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COMPETENCES OF LOGISTICS EMPLOYEES – SYSTEMATIC LITERATURE REVIEW

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Purpose: The main objective of the article is to cover the main directions of development of competences of logistics employees and explore researchers different points of view.
Design/methodology/approach: The research in the article consist of a systematic literature review described by Czakon (2015). All steps of the literature review were conducted from August to November 2024.
Findings: The Author based on literature review will point out the differences in the perception of competences logistics employees.
Research limitations/implications: The limitations include the adopted methodology and research strategy for the studies analysed and the restriction to only one database of scientific publications (Scopus). It is necessary to repeat the research presented in this article to conduct a comparative analysis, expanding the database of analysed studies, whether by including additional databases of scientific publications or by changing the research criteria.
Practical implications: the paper will have no practical implications.
Social implications: Building awareness of the need to introduce changes in the measurement employee competence level. This is due to the fact that not only experience and track records or academic qualification, but also soft skills and cultural fit refers are increasingly important in building a company's competitive advantage.
Originality/value: The analysis carried out allows further methodological work to be carried out on building tools to assess the competence level of logistics employees.
Keywords: competences, logistics.
Category of the paper: Literature review.

1. Introduction

In today's VUCA (Volatility, Uncertainty, Complexity, Ambiguity) world, we are facing a digital transformation and an ecological transformation. Thus, the perception of employees' knowledge, skills and social competences in terms of their effective use by employers is also changing. The changes taking place in logistics processes are not insignificant. This topic is highly relevant given that companies in the logistics industry are facing staffing issues including

a shortage of drivers and logistics professionals. This affects the ability to fulfil orders and maintain operational continuity.

The work of a logistician involves long working hours, frequent process changes and time pressure, which may deter potential candidates who are looking for a more sustainable lifestyle.

There is no consensus in the literature on the very definition of competence for instance: Filipowicz (2004), Kwiatkowska-Ciotucha et al. (2021), McKinnon et al. (2017). For the purposes of this study, it is assumed (Katinienė et al., 2021) that a competence is a set of personal applied abilities, skills and professional knowledge required to choose the necessary operational methods and to perform the activities/functions/work of a particular type.

Undoubtedly, the core competencies of logistics professionals have changed over the years. Therefore, in the first part of the consideration of competences, it was necessary to identify what changes have already taken place over the years. An analysis of the reports of Hays Poland (2019-2024) a leading company specialising in recruitment and HR services was carried out. The company's reports were chosen this due to the general availability of the reports, 50 years of experience in the industry and a scope of operations including: 40,000 client partnerships worldwide and1,300+ jobs filled every day).

According to the Hays Poland report, there was a shortage of logistics professionals on the market in 2019, which is why employers were keen to interview candidates from other industries with a similar background or education Companies were open to people who had experience on the 3PL/4PL (3th Party Logistics/Lead Logistics Provider) side. In 2020, the logistics industry was affected by the outbreak of the COVID-19 pandemic. The year was characterised by increased digitalisation in the transport industry and the automation of storage processes. As a result, there was an increased need for people with IT skills, more specifically people experienced in the implementation of ERP systems and with skills in the automation and robotisation of logistics processes. Companies quickly had to adapt to the new situation. The e-commerce sector developed rapidly, which influenced decisions to expand warehouse space and automate warehouse processes. In order to maintain the fluidity of distribution networks, companies continued to invest in solutions for optimal supply chain planning in 2021. A key role was played by the ability to analyse data and draw logical conclusions.

In 2022, a significant role could be seen in the implementation of technologies to optimise supply chains, specialisation in indirect purchasing, planning of logistics activities and optimisation of processes and costs, i.e. generating savings, improving service quality and reducing lead times. The year 2023 brought changes in competence needs. Employers have turned their attention to soft skills, such as negotiation, resistance to stress and quick decision-making. The preceding years have exemplified the importance of building supply chain resilience and risk analysis due to worsening raw material availability issues and high inflation. The relocation of logistics activities to our country has also become important, with the result that managers' responsibilities have expanded to international. In addition, environmental transformation has become a market trend.

