



EMPLOYMENT OF FOREIGNERS IN MANUFACTURING AND NON-MANUFACTURING BUSINESSES

Renata Skýpalová¹

Martin Šikýř²

Jana Vávrová³

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Abstract: *In recent years, many manufacturing and non-manufacturing businesses in the Czech Republic as well as elsewhere in the European Union have experienced serious people shortages in manual, technical, and other professions. One possible solution to this personnel issue is the employment of a foreign workforce. Based on a survey of 478 manufacturing and non-manufacturing businesses across the Czech Republic, the paper aims to analyze the experience of surveyed businesses with the employment of foreign workers and propose possible solutions to long-term people shortages. The analysis confirmed that the majority of surveyed businesses need to employ foreign workers to meet present and future labor demands. In addition, dealing with long-term people shortages requires implementing various organizational and technical measures related to working hours, job design, process automation, process outsourcing, and talent development.*

Keywords: *People shortage, Foreign workforce, Employment practice, Manufacturing businesses, Non-manufacturing businesses.*

JEL Classification M12 · M50

✉ renata.skypalova@ambis.cz

¹ AMBIS College, a.s., Lindnerova 575/1, Praha 180 00, Czech Republic

² University of New York in Prague, Londynska 41, 120 00 Prague 2, Czech Republic

³ Grafton Recruitment s.r.o., Palladium, Na Poříčí 1079/3a110 00, Praha 1, Czech Republic



1. INTRODUCTION

One of the most essential personnel issues of every manufacturing and non-manufacturing business is to have enough of the right people at the right time in the right place (Ahsan, 2017). The right people are individuals who meet the business's requirements for knowledge, skills, abilities, and motivation (Deming & Kahn, 2018) to perform assigned work and meet established performance standards regarding both results and behavior (Ployhart, 2021). Such people represent a competitive advantage and help the business meet strategic objectives, such as low-cost productivity, long-term profitability, sustainable competitiveness, social responsibility, etc. (Harvey & Tumbull, 2020).

To meet strategic objectives through people, every business needs to plan the demand for people, that is, the numbers and kinds of people required over the next year as well as over the next three to five years (Abujraiban & Assaf, 2022). The demand for people is usually derived from the demand for goods and services that are realized with the help of people (Hani, 2021). On the other hand, the business also needs to plan the supply of people, that is, the numbers and kinds of people likely to be available from within and outside the business over the next year as well as over the next three to five years (Vankevich & Kalinouskaya, 2021). The internal supply covers existing people employed and potential changes to existing people employed through organizational changes, career programs, and internal promotions (Bidwell & Keller, 2014). The external supply covers potential candidates available in the local, national, and international labor markets (Bidwell & Mollick, 2015).

Both internal and external hiring have their advantages and disadvantages (DeVaro et al., 2019). Internal hiring allows for lowering hiring costs, offering career opportunities, and improving employee engagement (Cassidy et al., 2016). On the other hand, it may result in a less diverse workforce, a lack of new insights, and demoralization of individuals not promoted (Devaro et al., 2018). External hiring brings a potentially larger applicant pool and new perspectives (Frederiksen & Kato, 2018). However, it may take more time and resources due to the more demanding recruitment, selection, and orientation processes (Hong, 2020). Moreover, new hires may not fit well with the organization, team, and job requirements (Deming, 2017). Considering the pros and cons of internal and external hiring, in many cases, it is more beneficial for a business to bring up quality employees on its own by employing talented people outside the organization (Green & Henseke, 2021). The problem, however, is that, in recent years, many businesses have experienced a serious shortage of talented people in the labor market (Juricic et al., 2021).

