Optimizing the process of acquiring future purchasing competencies within large organizations

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ABSTRACT,
Purchasing and Supply Management (PSM) contributes to the organizational performance of large organizations. Due to external developments, which are identified by three movements: strategic, contextual and digital, the PSM function is challenged. To tackle these challenges and stay competitive, future purchasing competencies should be acquired by purchasers. Therefore, future competencies are identified in the literature, to know which competencies are essential, and a 5 step guide is developed, by interviewing purchasing experts. The guide is developed to optimize the process of implementing educational methods for acquiring future competencies. The guide focuses on defining who is responsible, indicating education needs, creating development plan(s), guiding the implementation, and measuring and evaluating the process. Using the provided steps, it is expected that large organizations can increase their maturity level and stay competitive. This research fills the gap between the current research, where the need for future purchasing competencies is addressed, and the process of acquiring those competencies.

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1. INTRODUCTION

Purchasing and Supply Management (PSM) can be considered one of the central attributes that contribute to the overall competitiveness of large organizations (Weele & Raaij, 2014, pp. 57-58). External developments, such as a new interface, sustainability and e-business, change the attributes of purchasing competencies, and as a consequence the competencies of the purchasers (Knight, Tu, & Preston, 2014, p. 271). Therefore, new competencies need to be acquired by large organizations to stay competitive during these developments (Bals, Schulze, Kelly, & Stek, 2019, p. 6). It is important to research these competencies because within PSM, competencies and soft skills, in the light of sustainability and digitalization, are seen as highly valued aspects to stay competitive (Bals et al., 2019, p. 1). Furthermore, the arrangement of purchasing activities is a key aspect in PSM for large organizations in all sectors, since it focuses on how to meet the local needs and achieve purchasing benefits that contribute to the strategic objective of organizations (Knight et al., 2014, p. 274; Tassabehji & Moorhouse, 2008, p. 56). By coordinating purchasing activities, departments can learn from each other and increase the purchasing performance (Rozemeijer, Van Weele, & Weggeman, 2003, p. 8). The research of Tassabehji and Moorhouse (2008) indicates that updating competencies of the purchasing function effectively improves the financial, operational, and strategic advance of the organization, especially with the introduction of external developments.

One of these external developments is digitalization, which is related in the literature to Industry 4.0 and will affect the purchasing function. According to Schiele and Torn (2020, pp. 507-508), Industry 4.0 is characterized by autonomous machine-to-machine communication, such as Artificial Intelligence to support purchasing. Industry 4.0 is incrementally introduced in the current work environment and therefore included in the research. According to Cimini, Adrodegari, Paschou, Rondini, and Pezzotta (2021, p. 447), digital technologies regarding these transformational processes will reshape the competitive landscape where organizations operate and will affect the working environment of PSM. Consequently, to increase the performance of purchase departments, there is a need to develop and implement new competencies in the industry. In this research, organizations are considered large if they have more than 500 employees (Ghobadian & Gallear, 1997, p. 123). In addition, the research of Bals et al. (2019, p. 11), found that future competencies can be used as input into organizational competency models or human resource systems, to research how competencies adjust to the daily work in the PSM department. In order for large organizations to stay competitive.

The research aims are, how do large organizations know which future competencies are required, and how can the process of acquiring future competencies be optimized. These aims are acquired by analyzing the current literature and interviewing six purchasing experts of large organizations. The aim of the optimization guide is to reshape the implementation process of educating future purchasing competencies, to fill the gap of the existing knowledge about the need for future competencies and the implementation of it. The reason for researching these aims is to tackle the challenges of external developments that arise in the purchasing industry, for organizations to stay competitive and become more mature.

Based on these aims, the research questions are:

1. *How do large organizations know which future competencies are required?*
2. *How to optimize the implementation process of acquiring future competencies within large organizations?*

The thesis will provide a literature review, that supports the current research regarding the need for future purchasing competencies, and possible methods on how to acquire these competencies. After the literature review, the results from the interviews are proposed to provide essential information to the optimization process of implementing educational methods in large organization. Moreover, the analysis will assess the literature review and interviews to realize a guide for a continuous learning approach regarding future purchasing competencies. The developed guide contributes to the current research by filling the gap of the need for future purchasing competencies, and the integration of those needs in large organizations. The guide indicates the following steps, define who is responsible, indicate education needs, create development plan(s), guiding the implementation, and measuring and evaluating the process.

2. LITERATURE REVIEW

To clarify the meaning of purchasing, the definition of Schiele (2019) is used: "Purchasing (or supply management) is the strategic and operative process of supplying an organization with materials and services from sources external to that organization; the purchasing department is active in all situations, which require a payment to third parties." (Schiele, 2019, pp. 47-48)

2.1 External developments that affect competency requirements for purchasers

External developments will affect the purchasing department. Therefore this chapter will explain three movements to understand the need for new future competencies. The movements relate to strategic, contextual and digital developments.

First, the development of the procurement function is transformed from a traditional administrative and transactional role towards a more strategic role where cooperation and supply network management are essential (Tassabehji & Moorhouse, 2008, p. 55). The research of Tassabehji and Moorhouse (2008, p. 56), indicates that this new strategic role for purchasing and supply management will require internal support, acknowledgement and new categorized skills. The most important group of skills mentioned are technical, interpersonal, internal/external enterprise, and strategic business skills. Due to these, mostly technological developments, the internal and external integration of the organization is reshaped. This activates a new interface and new competencies required by PSM (Tassabehji & Moorhouse, 2008, p. 66).

Apart from the strategic role of purchasers, that is professionalized, other contextual developments arise, such as sourcing innovation, coping with potential supplier disruption, and establishing sustainability in the PSM department (Bals et al., 2019, p. 10). More focus on sustainability was proposed by the awareness that large organizations can have a significant impact on ecosystems, resulting in organizational change (Giunipero, Hooker, & Denslow, 2012). In addition, globalization changes the arrangement of many marketplaces as global companies boost their reach into all markets (Monczka, Handfield, Giunipero, & Patterson, 2015, p. 346), due to, for instance, digital improvements that ease the communication over long distances. These contextual developments ask for an update of the identified competencies of Tassabehji and Moorhouse (2008). Therefore, Bals et al. (2019, p. 7) updated these competencies by adding 17 additional competencies. The most important competencies that were added are: automation, big data analytics and innovation sourcing.

The other movement is related to a technological change, Industry 4.0, affecting purchasing activities by merging the

psychical and digital world. This results, for example, in autonomous machine-to-machine communication systems (Schiele & Torn, 2020, p. 508). These digitalization processes challenge the current competencies of purchasing experts, because Industry 4.0 will demand purchasers to solve more complex cases using advanced systems. To tackle the new problems, purchasers are expected to acquire new competencies. According to the analysis of the international research group Persist IO2 (2021), it is expected that Data Analytic and E-procurement technology skills are highly expected to be necessary in the Industry 4.0. This Delphi study complements the research of Bals et al. (2019), providing more insights into how Industry 4.0 is influencing the purchasing field (Delke, Schiele, Buchhol, & Stek, 2021, pp. 1-3). Concerning the impact of Industry 4.0, the research group of Persist (IO3, 2021), indicates that the connection between the physical and digital software will result in less human intervention. This suggests that the purchaser will need to focus more on strategic tasks.

All these dynamic developments lead to challenges for purchasers in large organizations. The challenges affect the purchasing function by focusing more on the strategic, sustainable and digital aspects. To tackle the challenges and stay competitive, the purchasing department should take responsibility for the operative and strategic activities that are involved in these developments. The operative procurement is focused on the ordering and activation of the delivery. Strategic activities contain the process of strategic sourcing, where, for example, the suppliers are selected and contracted (Schiele, 2019, p. 45).

2.2 Identifying future purchasing competencies

According to Bals et al. (2019, p. 11), experts who have had training and work in the purchasing department, can increase the value of the companies' performance. To analyze which future competencies are important in the training programs of purchasers and tackle the challenges mentioned in Chapter 2.1, future competencies are retrieved from the literature.

Within this research the concepts of skills and competencies are both used, however, there is a difference between them. Skills are based on general context-independent knowledge, whereas competencies refer to experience-based and context-dependent knowledge (Gammelgaard & Larson, 2001, p. 27). The competencies, in this chapter, are explained as skills since it explains general context-independent knowledge. The analysis will be context-dependent knowledge, with data from the interviews, it follows that in that section, the research will refer to competencies.

