PROJECTED AND EXPECTED COMPETENCES IN LOGISTICS AND SUPPLY CHAIN IN SLOVENIA

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Abstract

Technological development requires constant adaptation and new work approaches, which also applies to logistics and supply chains. In this field, innovation and instant adaptation are understood as key competitive advantages. The aim of this study was to identify which competences employers in 2020 projected to be needed in the future in the field of logistics and supply chain management and which competences employers expected from employees to have in 2023. For research, a quantitative survey of 435 employers in logistics and supply chains was conducted in 2020 to determine which competences employers projected their employees to need in the future in logistics and supply chain. To analyse the competences expected in 2023, a qualitative analysis of 50 job advertisements from the field of logistics and supply chain was conducted. So, this article presents the results of two different surveys, so a combination of quantitative study from 2020 and qualitative study from 2023. The results of the surveys show that communication skills, coordination and social skills are currently mostly expected competences for logistics jobs, but there is ate the moment not yet an important need for skills in robotics, the Internet of Things (IoT) and blockchain.

Keywords: competences, job advertisements, logistics, supply chain

1. INTRODUCTION

Recently major changes in workspace in logistics and supply chains and in general in various areas, one of which is digital transformation, have been made. (Sapper et al., 2021). The field of logistics and supply chains has undergone many changes in the last 20 years, which have contributed to an increased demand for knowledge as a result of the introduction of technology and international cooperation. While in the last century, lower-level positions in logistics (e.g., truck drivers, warehousemen) required a basic level of qualification, nowadays, due to advanced

technology (e.g., barcode and RFID systems, truck fleet management or tolling and truck steering concepts), it is the level of qualification required considerably higher than in the past century. This is also the case for many higher-level positions in logistics and supply chains in fields such as logistics information technology, contract logistics and innovative supply chain concepts. (Klumpp, 2015)

The standard of living is constantly rising and people's demand for diversity and personalisation is expanding (Wu, 2022). Supply chain is becoming increasingly complex and implies the continuous development of value-added logistics services (Cavusoglu et al., 2022). One of the big changes that is taking place is the globalisation of business, which means more transport needs and consequently more environmental pollution (Zhang et al., 2020). On the other hand, customers expect companies to be more environmentally friendly (Letnik et al., 2022).

To meet customer needs, be environmentally friendly and competitive, companies need to include the employees with right competences in their working environment and processes. The results of the study by Closs and Mollenkopf (2004) confirm that supply chain competences lead to improved performance and that supply chain competences are used in different ways to create different performance advantages in different business environments in logistics and supply chains. The importance of competency development is also shown in a study by Mageto and Luke (2020), which shows a growing trend in publications on competences in supply chains management. The importance of equipping employees with specific competences is confirmed by studies that find that competences, among others, impact the resilience of supply chains (Wieland & Wallenburg, 2012). Studies also point to a gap between the competences needed or expected by employers in field of supply chain management and logistics and the competences possessed by potential employees (Closs, 2000; Wong et al., 2011; Lutz & Birou, 2013; Sinha et al., 2016; Cvetić et al., 2017).

This paper aims to present which competences employers in logistics and supply chain organisations in Slovenia in 2020 identified as being needed in the future and which competences or skills employers in logistics and supply chain organisations in Slovenia expect from their employees in the present. The paper shows and explains the need to develop and build competences from a time perspective, i.e., the speed of the requirement for new skills and to clarify which skills are needed and which competences will be relevant when companies have more advanced processes and tools to do the effective and efficient work in field of logistics and supply chains. The purpose of this research was to review the current competence needs based on the predictions of the logistics sector and supply chain managers in the past. The research assesses whether the predictions of the expected competences in 2020 are already a reality in 2023. The results of the survey will help to identify the rapidity with which new competences are required. The research question of the study is:

RQ: Which competences do employers in field of logistics and supply chains expect from their employees in the future, based on past projections?

This research question will be researched according to findings from quantitative research in 2020 among Slovene logistics and supply chain companies and from qualitative analysis of published job advertisements.

First, the following chapters include an overview of the research on logistics and supply chain competences; second, a description of the data sources and the research method is explained; third, a discussion of the presented results will follow; fourth, the gaps between predicted and expected competences will be discussed; and finally, conclusions and suggestions for future research will end this article.

2. LITERATURE REVIEW

First, we will define competences, explain why competences are important in working environment in general and then define and explain the specific competences needed in the logistics and supply chain field.

Competences can be in general understood and defined as the interaction between the individual and the workplace (Derwik et al., 2016). Bouri et al. (2018) defines competence as a polysemic concept that leads to different definitions because it is a multidisciplinary concept that involves several fields such as human resource management, educational sciences, psychology, quality, industrial engineering and supply chain management.