For example, the Report on Labour Shortages and Surpluses 2021 by McGrath (2021) for the European Labour Authority has provided details on labor shortages and surpluses between the second half of 2020 and the first quarter of 2021, covering thirty countries and regions including twenty-five European Union countries. The report has revealed significant labor shortages in various professions increasing over few recent years. Persistent labor shortages range from agriculture, manufacturing, construction, and transportation to education, health care, and social services to information and communication technology. Similar findings have been revealed in a report on labor shortages in European Union member states in Central and Eastern Europe by Astrov et al. (2022). The report has pointed out increasing labor shortages in European Union member states in Central and Eastern Europe that will continue to increase over time, particularly due to demographic decline. One of the ways to deal with regional labor shortages is to use immigration policies and hire foreign workers from both European and non-European countries, although this may locally lead to various political, economic, and social issues.

The paper analyses the experience of a sample of 478 manufacturing and non-manufacturing businesses across the Czech Republic with the employment of foreign workers to propose possible solutions to long-term people shortages.

2. LITERATURE REVIEW

The phenomenon of employing foreigners has been noticeable for a long time across European Union member states (Travnicek et al., 2020). Within the European Union immigration rules, individual member states do their best to attract qualified foreigners from the other European Union countries as well as the third countries to deal with the lack of quality workforce in specific industries and professions from agricultural, manufacturing, and construction workers to medical, healthcare and social workers to high-tech engineers and IT specialists (Astrov et al., 2022).

Within the Czech Republic, citizens of the European Union countries, the European Economic Area countries, and Switzerland plus citizens of third countries (e.g., Ukraine, Russia, Belarus, Latvia, Serbia, Moldova, Kazakhstan, Vietnam, Mongolia, Philippines, India, etc.) are employed. The citizens of third countries can be employed in the Czech Republic on condition of receiving a work permit and a residence permit or the Employee Card, the Blue Card, or the Intra-Company Employee Transfer Card. Labor migration programs supported by Czech government institutions and attracting foreign workers are aimed at dealing with the long-term labor shortage in the Czech labor market across industries and professions from low-skilled to medium-skilled to highly-skilled workers. The largest numbers of foreign workers are traditionally in industries with a long-term high demand for people, particularly in agriculture, manufacturing, construction, transportation, wholesale, and retail. These industries employ the majority of foreign workers, mostly low- and medium-skilled. The rest is accounted for by industries requiring medium- and high-skilled workers such as health care, social services, education, information technology, high-tech engineering, science, and research (CSO, 2022).

Among the main reasons for the long-term shortage of suitable workforce in some industries and professions are unfavorable demographic developments associated with the aging of the workforce and social changes in work preferences and attitudes, where younger generations of the workforce are not interested in working in some industries and professions (Simkova, 2021), such as agriculture, manufacturing, construction, or transportation associated with low-skilled jobs and low earnings. On the other hand, there is also a long-term shortage of suitable workforce in industries and professions associated with high-skilled jobs and high earnings (Koisova et al., 2018). The issue is that these industries and professions require individuals with high levels of intellectual ability and motivation, but such individuals are in short supply in the population. These population and social trends mean that the economy is unable to naturally replace an aging workforce (Schon & Stahler, 2020). One possible solution is the employment of a foreign workforce.

Employing a foreign workforce can address people shortages across industries and professions in the short and long term. However, employing foreigners brings new economic and social challenges for the entire state as well as for individual businesses (Barzotto et al., 2019). The state must ensure clear rules for the employment of foreigners and must support the integration of foreigners into society, including overcoming cultural and language barriers, to prevent the social exclusion of foreigners and their potential unemployment, which would mean an additional economic and social burden for the state (Mutilva, 2014). From the point of view of state employment policy, it is also necessary to monitor the effects of employing foreigners on the domestic labor market, when the increasing number of foreign workers may lead to pressure to reduce wages and

increase unemployment of domestic workers (Duszczyk & Matuszczyk, 2018). Foreign workers, especially in low-skilled professions, are often paid less than domestic workers, sometimes at the minimum wage level, and therefore may struggle to earn enough money, which may lead to serious economic and social issues (Gutfleisch, 2022). These negative effects of employing foreign workers should be avoided by rightful state employment policy as well as socially responsible employment policy of individual businesses (Auer et al., 2019).