The year 2024 sees a further need to optimise costs and strengthen supply chains. The importance of soft skills, which are increasingly placed on a par with technical skills, is being reinforced. Among other things, logisticians are increasingly required to be able to adapt quickly in changing conditions, to have analytical and communication skills or to be effective in managing several projects simultaneously.

Another strongly emphasised trend is the digitisation of logistics processes (including the trend of artificial intelligence, robotics and advanced technologies). Consequently, there has been an increased demand for logistics employees with interdisciplinary competences, who are innovative and have the skills to use modern tools to improve their work.

The above considerations are illustrated in Figure 1.

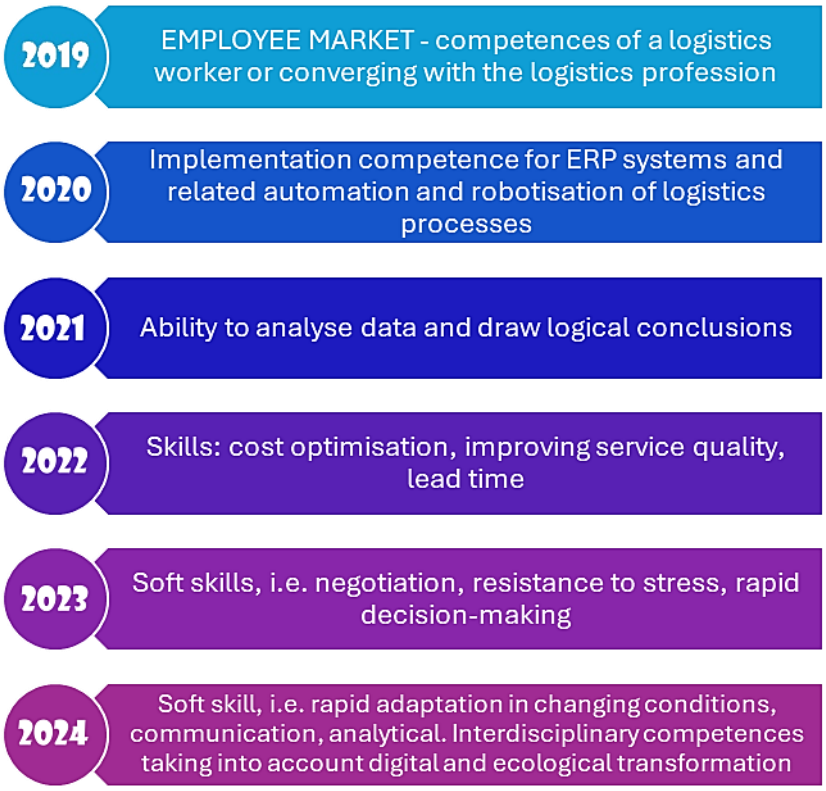

Figure 1. Employers' competence needs in relation to logistics employees over the years.

Source: own elaboration based on data analysis from Hays Poland 2019-2024 Reports.

Given these developments, it seems interesting whether research is being produced in a world of such dynamic of logistics, studies are being produced to measure the level of competence and competence for market needs.

2. Methodology and results

The research in the article consist of a systematic literature review described by Czakon (2015). All steps (Figure 1) of the literature review were conducted from August to November 2024.