One of the most general definition of competences, that is also being considered in this article, define competences as "knowledge, skills and abilities that are associated with high performance on the job at an individual level" (Barnes & Liao, 2012).

Having employees whose competences match the requirements of the jobs they do is an essential criterion for a company's success (Flöthmann et al., 2018). Individual job fit is positively related to job performance and job satisfaction (Caldwell & O'Reilly, 1990).

2.1 Competences in logistics and supply chains

In the field of logistics and supply chains, the importance of competences is being increasingly researched and discussed.

Several different authors explain that skills and competences in logistics and supply chains are despite all technological development extremely important for the performance and future development of business. (Cottrill & Rice, 2012; Ellinger & Ellinger, 2014; McKinnon et. al. 2017)

"To take supply chain performance to the next level, companies will have to tap into this human element more intensively. Many companies have pushed hard on technological and infrastructure improvements and investments. The next wave of improvements and investment should center on the people who manage and operate the supply chain." (Daugherty et al., 2000)

Different authors have identified various competences as the most important in the field of logistics and supply chain management at different times. Prajogo and Sohal (2012) identified in their research as the most important (1) competence's ability to work effectively with individuals and groups/teams, (2) ability to manage relationships in diverse contexts, (3) ability to manage risks in supply chain and their

associated issues, (4) ability to make use of numerical techniques for decision making and project management skills and (5) ability to lead major projects.

Bals et al. (2019) listed as important competences for purchasing following skills, abilities and knowledge: (1) analytical skills, (2) basic knowledge on purchasing and supply management role & processes, (3) communication skills, (4) cross-functional abilities & knowledge, (5) interpersonal communication skills, (6) ability to negotiate, (7) stakeholder relationship management knowledge, (8) strategic sourcing, (9) strategic thinking and (10) knowledge in field of sustainability.

Katiniene et al. (2021) identified working with people as the most important social competences in field of logistics and supply chain management. Since logistics and supply chain management are despite all technology still service oriented this can be seen as really generally evident and important. For the analytical competences, the competences needed to do the specific job came first, so no general analytical competences were listed, but the competences connected to the specific workplace in logistics and supply chain were mentioned. The most important personal competences were perceived the competences needed for self-management.

Sapper et al. (2021) explored the competences needed for the future in logistics and supply chain filed and listed and rated the willingness to learn as the most important personal competence. This is very important especially in fast developing industries and services where also logistics and supply chain have a significant role. General understanding of the process was perceived as the most crucial in the group of professional competences Sapper et al. (2021). According to Sapper et al. (2021) interdisciplinarity will be the most significant in the future in the group of methodological competences. The same study shows that communication skills are considered to be the most valuable in the group of social competences.

From the previous researches and competences listed above, it can be summarised that the most important competences in field of logistics and supply chain are knowledge of logistics processes, working with people and communication skills. The technological and technical knowledge related to the specific workplaces will be needed as well. And this is closely connected to the willingness of employees to learn and develop in the future and adjust to new ideas, strategies and technologies.

3. METHODOLOGY

The research is based on a survey questionnaire (among companies in field of logistics and supply chain) which was conducted in 2020 and an analysis of job advertisements in field od logistics and supply chain management from 2023. The survey from 2020 aimed to obtain a set of competences extracted from previous researches and scientific articles in the field of logistics and supply chains management on the topic logistics and supply chain of the future, competences needed for the future and in the context of industry 4.0. Respondents in companies rated these according to previous researches found and listed competences on a Likert scale from 1 to 5, indicating how relevant they thought the competences would be for them in the future. To compare the competences projected to be relevant and the competences actually acquired in 2023, 50 job advertisements that were published in Slovenia in

2023 were analysed. So, first, research in 2020 is based on quantitative data from questionnaire and the second from year 2023 is due to analysis of online advertisement performed on qualitative way.

So, this article presents the results from mixed research techniques: qualitative and quantitative ones, and both data and prepared results (according to quantitative and qualitative research) present additional added value to this research. Data from both researches will pre combined and results also compared.

3.1 Research methodology of projected competences for the future (conducted in 2020)

The quantitative survey in 2020 was conducted online between June and August 2020. The questionnaire was prepared for to employees in leading positions in the logistics sector (logistics managers, warehouse managers, purchasing managers, purchasing specialists, transport organisers, etc.) who have the experience, knowledge, overview and insight into the necessary competences needed by employees in this field. The relevant companies and their contacts were obtained with the help of the Bizi.si (business assistant online system) and selected according to the standard classification of the activity, so companies that are fully or partially involved in logistics activities or supply chains. The appropriate contacts for selected companies were also found on companies' websites od LinkedIn profile. S, the whole population in our research were all the companies that are offically classified in Slovene business system under classification of logistics and supply chains

The sample consisted of 435 respondents, of which 42 % were women and 58 % were men. Most respondents were in the 36-45 age group (36 %), followed by the group age 46 and more (33 %), the group age between 26 and35 (28 %) and the under 25 group (3 %). Almost half of the respondents have a university degree or higher education (Figure 1).