To identify future purchasing competencies, three different researches are analyzed to form the basis of the competencies. The research of Bals et al. (2019, p. 6) identified current and future requirements for PSM competencies, retrieved from their own literature analysis. The research of Delke et al. (2021, p. 4), analyzed the outcome of the Delphi study to identify the top 10 Industry 4.0 oriented PSM skills. The input for future competencies regarding Industry 4.0 is important in this research, because the PSM function is challenged by this new industry (Schiele & Torn, 2020, pp. 513-515). The third input for the identification of purchasing competencies is the research of Persist White Paper (IO2). This research focuses on a student-centered approach to educate, with the use of gamification, the future competencies in Industry 4.0. It has analyzed World Café sessions (Persist White paper IO2, p.8-12) and interviews of experts of the purchasing department. In that research, the purchasing department is deviated from the strategic sourcing and operative procurement. Table 1. provides an overview between the insights of the three different studies concerning future purchasing competencies. These insights will indicate what the future competencies are, as a result of the developments mentioned in Chapter 2.1. The current competencies of Bals et al. (2019, p. 6) are provided to indicate the difference between current stated and future competencies.

Table 1. Overview future competencies

***Current competencies*[1]**	**Future competencies[2]**	**Projection results future competencies PSM[3]**	**Competencies strategic sourcing & operative procurement[4]**
Analytic skills	Analytic skills	Data analytics skills	Strategic skills
Basic knowledge on PSM role & processes	Automation	eProcurement technology skills	IT-related skills
Communication skills	Big data analytics	Digital leadership skills	Leadership skills
Cross-functional abilities & knowledge	Computer literacy	Robotic process automation skills	Information research skills
Interpersonal Communication	eProcurement technology	Supply network management skills	Contract management
Negotiation	Holistic supply chain thinking	Digital negotiation skills	Partnership management
Stakeholder relationship management	Process optimization	Digital contract management and legal skills	IT skills
Strategic sourcing	Strategic sourcing	Strategic management skills	Processing resources and timing management
Strategic thinking	Strategic thinking	Digital partnership management skills	Operative and strategic purchasing to be integrated
Sustainability	Sustainability		Technical skills

To get a better understanding of the future competencies, the indicated competencies from the research of Delke et al. (2021), are further elaborated in the following subsections. A reason to explain these competencies is that the research of Delke et al. (2021) analyzed that these competencies further develop in Industry 4.0 and eventually should be obtained by the purchasing experts. Therefore, the continuous learning approach in Chapter 5 will build further on these explanations of future competencies.

2.2.1 Data analytic skills

Data analytic skills contain the interpretation of data by using, for example, visualizations or data mining techniques (Delke et al., 2021, pp. 7-8). Data mining techniques can be used for customer relationships to analyze the behavior and understand which decisions are going to be made to increase customers' value (Provost & Fawcett, 2013, p. 2). The ability to analyze data quantitatively contributes to the overall effectiveness and performance of an organization (Lakshminarayanan, Pai, & Ramaprasad, 2016, p. 426). This explanation complements the

[1] Bals et al. (2019, p. 6)

[2] Bals et al. (2019, p. 6)

[3] Delke et al. (2021, p. 7)

[4] White paper of Persist (IO2, p.15-16)

research of Bals et al. (2019), because their research also reflects the expectation that being analytical and data-driven will increase the strategic role of PSM. Since there is a large amount of data available, due to advanced computers and specific algorithms within these tools, data mining techniques are applied in organizations in order to gain a competitive advantage (Provost & Fawcett, 2013, pp. 12-13).

2.2.2 eProcurement technology skills

eProcurement skills are used to facilitate business-to-business activities by using internet-based technology platforms for the purchasing and payment of goods and services (Caniato, Golini, Luzzini, & Ronchi, 2010, p. 496). Electronic technologies are used to streamline all procurement activities to, for instance, improve visibility of the supply chain, and enhance decision making (Hawking, Stein, Wyld, & Foster, 2004, pp. 5-6). Thus, using electronic technology within the supply chain, management can provide efficiency and effectiveness (Caniato, Longoni, & Moretto, 2012, p. 494), by automating processes. As outlined in the interviews in the research of Bals et al. (2019, p. 8), having procurement skills can bring insights and understanding into market development in order to, for example, innovate within the organization.

2.2.3 Digital leadership skills

The outstanding advance in technology is that it offers people different ways to communicate, for example, through online platforms. The challenge for (digital) leaders is to reflect on the effectiveness of developing communication methods, to ensure that employees can successfully develop (Sheninger, 2019, pp. 16-18). Therefore, digital leadership skills contain the ability to manage people in a digital environment (Delke et al., 2021, p. 8). The digital environment can be outlined by, for example, an online dashboard where the key performance indicators of the employees are measured.

2.2.4 Robotic process automation skills

Robotic process automation (RPA) contains a set of software tools that can automate processes in business (Aguirre & Rodriguez, 2017, p. 1) The robotic process emerges to determine the outcomes of certain activities. It is a technical imitation of a human employee (Aguirre & Rodriguez, 2017, p. 66). It is important that the employees know how to work with the automation process, rather than understanding all the technical functionalities (Delke et al., 2021, p. 8). If employees understand the automation, the tool can save time, because customer relationship management or resource planning can be done automatically. The robotic process automation can therefore add value to the organization by migrating the available data (Madakam, Holmukhe, & Jaiswal, 2019, p. 11) and use, for example, artificial intelligence to automate purchasing activities or planning, which will save time.

2.2.5 Supply network management skills

Having supply network management skills indicates that you have an integrated understanding of the supply chain and are able to create valid views of the network and its developments (Möller & Halinen, 1999, p. 417). It is important that employees understand the supply chain from different perspectives, such as economically, socially, and environmentally to gain new business opportunities (Tatham, Wu, Kovács, & Butcher, 2017, pp. 266-271). The emphasize is on the ability to connect supplier resources with the use of technology, and to have a consistent approach that match the perspectives within the organization (Gadde, Håkansson, & Persson, 2010, pp. 15-16).

2.2.6 Digital negotiation skills

According to Delke et al. (2021, p. 9), negotiation skills in the digital environment and in Industry 4.0 differ. Within a digital environment, the focus is on e-sourcing technologies and auction, whereas in Industry 4.0 the focus is more on machine negotiation and digital market places. Digital negotiation skills are about choosing the right tool for a specific negotiation. Thus, within the digital environment, organizations should focus on e-sourcing tools. E-sourcing tools have gained more importance because they were driven by competitive and dynamic market environments, which led to more pressure on the cost (Dai, Narasimhan, & Wu, 2005, p. 142). E-sourcing is a business software that automates key business processes to, for example, negotiate with purchasers while also targeting supplier relationships (Dai et al., 2005, p. 142). For Industry 4.0, tools should focus on a machine-to-machine negotiation with the fitted parameters for each situation (Delke et al., 2021, p. 8). This process can help to make decisions on when to meet the supplier face-to-face, or to completely automate a specific purchasing process.

2.2.7 Digital contract management and legal skills

To implement legal requirements into automated purchasing processes, digital contract management, and legal skills should be obtained (Delke et al., 2021, p. 9). The automated process can be reached by, for example, blockchain technology. Concerning online contract management, certain rules should be identified to act in a transparent and fair way within the organization. According to the research of (Yasin & Liu, 2016, p. 193), these rules are promised, respecting each other's boundaries, permissions, all users have to take permission for using the information. As well as the protection rule, the network must be protected, and portability, every user has the right to change to another network. Followed by the last rule, proof, participants have to share the right information. Having those skills and keeping up with these rules, a transparent and reliable system should be realized. These skills are the link between the legal department and IT, and essential for the organization. Since the environment of large organizations is changing, consequently the legal processes are also changing.

2.2.8 Strategic management skills

Strategic management skills imply that you are up-to-date with the global trends of the organization and are able to perform a commodity strategy (purchasing plan) to increase the competitive advantage of the organization (Delke, 2021, p. 7). To implement the commodity strategy, new technologies can be used to understand the digital transformation and be kept up-to-date. The technological developments can result in closer integration of the supply chain, by having a coordinated and consistent approach.

2.2.9 Digital partnership management skills

According to the research of Persist (IO3, 2021), digital partnership management skills are related to the ability of personal communication between different stakeholders. As also mentioned in Chapter 2.3.8, the interpersonal relationships between the stakeholders should be coordinated to increase the integration between the buyer and the supplier. Integration between the buyer and supplier is essential, because suppliers can provide access to specific knowledge that is necessary for buyers, to increase the performance capability of the purchase department (Koufteros, Vickery, & Dröge, 2012, p. 97). The use of digital tools within this integration has been promoted as an critical tool to ensure a logistics objective, in order to, for example, create commitment between the buyer and supplier (Paulraj & Chen, 2007, pp. 2-3).