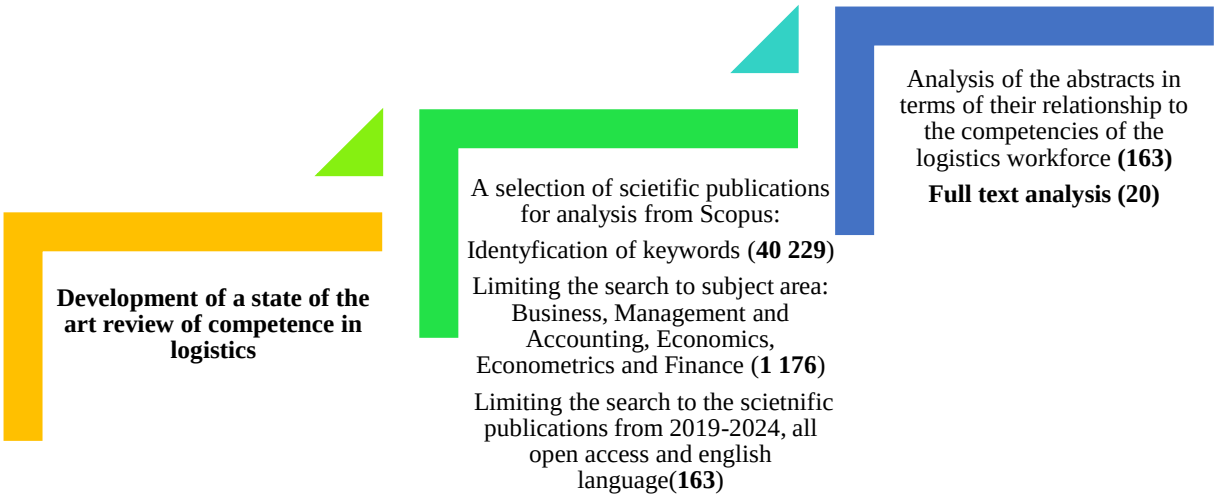

Figure 2. Methodology adopted form systematic literature review, step by step.
Source: own elaboration.

First, the Author selected the publications to be analysed based on the Scopus database of scientific publications. An important step in the literature review is the selection of appropriate search criteria to establish the appropriate database for further analysis. Identification of keywords and fields of science. The Author decided to limit the search criteria included a combination of the word ‘competence’, ‘logistic’ or ‘transport’ to the query which resulted in 1 176 publications. The last step based on the above searches included published between 2019 and 2024, limited to open access, English language and articles only. This search resulted in 163 articles, which were subjected to further biometric analysis.

Table 1.
Steps in the retrieval of process and their results

Steps	Consecutive query steps	Query strings	Number of documents
1	‘competence’ and all words derived from it (i.e. competency, competencies) in title, abstract and keywords	TITLE-ABS-KEY (competen*)	574 770
2	‘competence’ and all words derived from it (i.e. competency, competencies) in title, abstract and keywords, publications in the fields Business, Management and Accounting, Economics, Econometrics and Finance	TITLE-ABS-KEY (competen*) AND (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "ECON"))	40 229

Cont. table 1.

3	All words derived from ‘competence’ cooccurring with word logistics or transport Publications in the fields Business, Management and Accounting, Economics, Econometrics and Finance	(TITLE-ABS-KEY (competen*) AND TITLE-ABS-KEY (logisti*) OR TITLE-ABS-KEY (transpor*)) AND (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "ECON"))	1 176
4	All words derived from ‘competence’ cooccurring with word logistics or transport Publications in the fields Business, Management and Accounting, Economics, Econometrics and Finance, timeframe 2019-2024, limited to open access, articles only, language limited to English	TITLE-ABS-KEY (competen*) AND TITLE-ABS-KEY (logisti*) OR TITLE-ABS-KEY (transpor*) AND PUBYEAR > 2018 AND PUBYEAR < 2025 AND (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "ECON")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (OA , "all"))	163

Source: own elaboration based on the Scopus database search results.

The Autor analysed the abstracts of the 163 articles. This analysis resulted in a reduction of the literature based to 20 articles because abstracts of 146 articles not related to the aim of the article.

The bibliometric analysis was performed using MS Excel and VOSviewer version 1.6.20. The analysis allowed to identify the most popular keywords along with their frequency.

Keywords provided by the authors in the selected 20 publications were examined. The sum of all keywords is 106, of which the most common are 'logistics' - 15 times and Supply Chain Management - 11 times, while 'leadership' and 'Sustainable development' - seven times each.