Individual businesses employing foreign workers face similar challenges as the state itself. Foreign workers can bring missing know-how to the business and often at lower labor costs (Antonioni et al., 2022), but at the same time they increase the demands on recruitment, selection, and orientation processes (Bills et al., 2017). Businesses can recruit foreign workers themselves or, more often, through the services of specialized HR agencies. The selection should focus on both technical and social skills, but also on the motivation to stay and work abroad. Language skills are a specific problem. The business must consider how important the knowledge of the local language is, or rather the business must determine a common language of communication, such as English (Ahmad & Scott, 2021). Helping to overcome language and other barriers to communication and cooperation in the workplace must be the main purpose of the orientation of foreign workers (Privara et al., 2019). The business must create the conditions for successful performance and prevent potential turnover issues (Schmidt, 2020). All this requires adequate time, effort, and money, but these investments will pay off (Grech, 2017).

3. METHODOLOGICAL APPROACH

The paper analyzes the experience of a sample of 478 manufacturing and non-manufacturing businesses across the Czech Republic with the employment of foreign workers to propose possible solutions to long-term people shortages using relevant data of the HR Analysis in Companies 2023 survey accomplished by the employee search company Grafton Recruitment Czech Republic during November and December 2022.

The collection of relevant data was carried out via an online questionnaire survey. The respondents were clients of Grafton Recruitment Czech Republic including general managers, HR managers, and HR specialists supplemented by HR professionals surveyed through the professional social network LinkedIn.

Originally the online questionnaire used included twenty-five questions related to HR decisions, plans, and challenges in 2022 and 2023. For the paper, six questions regarding the number of employees and the employment of foreigners in 2022 and 2023 were selected: (1) Has the number of your employees changed in 2022? (2) Do you plan to change the number of your employees in 2023? (3) From which countries do you employ foreign workers? (4) Through what sources do you recruit foreign workers? (5) To what extent have you employed foreign workers in 2022 (compared to 2021)? (6) Do you plan to employ foreign workers from third countries (outside the European Union) in 2023?

The sample of 478 businesses included 290 (61%) manufacturing businesses and 188 (39%) non-manufacturing businesses. Among all of these businesses, there were 137 (27%) small businesses (100 or less employees), 213 (44%) medium-sized businesses (101-500 employees), and 137 (29%) large businesses (501 or more employees).

The analysis of relevant data was performed using Microsoft Excel. Relative frequencies of responses were calculated and the dependence of the responses on the nature (manufacturing and

non-manufacturing) and the size (small, medium-sized, and large) of surveyed businesses was evaluated. Within this evaluation process, a Pearson's correlation analysis and a chi-square goodness of fit test with a significance level of 0.05 were applied and a hypothesis (H) was verified:

Hypothesis (H): Surveyed manufacturing businesses employ more foreign workers than surveyed non-manufacturing businesses.

4. RESEARCH RESULTS

The experience of a sample of 478 manufacturing and non-manufacturing businesses across the Czech Republic with the employment of foreign workers is analyzed to propose possible solutions to long-term people shortages. The analysis and discussion are divided into two sections covering the number of employees and the employment of foreigners in 2022 and 2023.

4.1. The Number of Employees in 2022 and 2023

The first two analyzed questions were related to the number of employees in 2022 and 2023. The first question asked about implemented changes in the number of employees in surveyed businesses in 2022 (see Table 1). The responses revealed that the number of employees increased in 44% of businesses, remained the same in 36% of businesses, and decreased in 20% of businesses.