2.3 Continuous learning approach for educating future purchasing competencies

It is essential to coordinate the implementation of education of future purchasing competencies in a continuous approach to increase the motivation, job satisfaction and morale of employees (Chatzimouratidis, Theotokas, & Lagoudis, 2012, p. 662). The implementation and learning of future competencies are part of lifelong learning because they are affected by external developments (Terziev & Dimitrova, 2014, p. 224), which will always occur. According to the research of Terziev and Dimitrova (2014, p. 223), the factors that affect the continuous training are new technological equipment, globalization of the industrial market, rapidly changing technology, and being more efficient and economical to conduct continuous educating. These correlate with the developments addressed in Chapter 2.1.

Moreover, according to Schiele (2007, p. 283), there is a positive relationship between the maturity of the purchasing functions and the performance. The research addresses the importance of skills within the maturity model to improve the organization. However, the focus of these skills is mostly on the outcome. Therefore, the process of guiding with the use continuous learning will be addressed in this research, to not only focus on the outcome, but also optimize the process. Since according to Schiele (2007, p. 247), *"A better performance of the purchasing function may make a considerable contribution to the overall performance of a firm."* To enable an improved learning process for purchasers to become more mature, a new paradigm should be created for future learning, where learning is individualized, localized, and globalized (Cheong Cheng, 2003, pp. 208-209). The student should be at the center of given appropriate learning guidance, which is individualized. Localized and globalized indicate that people can learn from multiple sources, using networks and unlimited opportunities to obtain lifelong learning. Including the continuous element in this process, performance appraisal and career development of employees should be included (Schiele, 2007, p. 290). Schiele (2007, p. 290) divides these elements into three categories: target agreements, career development, and the feedback process. These elements can be used to analyze the performance of employees, by setting sufficient targets, and supporting employees. Organizations should provide regular continuous reviews with employees to discuss the progress, and feedback elements. This will enable bottom-up feedback and implement and update learning aspects during the process.

2.4 Different methods to acquire future purchasing competencies

There are different methods to acquire a continuous learning approach for educating future purchasing competencies within large organizations. Therefore, the following subsections will elaborate on the internal, external, and outsourcing methods of acquiring future competencies.

2.4.1 Train employees using internal programs

Training current employees can be done by developing internal training programs that focus on new competencies (Campion et al., 2011, p. 229), that relate to the needed competencies that the organization have set regarding future developments (Terziev & Dimitrova, 2014, pp. 223-228). The study of Terziev and Dimitrova (2014, p. 223), identified two core objectives for training, which are supporting and innovating. These objectives focus on the transfer and development of knowledge and competencies that will improve the overall performance. To acquire these objectives, the management of the purchasing department can rely on different mechanisms. The organization can follow a more knowledge-based, HRM, or a strategic mechanism (Loufrani-Fedida & Saglietto, 2016, pp. 77-83). This can be differentiated according to the business objectives.

To increase participation in organizations and achieve the objectives, the barriers to the learning process should be minimized in order to get the learning started. In fact, the employees who are trained in new competencies should understand why it is important to learn them and also how they can organize them in their daily work. This will instill a sense of following the training programs. Different factors should be taken into account to start the learning process, these contain psychical, psychological, social, and educational factors (Chapman, Cartwright, & McGilp, 2007, p. 48).

In the literature, different forms of internal training programs are identified, the research of (Raa, 2021, p. 58) identified the following methods, apprenticeship, job rotations and transfer, on-the-job training, programmed self-instruction, simulations, internal training session, mentorship and the use of case studies. The advantages of internal training programs are that it takes into consideration the organizational culture and the terminology that is already used among employees (Heathfield, 2020).

2.4.2 Train employees using external programs

If the organization has limited resources to provide training sessions internally, it can use external sources to identify training needs and develop accurate training programs (Paek & Hawley, 2006, p. 885). For organizations to meet the demand of future competencies, which is required by the industry (Raa, 2021, p. 27), the implementation of education could be pivotal. External training programs can be provided by private educational institutions such as NCIO, LOI, ISBW, NHA or ICM. Additionally, a well-known purchase academy is NEVI. NEVI offers different courses and certificates for purchasers. These organizations offer different kinds of training such as, classroom-led training and web-based learning (Raa, 2021, p. 28). These educational opportunities can be offered as workshops or training sessions.

According to the research of James (2002, pp. 1-2), an increasing number of organizations are making use of web-based learning systems. Specified advantages of the web-based learning system in the research are that it is easily accessible, and users can access and proceed with the training at any preferred time. Moreover, it is affordable, because users only require access to a browser. Web-based training can also be easily updated, which is preferable in a rapidly changing environment. However, the research of James (2002, pp. 2-3), also acknowledges disadvantages such as limited formatting of the content in the browser that the organization uses, resulting in the content not always being delivered sufficiently. Besides, it can be argued if computers are replacing human contact and fulfilling the need of interacting. Further, the course may not sufficiently address the specific needs of the organization, since it is mostly not differentiated. If it is personalized, it is assumed that the fixed costs are high.

2.4.3 Outsource specific tasks or hire new employees who already obtain future competencies

If the analysis of future competencies within the organization demonstrates that employees do not have the necessary competencies, the organization can decide to outsource specific tasks that require future competencies that are not available in-house. Outsourcing focus on the leverage of competencies to increase competitiveness, by focusing on core competencies (Quinn & Hilmer, 1994). Outsourcing can affect the worker tasks, skills and attitudes within lead firms (Davis-Blake & Broschak, 2009, p. 26). This can be both positive as well as negative. Besides, the research of (Davis-Blake & Broschak,

2009, p. 332) addresses that outsourcing also affects the organizational design, such as the structure and culture of the organization. The research advises to integrate the outsourcing tasks by providing a flow between the knowledge and information between the lead firm and the supplier, to successfully obtain the needed knowledge.

When the need for these future competencies is becoming more than, for example, one FTE, the organization can hire new employee(s) who already have these future competencies. If the organization knows which specific competencies are required for their department, by using specific assessment methods that measure the competencies that are needed, the potential top performers could be recruited externally (Soderquist, Papalexandris, Ioannou, & Prastacos, 2010, p. 326). According to Schiele (2007, pp. 277-279), assessment methods that could be used are: performing standardized interviews and measure the extent of a set requirements. Using these assessments, competency analysis can be used for these HRM activities to design job descriptions relating to future competencies, to create, among others, a sufficient recruitment and selection method (Knight et al., 2014, pp. 272-273). However, in the literature relation between the variables of selection and competency is quite unclear (Alsabbah & Ibrahim, 2013, p. 68). Moreover, the selection outcome of employees who obtain the favored competency is also dependent on the recruitment process of organizations. Therefore, this method will not be researched in detail, since recruitment and selection are not included in this research.

3. METHODOLOGY

This chapter will elaborate on the research design and the multiple-case study to explain the data collection and analysis, where Chapters 4 and 5 are built upon.

3.1 Research design

The research will support the existing findings from Bals et al. (2019), Delke et al. (2021), and the international research group Persist IO2 & IO3 (2021) regarding future skills. The research review supports these researches by providing an overview of which future purchasing competencies are required and which methods can be used to acquire those competencies. The overview is based on the aims of the research. Since to optimize the process of acquiring future competencies, it is crucial to know which competencies are needed.

To gather insights into the current work environment of the purchasing department and identify how the process can be optimized, the research is constructed as an inductive qualitive study (Corbin, 2017, p. 301). It is developed as bottom-up research to deviate from the presumptions to provide results that understand the grounded data (Rennie, 2006, p. 71). The literature review and the results of the interviews will provide a new result, an optimization plan to continuously acquire future competencies in large organizations.

3.2 Multiple-case study with semi-structured interviews

The research will be based on six case studies, to form an input to investigate the real-world context of the needed competencies in the purchasing department. The multiple case-study approaches will contribute to the research by offering insights into the different perceptions and interpretations of the case from different experts (Hollweck, 2016, p. 109).

3.2.1 Data collection

The interviews are conducted with six experts of different large organizations, who are responsible for their organizations' purchasing activities. An overview of the participants is stated in Table 2., and Chapter 4.1. The result section of *'Required competencies'* is matched to the identified skill terms of Bals et al. (2019) and Delke et al. (2021), to form consistency with the mentioned skills in Chapter 2.1. All of the organizations included are large in size, however, some interviews were conducted with the Europe BV. Therefore, the purchasing departments of some organizations are relatively small.