Table 2.
Most frequently occurring keywords from publications meeting the selection criteria after abstract analysis

Rank	Keyword	Frequency of keyword occurrence
1	Logistics	15
2	Supply Chain Management	11
3	Leadership	7
	Sustainable development	
4	Human	6
	Supply Chain	
5	Article	5
	Decision making	
	Air transportation	
6	3PL	4
	Competencies	
	Sustainability	
	Performance	
	Industry 4.0	
	Skills	

Source: own elaboration based on analysis performed in VOSviewer.

The Author then used VOSviewer to graphically represent the frequencies and links between keywords of articles for full-text analysis. The premise of minimum number of occurrences of a keyword: 4 – Fig. 3.

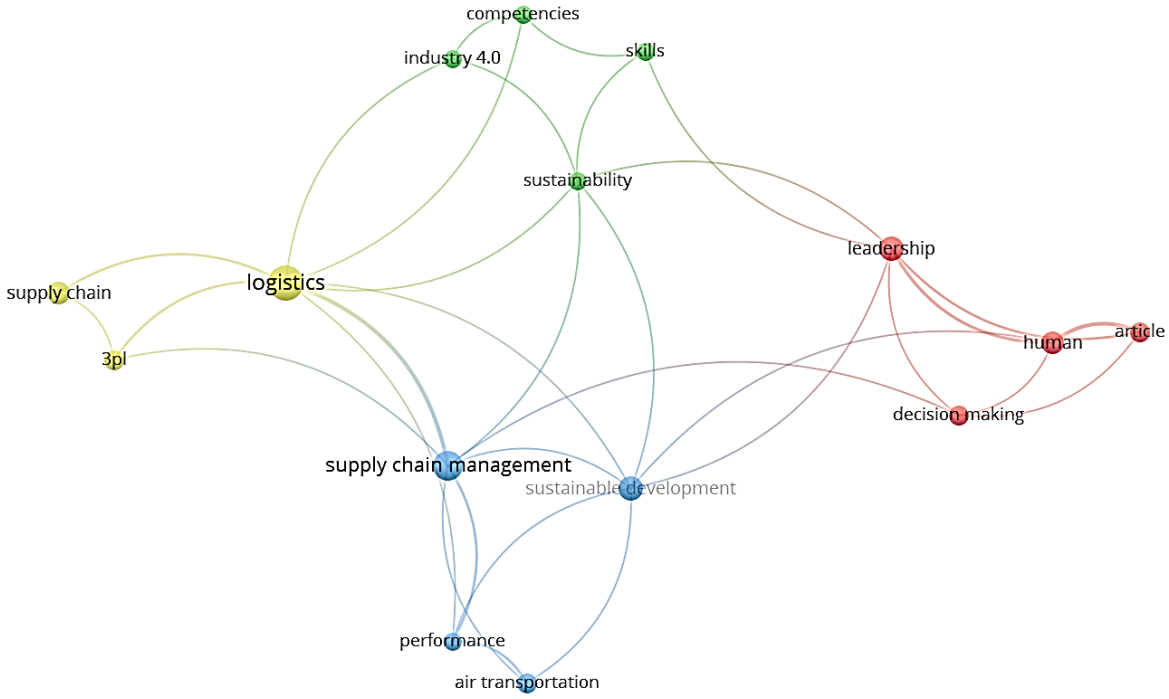

Figure 3. Keywords map based on the most popular keywords along with their frequency.
Source: own elaboration based on analysis performed in VOSviewer.

As can be seen in Figure 3, were identified 4 thematic areas (so-called clusters), which are represented by sets of related keywords.

The literature accepted for the study (20 publications) was subjected to full-text analysis. The first section will present the articles that were rejected with the reason.

