future state. This enables Volvo Group to identify areas for improvement. By understanding where the competence gaps exist, the employees can actively work on bridging the gaps. The framework utilizes a spider web diagram to illustrate the current levels of competence in relation to the desired future levels. The framework, and its components, was developed and defined together with the employees of the two roles as well as the team manager during workshops. This ensures a shared understanding which is an important aspect when using self-assessment.

This framework will provide Volvo Group with knowledge to make informed decisions on which competences to focus on to reach their desired future state. Nevertheless, it is important to note that a framework is only a tool for strategic decision making and does not develop competences by itself. To bridge the gap, Volvo Group needs to create an environment that promotes learning and development. By striving towards becoming a learning organization, Volvo Group can effectively adapt to the changes in the automotive industry and develop agile competences. However, this requires promoting an organizational culture that embraces learning from mistakes and encourages knowledge sharing among employees. Additionally, enhancing employees motivation is crucial to foster employees' willingness to learn and grow.

In conclusion, the developed framework provides an overview of the current competences and a future vision. However, to actually develop the employees' competences, factors affecting learning need to be considered. By combining the framework and a culture of learning, Volvo Group can successfully adapt to the ever-changing business environment and ensure long-term success.

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