The data was collected using semi-structured interviews, in order to enable a mutual exchange of knowledge between the interviewer and participant. This offered an opportunity to collect additional data via extra follow up questions and to provide space for verbal expressions from the people who participated in the interview (Kallio, Pietilä, Johnson, & Kangasniemi, 2016, p. 2955). This interview method is chosen to understand the perception of the interviewees and to get insight into their behavior, which is important for the implementation part (Rabiee, 2004, p. 655). Therefore, it was decided to choose the interview method in stead of, for example, surveys. The interview questions are stated in Appendix I, and are based on the research aims and the literature that is used for this research. The questions are formulated as open-ended questions to achieve sufficient extensive data. The interviews were conducted online and virtually due to the COVID-19 pandemic. The meetings were audio-recorded and were approximately between 30 and 45 minutes. The interviews should provide an overview of the competencies that are needed in large organizations as well as data on how large organizations understand which competencies are required to remain competitive. In addition, the interviews will request which methods are used to currently implement education methods, concerning competencies in the purchasing department.

3.2.2 Data analysis

The outcomes of the interviews are coded in Atlas.ti, to assess and classify the answers into analytical categories (Schmidt, 2004, pp. 31-55). The coding has been proceeded by putting labels on certain categories or arguments. First, three interviews were coded, afterwards, the codes were evaluated and rewritten to form consistency. Then, the codes were applied to all six interviews. Analyzing these codes, a guide is developed, by interpreting the results of the interviewees, to find aspects in their current processes that could be optimized. The literature review is aimed to complement the interviews by providing academic arguments for certain education methods or evaluation criteria. Thus, in Chapter 5, the assessment of the interviews, and the literature review are combined to form a continuous learning approach to optimize the process of acquiring future competencies.

4. RESULTS

The overview of the results are stated in Table 2. From this table, striking results are identified and executed in the subsections. The subsections will form background information of Chapter 5. *(I = Interviewee)*

4.1 Introduction to the interviewed purchasing departments

First, it is observed which kind of purchasing departments are interviewed to know what the guide is built upon.

The purchasing departments are relatively small compared to the large size of the organizations. This can be explained by the fact that the experts who are interviewed work for the Europe BV, or that the purchasing activities are decentralized. This means that purchasing activities occur at different departments and are not centrally organized, resulting in no specific strategy for the purchasing department (organizations of I3 and I5).

Table 2. Overview interviews

Information	Interviewee 1	Interviewee 2	Interviewee 3	Interviewee 4	Interviewee 5	Interviewee 6
Job title of the interviewee	Procurement manager	Chief purchaser	Supply Chain Director	Purchaser	General Manager Supply, Service & General Affairs	Senior Buyer
Industry	Heavy Equipment Manufacturing	Healthcare	Logistical Equipment and System Solutions	Biotechnology	Industry Metrology	Telecommunication
Size company – purchase department *1. Functional strategy* *2. digitalization*	*4.974 – 2 (Europe BV)* 1. Quality, cost and delivery 2. Use of MRP system.	*1.250- 3* 1. High quality, low cost TCO. 2. ERP system, and AFAS.	*12.000 – no strategic purchasing department (Dutch BV)* 1. Quality, sustainability, and being professional. 2. Online configuration system, performance dashboards.	*17.000- 2* 1. Centralize purchase activities. 2. Warehouse management, invoice processed digital, ultimo for equipment.	*24.409 – no specified purchasing department (Europe BV)* 1. Trade-off between quality and cost. 2. SHP system for invoices, shared service centre for payments, contracts registered online.	*7.500 – 25* 1. Cost-oriented, reciprocity, managing relationships, low risk. 2. PAT, CSR, measuring vendors and digitalize all figures.
Required competencies *(or skills)*	• Analytic skills • Basic knowledge on PSM role & processes • Negotiation • Strategic sourcing • Stakeholder relationship management	• Basic knowledge on PSM role & processes • Information research skills • Partnership management	*Not specifically stated.* • Analytic skills • Contract management • Communication skills • Negotiation • Stakeholder relationship management	• Analytical skills • Basic knowledge on PSM role & processes • Stakeholder relationship management • Strategic thinking and sourcing • Teamwork skills	*No specific purchasing competencies, rather competencies related to the business units.* • Communication skills • Innovative • Leadership skills • Strategic skills	*Depends on specific function* • Basic knowledge on PSM role & processes • Control Dutch and English language • Communication skills • Negotiation
1. Employees competence assessment method *2. Training responsibility*	1. During an interview: based on experience. 2. Self-initiate.	1. Personal observation: analyze how internal customers react to the supplier, acting professional, gain targets. 2. Self-initiate.	1. Individual targets (soft/hard). HR (PMR) keeps track of performance. Mechanics: passport with obtained trainings. Profiles measured in IMS system. 2. Self-initiate before PMR meeting or together with the manager during PMR meeting.	1. 4x per year annual appraisals, competencies are discussed. Measuring depends on consideration of the manager. 2. Self-initiate, stimulated by the board.	1. Targets, understand the regulation of a quotation and analyze risk. Collect a lot of data in dashboards or business warehouses. Training plans are analyzed during yearly appraisals. 2. Coordinated together with the manager.	1. HR: framework. Performance Dialogue Plan, discussed quarterly. 2. Self initiate commodity and personal development plan.
Competencies acquisition method: *1. Internal* *2. External* *3. Outsourcing*	1. On the job and learn from seniors. (product understanding) 2. Different trainings, personally initiated. 3. IT related questions to consultants.	1. E-learnings, 'good habits' program (e.g. Excel training) 2. Mostly not a lot of money available which makes it difficult. 3. Not favorable.	1. Training for mechanics by other employees who followed external trainings. 2. NEVI and other management skills. 3. Knowledge that is not available intern.	1. Safety, computer or other specific training. 2. Focused on specialized skills. (E.g. Nevi, NIC.) 3. Activities (arrange tenders), to obtain the support of an external professional.	1. general training, supply chain, or negotiation. (E.g. Evofenedex) 2. Trainings focus less on purchasing competencies, employees feel more responsible for a specific business unit. 3.Uses outsourcing mode.	1. Learning portal with internal trainings. E-learnings or self-made trainings. 2. learning portal also contains external trainings. 3. Specific external skills
Recommendation education methods	Earn points for every training you perform, only if you have a certain amount of points you will get promoted.	Focus on personal development, feedback trainings.	Buddy system for guidance, create a strategic purchasing department and be committed to your employees.	Set vision and goals. HR can stimulate these goals with trainings, PDCA. Focus on the health of employees. Releasing a Company Academy to offer education and perform better.	Training plans for the employees. Learn on the job to see result in daily work, learn how to sell ideas. Skills change, guide the process.	Learning portal challenges employees to continually develop, set targets for this, update knowledge to survive in the purchasing sector. Education methods will stimulate this.

An interesting note regarding the organization of I5, is that the firm uses an outsourcing model, where the business owner has to handle the purchasing activities for that certain unit. Resulting in no specific business unit for purchasing. Besides, it is observed that when there is no specific strategic purchasing department, a lot of rules and regulations are stated by the head quarters, resulting in difference purchasing competencies. Consequently, the required competencies in these kinds of organizations are not specifically stated. The focus is more on general competencies, e.g., communication, rather than particular purchasing competencies. According to I3, *"Negotiation skills are not essential since the costs and discounts are already stated."* This results in general training programs for employees that do not only focus on purchasing competencies.

All purchasing departments use various digitalization processes, such as MRP system (I1), ERP system, AFAS (I2), online configuration systems (I3), warehouse management (I4), SHP systems (I5), PAT and CSR systems (I6). The objectives of the organization are more or less the same, the main focus is on quality and costs, only I4 mentions a different objective, focusing on the centralization of purchasing activities. Moreover, the relationship with suppliers is an essential aspect for all organizations to sustain competitive. Compiled, all organizations are making use of different technological tools, but the purchasing activities are not 100% automated by AI driven software's and therefore the personal-customer relationship is highly valued.

4.2 How to know which future competencies are required

After the observation of the six purchasing departments, the identification on how to know which future competencies are required is addressed, this refers to the first research question. The sections of the table '*Required competencies'*, *'Acquire competencies'*, and *'Employee competence assessment method & training responsibility'* will be elaborated.

All interviewees mention that the assessment of competencies and the identification of future competencies that need to be

required, occur during appraisals. During the appraisal, the manager indicates which competencies are required and states them in job profiles. According to I1, I2, and I4, the evaluation depends on the personal experience of the manager. Thus, in these cases, the identification relies on a subjective evaluation of the manager regarding the organizational and personal development of employees. Whereas I3 mentions that the competencies of job profiles are measured in an IMS system, and I5 makes use of data dashboards or business warehouses to keep track of the competencies. Further, the organization of I6 acquires a Performance Dialogue Plan, where competencies are recorded and discussed during the appraisal. These cases use a combination of the experience of managers and objective (digital) tools.