The article Artz, Goodall, Oswald (2019) concerned on the first statistically representative international estimates of the extent to which employees have 'bad bosses' and research on Peter Principle (managers and supervisors are routinely promoted to one level too high relative to their abilities, within organizations) - does not apply to the competence of logistics professionals

Medeiros, di Serio & Moreira (2021) article based on case study Avon Brazil which aim is to develop in each student analytical competencies by evaluating current logistics processes.

The other articles analysed can be grouped: first group are those dealing with competencies in general i.e. competency framework, categories of competencies. Second group are articles dealing with both the logistics industry, transport industry and competencies. Third group are articles dealing with IT application, HR, leadership, logistics and competencies.

Group one: General research about competencies

Ali & Qureshi (2021) validate a scientifically developed competency framework and assesses the prospects of its application in specific industrial sector of Paksitan. The proposed framework was validated for having relevant content and likelihood of its usefulness. They show that the use of competency frameworks is often hindered because of conceptual ambiguity of methodological rigor in the development of such systems, and psychometric

issues. The authors propose that the competency framework colud be verified in settings like other industries, larger geography, more diverse groups.

Larsson & Björklund (2020) Measures Developmental Leadership Questionnaire (DLQ) based on a structural equation modeling analysis, was used to assess leadership behaviors. The DLQ, contains items designed to measure the leader characteristic: task-related competence (two items), management-related competence (four items), social competence (two items) and stress management skill related competence (four items). Data was collected using the developmental leadership questionnaire from a sample of Swedish leadership course participants.

Kannan & Garad (2021) presented as attachment a list of core competencies required by employees to cope with the specific job and tasks in Industry 4.0 was derived, divided into the four main established categories of competencies: Technical, Methodological, Social and Personal to create a competency model tool to assess specific competencies of individual employees, by customizing it to specific department or job profile, and to identify the competence gap - the authors focused on the competencies required for quality management professionals to meet the needs of industry 4.0.

Group two: Competencies, logistics industry, transport industry

The main goal of research Andrejić, Kilibarda, Pajić (2022) was how to determine what factors and how affect employee's satisfaction and loyalty in the logistics sector in the Serbian. The results of the research show that employees working in logistics companies have to multiple skills and knowledge, such as professional knowledge, practical skills, knowledge of computer programs (such as excel, word, etc.), knowledge of the foreign language, personal characteristics, communication skills, interest in the job, motivation, persistence, etc.

Bremer & Maertens (2021) compared ten studies on future competencies from different countries, using the ESCO classification (European Skills/Competencies, qualifications and Occupations). They noticed that communication, collaboration and creativity are three competencies that should not be viewed individually as they are often interlinked. What is important the most common competencies – using of foreign languages. Other skills: working with computers and programming computer systems, solving problems and adapt to change. They focused on the air transport industry especially the future skills of flight attendants.

The main purpose of article Dobroszek (2020) was the required competences and tasks undertaken while taking into account current trends in supply chain managefment and its wider dimensions based on job advertisements addressed to the German market. The core competences were analysed. In both cases (logistics controllers or SC controllers) knowledge/cognitive competences prevails, the second place is occupied by personal/behavioural competences. Third place in the analysis was taken by functional competence. Values and ethical competences are rarely mentioned. The study fills the gap between theory and practice by pointing to the need to use a controller and shape the correct

profile (“engaging inspirer” or “creative maker”) to achieve faster efficiency and transparency of SCM required by the modern economy (e.g. Industry 4.0).

Drejeris, Katinienė, Vaičiūtė & Čiutienė (2024) focused on key competencies of logistics specialists i.e. group of explicit competencies (i.e. use of information technologies (technically complex) in transportation process) and group of tacit competencies (i.e. motivation to work, autonomy at work). They described how to measure creativity and innovation. The SAW and AHP methodologies were selected to research and evaluate the logistics specialists’ competencies based on criteria.