Table 1. Implemented changes in the number of employees in surveyed businesses in 2022

		The number of employees			
		Nature		Size	
Increased	44%	Manufacturing	57%	Small	18%
				Medium-sized	46%
				Large	36%
		Non-manufacturing	43%	Small	45%
				Medium-sized	41%
				Large	14%
Remained the same	36%	Manufacturing	56%	Small	45%
				Medium-sized	36%
				Large	19%
		Non-manufacturing	44%	Small	56%
				Medium-sized	33%
				Large	11%
Decreased	20%	Manufacturing	76%	Small	10%
				Medium-sized	45%
				Large	45%
		Non-manufacturing	24%	Small	10%
				Medium-sized	70%
				Large	20%

Source: Own calculations on the HR Analysis in Companies 2023 survey by Grafton Recruitment Czech Republic, November-December 2022

The 44% of businesses in which the number of employees increased included 57% of manufacturing businesses in which the number of employees most often increased among medium-sized businesses (46%) and 43% of non-manufacturing businesses in which the number of employees most often increased among small businesses (45%). In contrast, the 20% of businesses in which the number of employees decreased included 76% of manufacturing businesses in which

the number of employees most often decreased among medium-sized and large businesses (45%) and 24% of non-manufacturing businesses in which the number of employees most often decreased among medium-sized businesses (70%). These findings indicate that the number of employees most often changed (increased or decreased) among manufacturing businesses including more medium-sized and large businesses than small businesses. This could confirm the assumption that medium-sized and large manufacturing businesses with more than 100 employees are more sensitive to changes in the demand for their production (Paul & Chowdhury, 2021), and therefore must change the workforce demand and the number of employees more often (Awad et al., 2018). However, Pearson's correlation analysis showed a negligible association between the size of the business and the implemented change in the number of employees ($r = -0.128$).

The second question asked about planned changes in the number of employees in surveyed businesses in 2023 (see Table 2). The responses revealed that in 44% of businesses no changes were planned or no plans had been made related to the number of employees, in 41% of businesses an increase in the number of employees was planned, and in 15% of businesses a reduction in the number of employees was planned.

Table 2. Planned changes in the number of employees in surveyed businesses in 2023

		The number of employees			
		Nature		Size	
Increase	41%	Manufacturing	60%	Small	22%
				Medium-sized	44%
				Large	34%
		Non-manufacturing	40%	Small	49%
				Medium-sized	36%
				Large	15%
No changes/plans	44%	Manufacturing	58%	Small	15%
				Medium-sized	48%
				Large	37%
		Non-manufacturing	42%	Small	48%
				Medium-sized	43%
				Large	9%
Reduction	15%	Manufacturing	74%	Small	10%
				Medium-sized	46%
				Large	44%
		Non-manufacturing	26%	Small	35%
				Medium-sized	47%
				Large	18%

Source: Own calculations on the HR Analysis in Companies 2023 survey by Grafton Recruitment Czech Republic, November-December 2022

The 41% of businesses in which an increase in the number of employees was planned included 60% of manufacturing businesses in which the increase in the number of employees was planned most often among medium-sized businesses (44%) and 40% of non-manufacturing businesses in which the increase in the number of employees was planned most often among small businesses (49%). In contrast, the 15% of businesses in which a reduction in the number of employees was planned included 74% of manufacturing businesses in which the reduction in the number of employees was planned most often among medium-sized businesses (46%) and 26% of non-manufacturing businesses in which the reduction in the number of employees was planned most often among medium-sized businesses (47%). These planned changes in the number of employees in 2023 correspond

to implemented changes in the number of employees in 2022. This means that the changes in the number of employees (an increase or a reduction) were planned most often among manufacturing businesses including more medium-sized and large businesses than small businesses. In other words, businesses that implemented changes in the number of employees in 2022 planned changes in the number of employees in 2023. A Pearson's correlation analysis showed a negligible association between the size of the business and the planned change in the number of employees ($r = -0.142$).

4.2. The Employment of Foreigner Workers in 2022 and 2023

The remaining four analyzed questions were related to the employment of foreign workers in 2022 and 2023. The third question asked about countries from which surveyed businesses employ foreign workers. The responses revealed that 20% of businesses do not employ foreign workers at all and 38% of businesses employ foreign workers from the European Union countries only. In addition, businesses employ foreign workers from Ukraine (55%), Russia (9%), Belarus (6%), Kazakhstan (5%), Serbia (5%), Philippines (4%), Moldova (3%), India (3%) or Latvia (1%). The third countries (outside the European Union) from which surveyed businesses employ foreign workers include mostly countries from Eastern Europe, based on the existence of traditional economic relations with the Czech Republic.