In addition, during four different interviews, it was stated that cooperation with HR is used to define (new) competencies. In these cases, the managers of the purchasing department also rely on their expertise and vision. According to interviewee 5, *"HR indicates the general competencies. If you look at our organization, we have certain ground rules, creativity, and trustworthiness. And to reach this, different competencies are related to this."* Moreover, I4 mentions that their HR department stimulates the departments to constantly learn by using the plan, do, act, check method. This method can be used to identify the needed competencies and to measure them. Besides, striking to notice is that I1 and I4 do not experience any changes in the competencies in the last few years. The experts base this on the unchanging job profiles.

Thus, updating competencies of purchasers is based on personal experience of the manger, and it occurs during appraisals. Updating competencies occurs reactive, employees have to self-initiate their learning need, after that updates are proceeded. Therefore, the guide that is developed in Chapter 5.2 will focus on the participation of mangers, in cooperation with HR and employees, to combine the general and purchasing knowledge on identifying and updating competencies of purchasers continuously.

4.3 Recommendations for education methods

When the organization knows which competencies are required, the next step arises: how to acquire future competencies? This will be further discussed in Chapter 5.2, the implementation guide. However, during the interviews, multiple methods and advices were addressed that are taken into account.

I1 raises the importance of product understanding, a current skill, which will always be essential, *'The more you understand the product you are buying, the better you can be as a buyer'*. Resulting in that, the organization in Japan offers training to understand the product and the process. For example, strip an engine down to know how it is built up and which pieces are important, or work in different departments to understand the process. In addition, I2 advises to focus on personal development and feedback training to gain new competencies. The expert experiences that people find it hard to deal with feedback. To increase internal communication, these kinds of trainings would be favorable. Further, I3 advises to create a strategic purchasing department to centralize the purchasing activities. This advice is accurate when there is not a strategic purchasing department. Moreover, a buddy system for guidance is advised to guide your new employees efficiently. I3 addresses that the most important aspect is the commitment of your employees, in order to create a good and trustworthy relationship. I4 works in a family business where the management team and HR department stimulate the employees to learn. An interesting note is that the organization is starting a company academy to offer employees the needed education to perform better. The main focus and advice of I4 is to pay attention to the health of employees. *"If you want to perform better, you need to have healthy, motivated employees."* I5, as well as I1, addresses the importance of knowing everything from your unit in where your purchase activities occur, to keep up with the rapid changes in the market. Moreover, I5 addresses the importance of focusing on soft skills, where learning on-the-job is aimed to guide employees in their daily work. The advice is that people mostly learn when they are out of their comfort zone, and this could be established by on-the-the-job training. The last interviewee, I6, addresses that implementing educational procedures in the company is great to develop yourself and to feel responsible for your own growth within the company. The advice is to continuously update your knowledge to keep track of all developments and react to the changing market to survive in the purchasing industry.

5. ANALYSIS

To assess the literature review, interviews, and answer the second research question, a new model is developed to optimize the education approach of future competencies. The model is based on Chapter 2 and the following sections of the results table, *'Competencies acquisition method'* and *'Advices education methods'*. Besides, additional literature is added to the model, since the model was developed after the literature review and assessment of the interviews. The additional literature is used to build solid arguments and understanding of the chosen steps.

5.1 Create awareness for future competencies

To start, an analysis concerning the awareness of purchaser to learn new competencies is proceeded. Since, being aware of a change is essential to start a learning process and become aware of the related impact (Paton & McCalman, 2008, p. 246).

During the interviews, it was stated that I1 and I4 do not experience any change in competencies over the last few years. The reason could be that employees are unconsciously competent, meaning that there is no awareness regarding the new competencies. Therefore, it is recommended to create awareness and make employees conscious about their knowledge, to develop themselves and get the learning process started. Because, if there is no awareness, an implementation guide will not be successfully integrated in the department, and employees will be less inclined to seek new opportunities for education (Kotter, 2008, p. 5). In addition, I2 does experience a development regarding professionalization, but there is not enough money available from the board to acquire the needed learning. Thus, in this case, the board should be aware of the potential positive impact of the education opportunities. I3 does not have strategic purchasers within the department, which makes it more difficult to state the specific purchasing competencies and become aware of the changes of these competencies. I5 does not identify specific purchasing competencies, but rather general competencies for the specific business unit. Therefore, within this organization, the awareness of purchasing competencies needs to be addressed to be able to tackle purchasing development. Furthermore, I6 is aware of updating the purchasing competencies to stay connected with the world and the market you are working for.

As earlier discussed in Chapter 2.4, learning and implementing new competencies are part of lifelong learning (Chapman et al., 2007, p. 248), this means that people have to partially self-initiate the learning process. The self-initiated aspect was also mentioned in every interview. However, when employees do not feel the urge to educate themselves, the possibility of self-initiating education needs is assumed to occur less. Further, when there is no pre-understanding of the intention, the learning process can

be based on already existing aspects or even no development in learning (Illeris, 2003, p. 172). Therefore, the guide will not only focus on the self-initiating aspect of employees, but also on the effort of the managers. This is done to form a more structured learning approach. Overall, it is essential that employees and managers are aware of the development of new competencies to start the learning process.

5.2 5 step guide to implement future competencies

A 5 step guide is proposed to structure and optimize the education process of future competencies in purchasing departments of large organizations to answer the second research question. I3 mentions that, *"Employees are scarce and bring a lot of value to the company. Employees feel more need to develop themselves, so we have to guide them to commit to each other and keep adding value to the company."* The reason for developing this guide, is that it was analyzed during the interviews, that there was not a structured approach regarding the complete process of identifying and implementing future competencies in the purchasing department. The interviewees mention that updating competencies occurs reactive with no specific stated guidelines. Whereas structuring processes in large organizations will contribute to the desired end state (Ford, 2009, p. 307). Therefore, this guide will optimize the current process of identifying and integrating future purchasing competencies by streamlining the process. Large organizations can benefit from this guide, since it contributes to the overall competitiveness of the organization by continuously implementing education methods to increase the capabilities of employees.

Figure 1. illustrates the 5 steps, which will be further elaborated on in the following subsections. Essential to note is that the model is a continuous process, after step 5 new education needs can be discussed. Since external development will always arise within an organization and learning is a never-ending process. Moreover, the model will expand the maturity of large organizations by integrating the elements of Schiele (2007, p. 290), mentioned in Chapter 2.4. Thus, target agreements, career development, and feedback processes will be included in steps 3 and 5 to become more mature and increase the competitiveness level of the organization. All steps should be taken to increase the participation of managers and employees, and boost the value of purchasers.

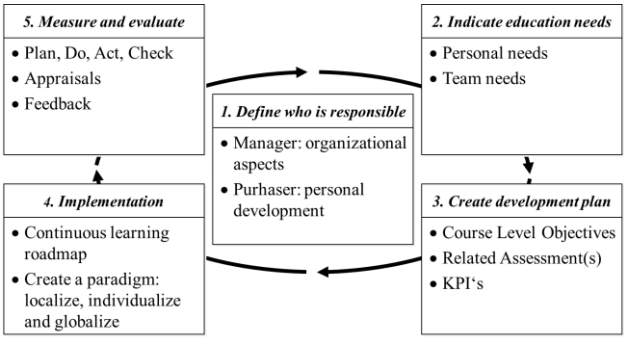

Figure 1. 5 step guide to acquire future competencies in large organizations

5.2.1 Step 1: Define who is responsible

The first step of the guide is to define who is responsible. This person should establish or define the end state of the implementation, to form a vision of the process, from a generic point of view and a purchaser point of view. This can be done by senior business leaders, HR members, functional experts, or any other employee who adds value to the implementation (Campion et al., 2011, p. 237). This guide advises to make the manager of the purchasing department responsible for the organizational process of understanding the future developments in purchasing, the HR manager for generic competencies, and the employee for their own development. Since managers work closely to the employees, know the work sphere, and are able to provide an objective overview of the process, they should be able to provide an understanding of the needed competencies. Focusing on the organizational part, it is expected that the manager and HR state the vision and mission of the learning process to be in line with the overall performance objectives of the organization. The manager is expected to be able to indicate the education needs (step 2) and create a matching development plan (step 3), in cooperation with employees. Establishing a coherent process that also matches the culture of the organization. Moreover, the manager is responsible to provide all information about the different trainings (step 4) and together with the employee measure and evaluate the process (step 5). The employees are responsible for their own development by following the offered training. Moreover, employees should feel responsible for their own growth to determine where their learning gap is, by reflecting on their current capabilities.