Figure 1 Education (2020)



Source: own source

Most of participants in research come from companies with up to 50 employees (Figure 2) which means mostly small companies. The questionnaire consisted of 24 questions and listed competences related to logistics and supply chain competences relevant for the future.

Figure 2 Company size



Source: own source

3.2 Research methodology of research about expected competences in 2023

The second part of the research is based on qualitative analysis of 50 job advertisements from the logistics and supply chains sector posted in Slovenia in April 2023. The job advertisements were posted on Mojedelo.com, which is one of the major recruitment platforms in Slovenia, and have been filtered into the "Transport, procurement and logistics" work area. Positions requiring at least a high school education or more were included into research. Job advertisements have been posted for jobs such as logistics associate, director of logistics, (strategic) purchaser, head of department in transport, supply chain developer, logistics coordinator, warehouse analyst, warehouse manager, logistics planner, etc. The highest number of job advertisements was for procurement position (Figure 3).

Figure 3 Percentage of job positions (and related different areas) in job advertisements included in the research



Source: own source

The most often required qualification was at least a bachelor's degree (42 %). This was followed by a high school education or higher (20 %). 10 % required a master's degree, and 8 % a specific university degree. In 20 % of the job advertisements, the required level of education was not specified. Out of the 50 job advertisements, 26 % specified a logistics degree, while 44 % mentioned a degree, but



not specifically in logistics, but in a more general field, e.g. a technical degree. 30 % respondents did not mention the required field of education.

4. RESULTS

Here, the results and findings from both, qualitative and quantitative research, will be presented. The research results show and present the competences that are projected for the future by Slovene companies according to quantitative and qualitative researches made in 2020 and 2023.

Figure 4 shows the results of average ranking of the listed competences on scale from 1 (strongly disagree) to 5 (strongly agree) according to how respondents that are working in field of logistics and supply chains in 2020 predicted the competences in logistics and supply chains will be important in the future.

Problem solving, ability to coordinate workflows, communication skills, performance orientation and knowledge of digitalisation in logistics were marked as the most important competences for the future in logistics and supply chain sector. They were in average marked extremely high (average of all more than 4.5).

Figure 4 Projected future competences in logistics and supply chains companies in 2020

| Problem solving | | | | | | 4,72 |
|---|---|---|---|---|------|------|
| Ability to coordinate workflows | | | | | | 4,65 |
| Communication skills | | | | | | 4,65 |
| Performance orientation | | | | | | 4,60 |
| Knowledge of digitisation in logistics | | | | | | 4,53 |
| Continuous development of process knowledge | | | | | | 4,49 |
| Interdisciplinary thinking and action | | | | | | 4,44 |
| Leadership skills | | | | | | 4,43 |
| Personal responsibility for decision-making | | | | | | 4,43 |
| Participation in innovative processes | | | | | | 4,37 |
| Control of the extent of work complexity | | | | | | 4,30 |
| Systems thinking | | | | | | 4,29 |
| Knowledge of automation in logistics | | | | | | 4,29 |
| Social skills | | | | | | 4,26 |
| Entrepreneurial thinking | | | | | | 4,25 |
| Analytical skills | | | | | | 4,22 |
| Knowledge of the Internet of things | | | | | | 4,16 |
| Demand forecasting | | | | | | 4,13 |
| Big data analysis skills | | | | | 4 | 4,11 |
| Knowledge of robotics in logistics | | | | | 4 | ,04 |
| Research skills | | | | | 3,9 | 97 |
| Creativity | | | | | 3,9 | 95 |
| Ability to operate (co-operative) machines | | | | | 3,66 | |
| Knowledge of blockchain technologies | | | | | 3,61 | |
| | 0 | 1 | 2 | 3 | 4 | 5 |

Source: own source

Furthermore, these mostly predicted competencies from research performed in 2020 were also mostly found in qualitative analysis of job advertisements (connected to Slovene logistics and supply chain sector) analysed in 2023. So, figure 5 shows the results of the frequency of expected competences in job advertisements in 2023 among those that were predicted in quantitative research before in 2020.



Figure 5 Expected competences in logistics and supply chain sector in 2023

Source: own source

The figure 5 shows the percentage of analysed online advertisement where mentioned skills, abilities and knowledge (that were found in research in 2020 as the mostly predicted) were found. As presented in figure 5, communication skills, ability to coordinate workflows, social skills, personal responsibility for decision making, control of the extent of work complexity and knowledge of digitalisation in logistics were found the most frequently in analysed online job advertisements in field of logistics and supply chain in Slovenia. These mentioned competences were found in more than 50 % of analysed online advertisements in logistics and supply chain sector.