The analysis of the dependence of the responses on the nature of surveyed businesses (manufacturing and non-manufacturing) showed (see Figure 1) that in 2022, manufacturing businesses generally employed more foreign workers than non-manufacturing businesses while manufacturing companies also employed more third-country foreign workers than non-manufacturing businesses.

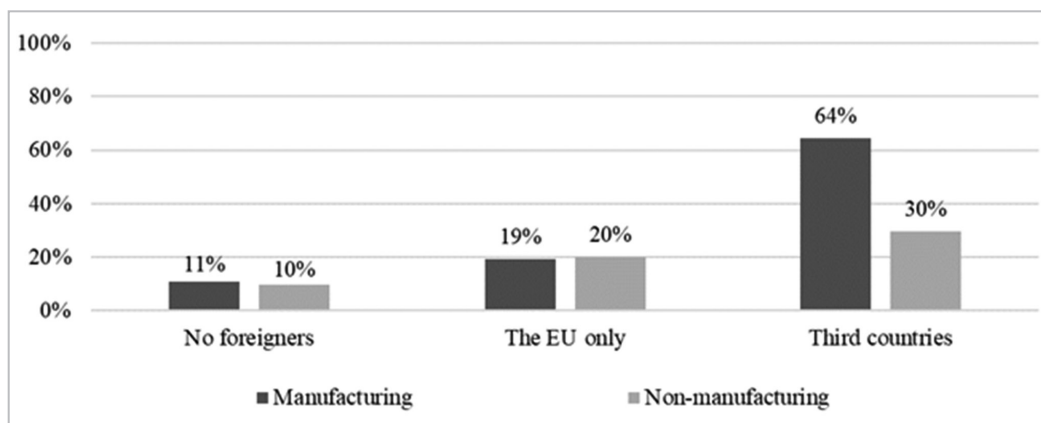


Figure 1. Employment of foreign workers in 2022

Source: Own processing on the HR Analysis in Companies 2023 survey by Grafton Recruitment Czech Republic, November-December 2022

Within the analysis of the dependence of the responses on the nature of surveyed businesses, hypothesis H was verified that surveyed manufacturing businesses employ more foreign workers than surveyed non-manufacturing businesses (see Table 3). The null hypothesis was tested that the employment of foreign workers does not depend on the nature of the business. Since the chi-square statistic [χ^2] was higher than the critical chi-square value [$\chi^2_{0.05}(1)$], the null hypothesis was rejected. The employment of foreign workers depends on the nature of the business. Based on these and other stated findings, hypothesis H was confirmed. In other words, surveyed manufacturing businesses employ more foreign workers than surveyed non-manufacturing businesses.

These findings could be generalized. Manufacturing businesses usually experience a serious shortage of technical and manual workers and therefore have to use foreign workforce more often and to a greater extent (Thangavelu, 2016).

Table 3. Employment of foreign workers in 2022

	Yes	No	Σ
Manufacturing	206	43	249
Non-manufacturing	111	39	150
Σ	317	82	399

H_0 : The employment of foreign workers does not depend on the nature of the business.

H_A : The employment of foreign workers depends on the nature of the business.

Chi square statistic $\chi^2 = 4.370$

Critical chi-square value $\chi^2_{0.05}(1) = 3.841$

Hypothesis H was confirmed. The employment of foreign workers depends on the nature of the business. Surveyed manufacturing businesses employ more foreign workers than surveyed non-manufacturing businesses.

Source: Own calculations on the HR Analysis in Companies 2023 survey by Grafton Recruitment Czech Republic, November-December 2022

Following the need to employ foreign workers, the fourth question asked about sources the surveyed businesses use to hire foreign workers. The responses revealed that 65% of businesses hire foreign workers on their own, while 35% of businesses hire foreign workers with the help of HR agencies. The analysis of the dependence of the responses on the nature of surveyed businesses showed that manufacturing businesses hire foreign workers with the help of HR agencies more often than non-manufacturing businesses (48% versus 13% in favor of manufacturing businesses), while non-manufacturing businesses hire foreign workers on their own more often than manufacturing businesses (87% versus 52% in favor of non-manufacturing businesses). This corresponds to the reality when many HR agencies focus on missing technical and manual workers and offer manufacturing businesses a complete service related to their hiring (Wallo & Koch, 2018).