The reason for this approach is that all interviewees mentioned that they have to self-initiate the learning process, sometimes in cooperation with a manager, but that there is a lack of a structured an clear vision or mission. This approach will build further on the need of education of the employees, by translating it into a development plan. Besides, this approach focuses on giving employees the feeling that they are part of the organization and can add value by learning new skills. Since individual performance and innovation are analyzed to be pivotal in organizational survival (Simmons & Sower, 2012, p. 298). However, if there is no manager who controls the process, employees might train the wrong competencies or competencies that they already contain.

5.2.3 Step 2: Indicate education needs

The second step focuses on how to sufficiently indicate the educational needs of employees and their teams to innovate and improve their learning. Team needs are also discussed, because the main characteristics of a project are its collective dimension and group ability to reach a common goal (Loufrani-Fedida & Saglietto, 2016, p. 75). Effective group facilitation is essential to build further on the needed competencies and to diagnose a clear vision (Campion et al., 2011, p. 237). The focal point of the proposed steps is mainly on the input of the manager, since researches have denoted that transformational leadership and developmental feedback have a positive relationship with individual creative work and innovation (Simmons & Sower, 2012, p. 299). Moreover, the research appoints that managers retrieve useful and novel ideas during group discussions that can be used for identifying specific needs.

All interviewees confirm these statements and address that the identification of future competencies is currently based on the experience of the managers. To make sure that the managers have a consistent approach, the following 6 steps are proposed. These steps are developed by observing the current approach of purchasing experts. During the observation aspects in the process were missing. For example, finding the right competencies in a structured way, to eventually match the needed competencies to the sufficient training program in step 3 and 4. Therefore, these steps are proposed to optimize the process of indicating education needs. Concerning step 4, the competencies in Chapter 2.2 can be used.

1. Identify the current purchasing competencies of the employee and team by proceeding interviews and observation.

2. Diagnose if the current competencies match the daily work of the purchaser and the team.
3. Indicate the gap between the current competencies and daily work of the purchaser and the team.
4. Find the right competencies that will fill the gap between the daily work of the employee, teams and their current access to competencies.
5. Discuss the personal preferences of the employees and the team. Create a group discussion for the team.

When the education needs are defined, the differentiated developments plans can be created and discussed, which will be explained in step 3.

5.2.4 Step 3: Create development plan(s)

After the identification of the education needs, development plans should be created to form the guidelines of the process. The personal and team development plan can be used to determine which actions need to be taken to decrease the competency gap. An essential aspect of this guide is to make a course level objective (CLO) list and add the related assessments (Williams et al., 2020). The objectives should refer to the results that need to be accomplished, and the behavior and competencies that will contribute to this objective goal (Kirkpatrick & Kirkpatrick, 2006). It is essential to distinguish a personal CLO and a team CLO, to avoid educating competencies that employees already obtain and minimize the education costs. A template for this course objective list can be found in Table 3., based on the work of (Williams et al., 2020). To be able to evaluate and measure the process, it is advised to add key performance indicators (KPI's), quantifiable measurements, to the table of Williams et al. (2020, p. 6). Since KPIs can be used to set targets. To clarify this step, two examples are added in Table 3. The first CLO is focused on data analytic skills (internal training), CLO 2 focuses on digital negotiation skills (external training).

Table 3. Course development plan template with examples[5]

	Course Level Objective (CLO) *"By the end of this course, employees should be able to.."*	**Related Assessment(s)** *How do you intend to assess the achievement of the objective on the left? (indicate all assessment types that may be connected to each CLO at left)*	**KPI's** *How do you measure if the assessment has been achieved?*
CLO 1	Critical analyze purchasing history and visualize data in excel.	Learn on-the-job from a colleague to categorize and visualize elements in excel.	Find a fitted supplier for company X by visualizing previous purchasing data.
CLO 2	Using advanced digital negotiation tools during negotiation processes.	Follow the web-based training 'Advanced Negotiations E-learning' at NEVI.	Able to negotiate with suppliers by using NLP (natural language processing) system.

The development plans should be differentiated according to the personal needs stated in step 2. As mentioned in Chapter 2.3.1, the management of the purchasing department can rely on different mechanisms for these plans (Loufrani-Fedida & Saglietto, 2016, pp. 77-83). To clarify, if employees aim to learn new technical competencies, the plan should focus on a knowledge-based approach. When the competencies are focusing on communication and relationship management, a HRM mechanism is advised. The third mechanism of Loufrani-Fedida and Saglietto (2016, p. 83) is the strategic mechanism, this plan focuses on selecting and launching sufficient projects, and prioritize them according to the needs.

5.2.5 Step 4: Implementation

After the identification of the course level objectives and the related assessment(s), the implementation of the education trainings are prepared. Referring to the responsibilities of the managers, it is assumed that they provide all information about the training possibilities. To have an overview of all these potential trainings, the continuous learning roadmap and the additional development techniques of Raa (2021, p. 58) can be used. These are added in Appendix II. Fundamental to note is that these models are based on small organizations. However, these models can also apply to large organizations, since researches assume that the activities that occur in large organizations refer to those in smaller organizations (Paik, Wedel, & Yao, 2009, p. 359). Yet, an interesting difference is that large organizations are assumed to have more resources, such as financial and human resources (Paik et al., 2009, pp. 359-360). Therefore, it is advised to always identify which employees already obtain specific competencies, which can be used for on-the-the-job training. To indicate whether an internal or external training should be followed, Table 4 is developed.

Table 4. Internal and external training: guidelines

Internal training
Apprenticeship: learning critical skills from your colleagues, should be able to make the skills visible with a small teacher-to-learner ratio.[6]
Job rotation: understand and learn the whole process of a product.[7]
On-the-job training: required knowledge is available within the organization (e.g. seniors) and needs to be integrated in the daily work of an employee.[8]
Programmed self-instruction: learning new competencies through controlled steps, for example, in an internal learning portal.[9]
Simulations: learning from an internal real-world composed case by integrating many learning aspects, such as motivation, cognitive, and social elements.[10]
Training session: coaching sessions to give direction after an observation.[11] Can also be proceeded with an external coach.
Mentorship: connect new colleagues to a buddy to guide them in the learning process.[12]
Case studies: facilitate active and reflecting learning and increase employees' critical thinking.[13]
External training
Instructor-led classroom: multiple people aim to learn the same competency, immediate feedback is needed, and courses need to be developed quickly.[14] Instructor-led classroom can also be proceeded with an internal trainer of the company.
Web-based learning: external learning programs need to be acquired at different times, and updated often.[15]

[5] Williams et al. (2020, p. 6)
[6] Collins and Kapur (2006, p. 47)
[7] Interviewee 1 (2021)
[8] Interviewee 1 and Interviewee 5 (2021)
[9] Interviewee 6 (2021)
[10] Landriscina (2013, pp. 673-674)
[11] Cushion, Armour, and Jones (2003, p. 217)
[12] Interviewee 3 (2021)
[13] Brush and Saye (2000, p. 49)
[14] Coppola and Myre (2002, p. 170)
[15] Raa (2021, p. 49)

The table is based on the analysis of the interviews, Chapters 2.3.1 and 2.3.2, and additional literature. This table extends the additional development techniques for purchasing of Raa (2021, p. 58), by adding general guidelines that help the decision of choosing between internal or external training. The organization should eventually assess the guidelines according to their own criteria, such as cost and efficiency (Raa, 2021, p. 21), to match the organizational resources.

After the manager and employee have discussed which CLO's will be developed, and the sufficient training possibility is chosen, the implementation can start. The specific training program should be differentiated to match the stated CLO's. The following guidelines regarding the implementation are generic to make the guide applicable for all different organizations. As mentioned in Chapter 3.2.3, a new paradigm should be created to integrate the offered training and education needs (Cheong Cheng, 2003, pp. 208-209). The research of Cheong Cheng (2003, pp. 208-209), notes that education should be localized, individualized, and globalized. Individualized means that the learning process should not be reproduced (standard programs and following a teacher), but rather focusing on how things are learned and self-actualizing process. Further, localized and globalized learning addresses the need for lifelong learning and using global sources. This approach is advised, since it is essential to follow an individualized program, every employee is unique and has their own personal needs, and localized and globalized matches the ever-changing environment of the purchasers.

Outsourcing specific tasks, mentioned in Chapter 2.3.3, can also be an implementation method of acquiring new competencies within the organization. This can be done when the purchaser does not obtain the aimed competencies, and there are no learning opportunities available to learn the employee the required competencies. However, since outsourcing does not focus on educating future competencies but rather buying competencies by hiring new employees, this aspect will not be included in the guide.