Thi Nong, Phuong & Duc-Son (2024) suggested that extended the research model by adding the effect of CJF (Competence-Job Fit) on employee performance and job satisfaction because the close relationship between employee competence and CJF. The authors applied competence relevant theories such T-model in logistics, KBV (Knowledge-based view), KSA (Knowledge - Skills – Ability) and Social exchange theory to explain the concept of competence and propose the moderating role of social exchange on the relationships between employee competence and employee performance and job satisfaction. Research findings confirm and support the positive impact of employee competence and CJF on business performance.

The aim of the empirical research Gołembska & Gołembski (2020) was, equally, to appraise the current state of the HRM design in logistics management, and to identify current trends in this area. The research tool was a survey questionnaire. The model of HR management in company logistics presented in article is merely a first attempt at characterizing this very important relation between the management of de facto human resources, and the management of material resources through the performance of logistics tasks.

Jena & Ghadge (2021) mentioned that to minimize the talent shortfall, logistics experts suggest that SCM managers must got through training and development (T&D) process for acquiring the necessary skills and gain competitive competencies to manage increasingly complex and dynamic SC processes. The purpose of theirs study was to explore the effect of intra HRM–SCM and joint HRM–SCM decisions on the performance of the supply chain.

Katinienė, Jezerskė & Vaičiūtė (2021) analysed the peculiarities of the competencies of logistics specialists and their use as a tool to ensure the development of logistics organisations and the quality of logistics services. They proposed three main competence groups can be distinguished which must be well- mastered: special competencies (to understand the principles of logistics and transport operations, i.e., the competencies required to fulfill the assignment); analytical competencies (the competencies needed to plan an optimal route, select cargo criteria, identify the needs of the clients, i.e., the competencies related to the analysis, synthesis, modeling methods); personal competencies (communication, cooperation with clients, i.e., self-management competencies). The applied multi-criteria evaluation method, i.e., n selected experts evaluated m indices by way of ranking.

Group three: Competencies, logistics industry, HR, leadership, IT application

Kuráth, Bányai, Sipos et al. (2023) indicate that trust between leaders and employees impacts organizational citizenship behaviors (OCBs), communication, performances, attitudes and intentions, like organizational commitment, job satisfaction, commitment to decisions made by the leader, cooperation, and information-sharing learning. They used a Confirmatory Factor Analysis (CFA). The research confirmed that trust and communication are distinguished factors of leadership success, whereas warmth is measured to have twice as much important as professional competence in building the former two.

Piwowar-Sulej & Bąk-Grabowska (2024) the aim of study was to identify the differences in employers' and workers' attitudes toward the development of future competencies, in the context of two FoEs: B2B contract and contract of mandate. The authors took services from a research agency to determine the sample size and collect data. The research sample consisted of 200 respondents (100 people representing each analysed FoE, i.e. dependent self-employment and contract of mandate; one respondent per company). The authors listed 14 detailed future competencies: technical/vocational, analytical, complex problem-solving, computer literacy, skills in the latest technologies, teamwork, virtual teamwork, creative thinking, interpersonal communication, proper nutrition, how to maintain physical health, stress resilience, ability to adapt to and act in new situations, including learning, command of foreign languages.

Alrashedi (2024) notes, that logistics firms face difficulties in matching available local talent with industry-specific job requirements. Author acknowledges that a clear lack of research specifically focusing on the unique challenges and opportunities within the logistics industry. He used the DEMATEL technique to analyse the important factors that impact the effectiveness of Human Resources (HR) Departments in logistics firms in Saudi Arabia and the multi-criteria decision making (MCDM) technique. Proposed parameters are considered significant factors and are given high priority, highlighting their crucial role in candidate selection and HR decision-making.

Zamkova, Polishchuk, Dovhan, Dovhan & Novytskyi (2023) proposed a conceptual model of a multi-level national system of professional training of logistics and supply chain specialists. They developed a T-shaped model of the competencies of modern logistics and supply chain managers which is based on a combination of deep hard and broad soft skills.