5. DISCUSSION

The results from 2023 underline the increasing importance of several key competences in the logistics and supply chain industry that were already projected in 2020. The ability to coordinate workflows (mean 4.65 in research performed in 2020 and 86 % share of expectation in analysed online job advertisements in 2023) indicates the need for individuals who can efficiently manage and coordinate tasks to ensure operations without complications. A similar study analysing job advertisements has been conducted in Serbia in 2014 and confirms "Planning and organising of the tasks" as the second most expected competency in the set of fundamental competences, after communication (Cvetić, 2017).

Highly ranked in quantitative research in 2020 and now in qualitative research in 2023 is communication skill (mean 4.65 in research in 2020 and 88 % share of expectation in analysed online job advertisements in 2023). This competence emphasizes the significance of clear and effective communication in facilitating collaboration, reducing errors, and improving overall efficiency. The importance of communication as a core competence in logistics and supply chains was also confirmed before in some other researches by the research of Cvetić et al. (2017), Bals et al. (2019) and Sapper et al. (2021).

The following competences that are according to our two researches very important are social skills (mean 4.27 in research in 2020 and 78 % share of expectation in analysed online job advertisements in 2023). These skills hold considerable importance, reflecting the recognition of the need for strong interpersonal abilities to build relationships, promote teamwork, and effectively interact with stakeholders in the logistics field. The high importance of social skills was also confirmed before in a studies by Derwik et al. (2016) and Kotzab et al. (2018), which analysed 280 competences in the field of logistics and supply chains.

Another competence projected in quantitative research and now expected in online job advertisements in logistics and supply chain companies is personal responsibility for decision-making (mean 4.43 in research in 2020 and 66 % share of expectation in analysed online job advertisements in 2023). This signifies the importance of individuals (in logistics and supply chain sector) who can take ownership of their decisions, make quick and important choices, and be accountable for the outcomes in the dynamic logistics and supply chain environment. This was also confirmed in the findings of the study Mangan and Christopher (2005) and Derwik et al. (2016).



Figure 6 Comparison of predicted (2020) and expected (2023) competences

Source: own source

Figure 6 shows a combination of results of both, qualitative and quantitative researches conducted in 2020 and 2023 in Slovene logistics and supply chain sector. If we combine both results, we can conclude, that ability to coordinate workflows, communication skills, social skills and personal responsibility for decision making were in both researches found as really important for successful work in supply chain and logistics field. Research skills, creativity, ability to operate with machines and knowledge of blockchains technologies were found according to both researches (conducted in 2020 and 2023 in Slovene logistics sector) as the less important for appropriate and good work in companies in logistics and supply chain sector.

Although researches have been made on Slovene logistics and supply chain sector and on limited sample, we still think that these results can be a good starting point for further planning of knowledge, skills and abilities needed for good and successful employees in logistics and supply chains.

6. CONCLUSION

Companies in general and especially in service sector (where in general also logistics an supply chains are classified) continue to highlight the need for soft competences in particular. The focus is according to different researches (Derwik et al. (2016), Kotzab et al. (2018), Cvetić et al. (2017), Bals et al. (2019), Sapper et al. (2021)) mainly on the competences needed for teamwork, emphasising the autonomy of employees and a basic working knowledge of a specific area (e.g. purchasing procedures, warehouse processes, etc.).

Despite the rapid development of new technologies in the world in logistics and supply chain sector, it is interesting and a bit surprising that according to our research findings in Slovenia organisations in this field companies are still looking for employees with only basic knowledge in the field of technology. It is possible that, although the need for these competences is high in companies in logistics and supply chain sector, companies do not mention these expectations in their job advertisements and simply take them for granted.

So, the research results show the importance of soft skills and competences, connected to soft skills, as really important of successful work in logistics and supply chains. Among them, the ability to coordinate workflows, communication skills, social skills and personal responsibility for decision making were marked as most important for future employees in companies related to supply chains and logistics.

There is also a great potential for further research in field of competences, so skills, knowledge and abilities, needs and understood as important in companies in logistics and supply chain sector. It would be interesting to research further on (according to our research results) what are not only expected but also the actual competences that companies expect from their employees that are already included in working environment in logistics and supply chain sector.

To provide companies with the most competency-matched employees, job advertisements should be more specific about the expected competences. In this way, potential employees, who are, to a large extent, students from this field, could also be given information by companies about what they expect from candidates for specific jobs and already strengthen their skills according to this information during the study. There is in general also a great potential to renew study curriculums according to new fast developing logistics and supply chain companies.

For further research, it is proposed to conduct in-depth interviews (according to quantitative research results in 2020 and qualitative analysis results in 2023) with managers in logistics and supply chain workplaces in Slovenia and so to prepare further qualitative analysis and list and closely and precisely describe the competences needed at the moment in companies in Slovene supply chain and logistics sector.

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