5.2.6 Step 5: Measure and evaluate

To provide a successful integration of the learned competencies in the purchasing department and validate the process, the progress should be measured. Measuring can be done by assessing the stated KPI's in the development plans. Besides, I4 stated that the HR department of their organization stimulates the learning process by using the Plan, Do, Check, Act (PDCA) model to measure the value addition (Gidey, Jilcha, Beshah, & Kitaw, 2014, p. 2). This model will therefore be applied to guide the measurement of the process. To understand the measure aspect in this PDCA model, the steps are shortly discussed. Plan: gathering the data and the education needs to determine which competencies need to be learned (step 2), and to develop the development plan (step 3). Do: implementing the sufficient training program (step 4). Check: summarizing and reviewing the process (step 5). Act: standardizing the improvements (step 5).

Thus, the manager and employee should summarize and review the process. This can be done during appraisals. A helpful tool to identify if the development plan has been proceeded accurately, is a personal development dashboard. Within the dashboard, course objectives are structured and connected to their KPI's. The dashboard can be proceeded as a helpful tool to objectively identify if employees have made progression. To illustrate how such a dashboard is presented, an example dashboard is added to Appendix III. Besides, as mentioned in the maturity model of Schiele (2007, p. 290), feedback should be given to optimize the process. Thus, during the measurement, the manager should indicate where the employees can develop themselves. The evaluation of the process is an essential aspect of the last step, which relates to 'Act' in the model. Evaluating may assist the decision of whether to continue with the training, improve the training, or standardize the competencies in the department (Kirkpatrick & Kirkpatrick, 2006, p. 17). The evaluation can be supported by the information of the measurements and the dashboard in Appendix III. It is advised to regularly evaluate the process by asking the employees on how the process is going to avoid conflicts at the end of the process.

6. DISCUSSION

6.1.1 Theoretical implications

The aim of the research was to find the answer on how large organizations know which future competencies are required and optimize the implementation process of future competencies within the organization. To answer both research questions, a literature review was used to build a solid understanding of the changing environment of purchasers and the need for future competencies, as well as a continuous method to implement these competencies.

The first research question was answered by analyzing the interviews, where it was found that the identification of future competencies rely on the experience of managers, and occur during appraisals, with no structured updating method. This result is essential to answer the second research question, since there was no structured approach, the optimization focused on structuring the process. Therefore, the results of the interview and analysis complements the existing research of Bals et al. (2019) and Delke et al. (2021). The reason for contributing to these current researches, is that both researches mentioned the need for future purchasing competencies, but without offering a plan that can be followed to gain and learn those future competencies. An optimization of the process of acquiring future competencies, concerning research question 2, is a 5 step guide. The reason for focusing on PSM, is that there has not been any model to visualize all the steps that are necessary for gaining the needed education for purchasers regarding (future) competencies. Therefore, this guide contributes to the existing knowledge of the need for future competencies and the implementation of these competencies. The reason that this guide is useful for purchasers, is that it can be differentiated to personal education needs, is structured in just five steps and without highly expected cost.

The guidelines can be used to tackle the external developments and support the incremental development of Industry 4.0 (Schiele & Torn, 2020), by guiding the implementation of the future purchasing competencies, which will be needed in the new industry. The proposed guide is generic, to make it applicable and knowledgeable for different large organizations. However, the data of the purchasing experts, the course development plan in step 3, the implementation roadmap of Raa (2021) and the added guidelines in step 4, make the guide more purchasing related. The main advantage of a generic guide is that it is applicable to other departments in the organization.

Concerning the continuous learning approach in Chapter 2.4, the research of Terziev and Dimitrova (2014), Cheong Cheng (2003), and Schiele (2007) is used to understand the need for continuous learning. The continuous learning of Terziev and Dimitrova (2014) focuses on supporting and innovating employees, regarding the education of general competencies. The guide that is proposed integrates these aspects, by including the input of the manager. Besides, the guide supports the research of Schiele (2007), by providing the needed steps that are necessary to gain a sufficient maturity assessment. In order to become more mature, a new paradigm where learning is

individualize, localized and globalized is used (Cheong Cheng, 2003, pp. 208-209). By combining the literature reviews, the link to purchasing is made. Since the method of Terziev and Dimitrova (2014) increases the performance of organizations, and the maturity of the purchasing functions is based on performance. Moreover, the 5 step model provides a continuous approach by continually indicate the need of education and development for employees, by assessing and evaluating the process, and to continuously identify potential needs. This is essential to tackle the challenges of the external developments in Chapter 2.1.

Focusing on step 4 of the implementation guide, the course template of Williams et al. (2020) is used to visualize the use of development plans. The KPIs support the template by making the assessment methods more measurable. However, it can be discussed that measuring 'soft' purchasing competencies is difficult, since they are based on social and personality traits. These traits are challenging to quantify. In addition, an overview with guidelines regarding the decision of choosing an internal or external approach is provided to complement the research of Raa (2021). Compared to the research of Raa (2021), which focuses implementing future competencies in small organization through HR, this research focuses more on the input of managers from the purchasing department, to structure the process and form a clear vision. Moreover, this research has interviewed large organizations instead of small organizations. However, since the purchasing departments were quite small, the roles and responsibilities of these experts were relatable to the interviews of the research of Raa (2021).

6.1.2 Managerial implications

The added value of the research concerning the process of acquiring future competencies, is that the guide will coordinate and optimize a continuous process of implementing education in the purchasing department. The guide meets both individual as well as organizational needs, by combining the input of the employee and the manager. Applying the guide will add value to the capabilities of purchasers, since it will help them to develop their knowledge.

The results of the interviews form a benchmark, to get an understanding on how large organizations identify the required future purchasing competencies. Moreover, the results in Chapter 4, can also be used to identify the different learning approaches between the purchasing departments. As mentioned, the model is executed as a general guide, to make it not only applicable for all organizations, but also for different departments. This means that other functions in the organization can make use of the guide to optimize their learning process. The guide is developed to be easily integrated into the daily work of employees, since it does not require much resources. The amount of resources and effort can be differentiated according to each need. Since the guide focuses on personal development to personalize the process, it avoids paying unnecessary costs, by for example training competencies that employees already obtain.

To conclude, by developing a 5 step guide, a continuous learning approach is found to optimize the learning process of future purchasing competencies in the purchasing departments of large organizations. Therefore, this research fills the gap between the current research of future purchasing competencies and the process of learning those competencies.

7. LIMITATIONS AND FUTURE RESEARCH

A limitation of the research is that the guide is based on the interviews of large organizations with rather small purchasing departments. The purchasing departments are between 2 and 25 employees, and the two organizations do not have a strategic purchasing department. Another limitation is that all interviewees work in the Netherlands, making the results biased for the specific country where the purchasing department is stated. For example, during the interviews it was stated that in the Netherlands employees work more individually. Besides, it may be that not all necessary information about the guide was discussed during the interviews, since the guide was established after the interviews. Therefore, the guide is executed slightly biased. In addition, the outsourcing aspect is not explained in detail, since outsourcing focuses on the recruitment and selection of organizations, which is not integrated in this research. The current digitalization processes are identified during the interviews, however the maturity stage of these processes are unknown. Therefore, it was unable to reflect on the current maturity level.

Therefore, future research could focus on how to implement specific training programs when larger purchasing departments are involved. Since the possibility to expand internal training is assumed to be greater in large departments, which could adjust the current guide. Besides, future research could focus on different sectors and its implementation structure. For some industries, I1 and I5, it is essential to understand the product, so other trainings can be more important for these kind of organizations. Moreover, it can be researched how the guide would fit to one specific organization, to, for example, differentiate the guide to a specific request for the company. Another aspect that can be further researched is a comparison analysis of the proposed guide and making use of an outsourcing model. Since this guide does not focus on outsourcing, but some organizations do, such as the organization of I5. Moreover, the effect of the guide regarding the maturity level of purchasing departments in large organizations could be researched by analyzing the maturity level before and after the use of the guide. This will contribute to the research of (Schiele, 2007), by researching the proposed steps to acquire a higher maturity level.

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APPENDIX
Appendix I: Interview guide

Question 1: Would you be so kind to introduce yourself and your company?

Question 1a**:** Ethical information (name, age)

Question 1b: Could you describe shortly your professional career? (Study, companies)

Question 1c: Could you describe your function within the company?

Question 1d: What is your role/responsibility in the organization?

Question 2: Could you describe the purchasing department?

Question 2a: In what way is the purchasing department important to the whole organization?

Question 2b: What are the core objectives of the purchasing department? (Is it, for example, most cost-oriented, improve quality, or manage the relationships, etc.)

Question 2c: How far is the digitalization stage within the organization/purchasing department?

Question 2d: Is the organization facing new developments within the purchasing department?

- ➔ If yes, what kind of development?
- ➔ If not, why is the organization not focusing on future trends?

Question 3: How do you organize roles and responsibilities within your purchasing department?

Question 3a: Which roles exist within your organization?