Pocatilu, Enăchescu & Diță (2020) presented the prototype of an application that combines semantic technologies with augmented reality (AR) in order to enhance the plain text from a CV content with context-aware information in regards to the technical background of the applicant. The authors developed the prototype of a CV screening system that helps the recruiter to upload the candidate's CV for a given position and displays a graph with the skills of the applicant and how those skills relate to others in the field. Conclusion: CV filtering process providing a more trustworthy approach than manual selection performed by the HR personnel.

The above analysis shows that the thematic area of competence in logistics is very broad.

3. Summary of the research results

The reflections and analyses of the research papers on competences in the logistics industry made it possible to realise the stated objective and answer the research questions posed. The growing interest in the topic of competencies is from the increasing instability of the environment for example COVID-19, the war in Ukraine, the progress and dynamic digital and ecological transitions.

Among the studies analysed, it can be identified three groups of publications on competences:

- general research about competencies,
- research about competencies, logistics industry, transport industry,
- research about competencies, logistics industry, HR, leadership, IT application.

Researchers focus their attention on a specific market e.g.: the Serbian market - Andrejić, Kilibarda, Pajić (2022), German market - Dobroszek (2020), Brazilian market - Medeiros, di Serio & Moreira (2021), industrial sector of Paksitan - Ali & Qureshi (2021) and Saudi Arabian market Alrashedi (2024). They stress that conditions force the search/exploration of specific competences. The main consideration is the degree of economic development or cultural differences.

The authors approach the classification of competences in different ways (Table 3).

Table 3.
Division of competences (based on literature review)

The author	Group of competences
Dobroszek (2020)	• knowledge/cognitive competences prevails, • personal/behavioural competences, • functional competence.
Katinienė, Jezerskė, Vaičiūtė (2021)	The peculiarities of the competencies of logistics specialists. • special competencies, • analytical competencies, • personal competencies.
Kannan, Garad (2021)	• Technical skills, • Methodological skills, • Social skills, • Personal skills.
Alrashedi (2024)	• Academic qualification, • Skills and competencies (practical skills, soft skills). • Experience and track records (involves evaluating the length of employment, range of duties, noteworthy achievements, and performance reviews). • Cultural fit refers. • Potential and future development.
Drejeris, Katinienė, Vaičiūtė, Čiutienė (2024)	Key competencies of logistics specialists: • group of explicit competencies (i.e. use of information technologies (technically complex) in transportation process). • group of tacit competencies (i.e. motivation to work, autonomy at work).

Cont. table 3.

Piwowar-Sulej, Bąk-Grabowska (2024)	technical/vocational, analytical, complex problem-solving, computer literacy, skills in the latest technologies, teamwork, virtual teamwork, creative thinking, interpersonal communication, proper nutrition, how to maintain physical health, stress resilience, ability to adapt to and act in new situations, including learning, command of foreign languages.

Source: own elaboration based on literature review.

As can be seen (using 2024 as an example), there is no single, coherent set of competencies for the logistics employees.

Other interesting findings from the analysis include:

- Communication, collaboration and creativity are three competencies that should not be viewed individually as they are often interlinked (Bremer, Maertens 2021).
- Methodological rigor in the development of competence systems is hampered by conceptual ambiguity (Ali, Qureshi 2021)
- Values and ethical competence are rarely mentioned (Dobroszek, 2021).

From the literature research carried out, it is particularly important to note that there is no single set of competences needed to work in the logistics industry. The authors unequivocally point to the need to strengthen behavioural competences. Importantly, there is no consensus on the tool used to measure logistics competencies. The Author think that, the possibility of replicating the obtained results by others interested in conducting research in this area.

The present study is not without limitations: the results obtained are dependent on the adopted search criteria. Changing or extending the search criteria (other databases of scientific publications, different time frame, other keywords, narrowing down to other scientific fields). Also, repeating the study based on the same assumptions at a later stage may yield interesting results regarding the further evolution of research on the competence needs of logistics employees. Similarly, the application of other methods of analysis could be an interesting direction for further considerations.

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