Question 3b: How do you define the responsibilities for each role?

Question 3c: Do you define specific skills or competencies for each role?

Question 4: Which competencies are needed regarding the responsibilities and roles of the purchasers?

Question 4a: How does the organization determine which competencies are currently important for specific job roles?

Question 4b: In which way are the job roles updated as a response to the future identified competencies?

Question 5: In what way is the organization assessing or measuring those competencies?

Question 5a: In what way does the organization set targets for the development of employees?

Question 6: How does the organization acquire new competencies?

Question 6a: Does the organization offer internal training programs to acquire new competencies?

- ➔ If yes, what kind of training programs?
- ➔ If no, why is the organization not training and developing their employees?

Question 6b: In what way does the organization offer external training programs for individuals to develop their competencies?

- ➔ Why?

Question 6c: Can you give a specific example of how new competencies are learned/acquired within the organization?

Question 6d: Is it also a possibility for the organization to outsource specific competencies? (For example, hiring external data analytics)

Question 7: **How does or should the organization implement the needed competencies in a continuous learning approach, to keep the competencies up to date?**

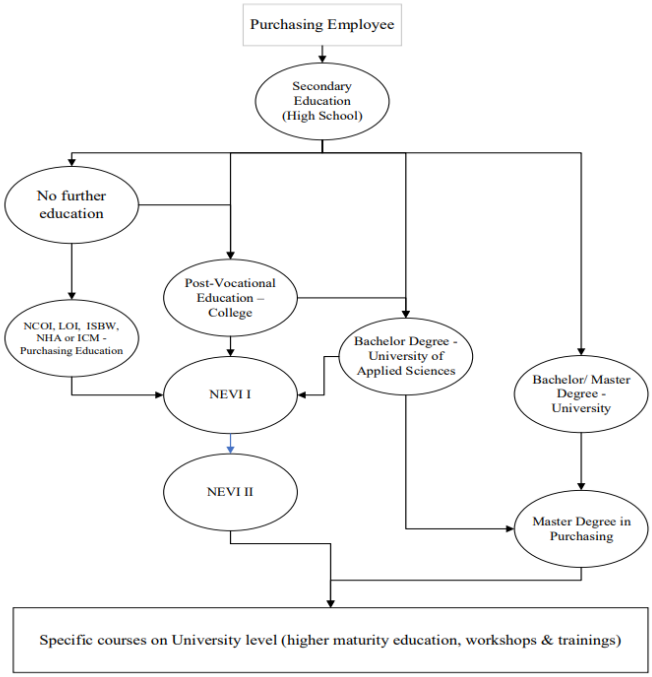
➔ If it is already implemented: Regarding your own continuous learning approach to acquire new competencies, do you think it is correctly assessed? Why?

Question 8: **Closing the interview, could you give some comments on the following points regarding the implementation of future competencies?**

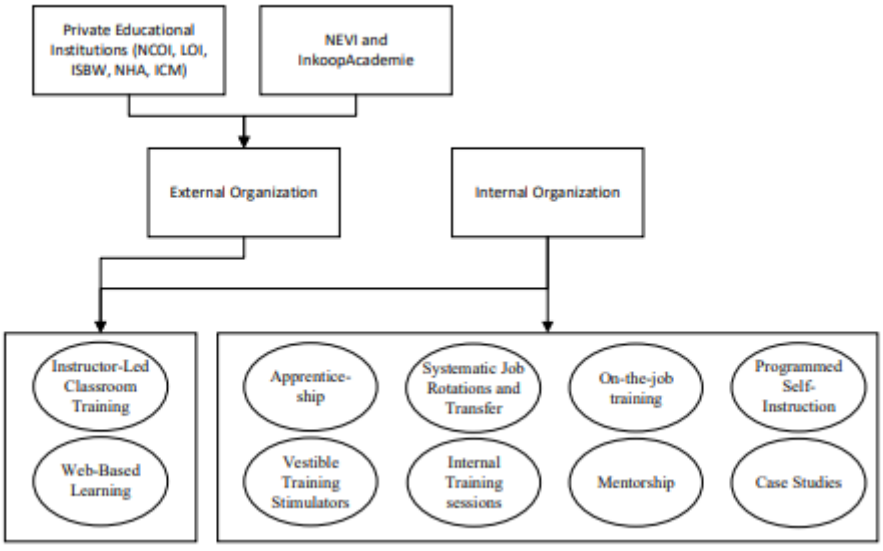
- Possible methods on how to implement new competencies
- The main reason of developing competencies in the purchasing department
- Implementing educational procedures in the company

Question 9: Are you open to verify the findings from the interview at a later moment?

Appendix II: Human resource development model and additional development techniques for purchasing

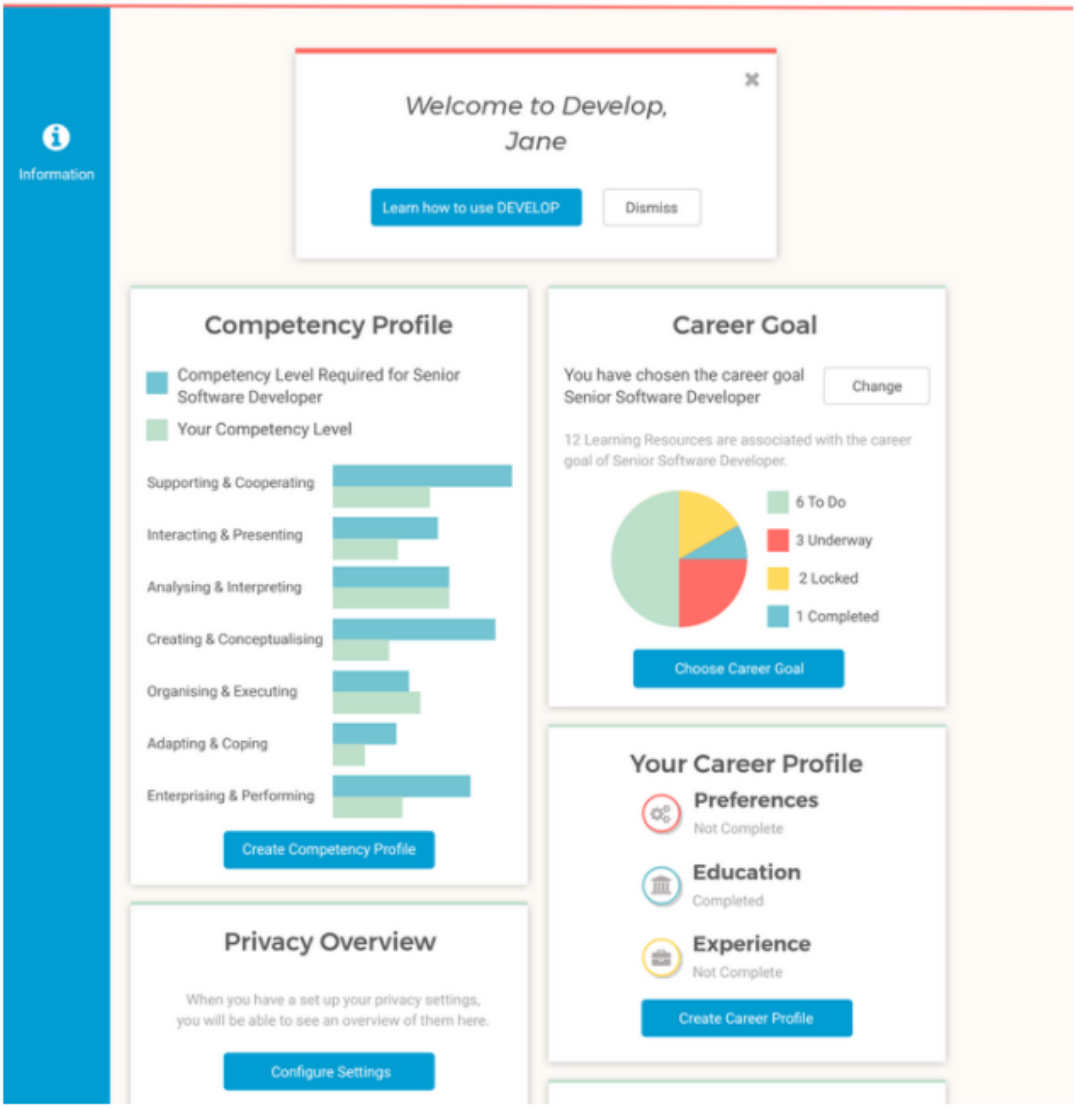


Human Resources Development Model for continuous learning in purchasing



Additional development techniques for Purchasing

Appendix III: Example Personal Development Dashboard[16]



[16] Schwertel (2017)