The fifth question asked about the extent surveyed businesses employed foreign workers in 2022 (compared to 2021). The responses revealed that 51% of businesses employed foreign workers to the same extent, 37% of businesses to a greater extent, and 12% of businesses to a lesser extent. Among the 37% of businesses employing foreign workers to a greater extent, there were 44% of manufacturing businesses and 25% of non-manufacturing businesses, while among the 37% of businesses employing foreign workers to a lesser extent, there were 14% of non-manufacturing businesses and 12% of manufacturing businesses. These findings confirm that surveyed manufacturing businesses employ foreign workers more intensively than surveyed non-manufacturing businesses.

The sixth question asked about the plan to employ foreign workers from third countries (outside the EU) in 2023. The responses revealed that 46% of businesses planned to employ the same number of foreign workers from third countries, 11% of businesses planned to employ fewer foreign workers from third countries, 8% of businesses planned to employ more foreign workers from third countries, and 35% of businesses planned to employ no foreign workers from third countries. Among the 35% of businesses planning to employ no foreign workers from third countries, there were more non-manufacturing businesses (48%) than manufacturing businesses (29%). On the other hand, among the 46% of businesses planning to employ the same number of foreign workers from third countries, there were more manufacturing businesses (52%) than non-manufacturing businesses (35%). These findings confirm again that surveyed manufacturing businesses employ foreign workers more intensively than surveyed non-manufacturing businesses.

5. DISCUSSION AND PROPOSALS

The analysis of the employment of foreign workers in surveyed manufacturing and non-manufacturing businesses revealed that most of the surveyed manufacturing and non-manufacturing businesses have a significant experience with the employment of foreign workers, which helps them to deal with people shortages (Juricic et al., 2021). Surveyed manufacturing businesses employ foreign workers more intensively than surveyed non-manufacturing businesses (Thangavelu, 2016), mainly due to long-term shortages of technical and manual workers (Wallo & Koch, 2018), who are mostly hired from third countries, outside the European Union (Travnicek et al., 2020). However, the potential solutions to long-term people shortages are similar for both manufacturing and non-manufacturing businesses.

Dealing with long-term people shortages is a challenging issue that should be based on a combination of various organizational and technical measures related to working hours, job design, process automation, process outsourcing, and talent development:

1. The issue of working hours refers to the scheduling of weekly working hours established by labor law (typically no more than 40 hours per week) into daily work shifts (typically five eight-hour shifts per week) to meet the business requirements (Song & Lee, 2021). In the case of a short-term people shortage, it is possible to use overtime work taking into account the maximum limits established by labor law to avoid physical and mental overload of workers (Ko & Choi, 2019). In the case of a long-term shortage of people, it is possible to use various shift work arrangements (typically two twelve-hour shifts or three eight-hour shifts) to ensure the continuous operation of the business. However, as in the case of overtime work, it is necessary to limit the negative impacts on the safety and health of workers (Lu et al., 2022).
2. The issue of job design is about dividing complex work activities into specific tasks, duties, and responsibilities of individual jobs representing fundamental organizational units (Magnier-Watanabe et al., 2019). Dealing with short-term and long-term people shortages, it is possible to apply different job design approaches, such as job rotation (shifting people from job to job), job enlargement (broadening the scope of jobs by expanding the number of tasks and duties that are performed), or job enrichment (increasing the depth of jobs by adding responsibilities for their performance) to enable the business to operate as planned (Hadidi & Abzakh, 2022).
3. The issue of process automation is about replacing human labor with machines wherever it is needed and beneficial for both the business and people (Hyun et al., 2021). The solution to long-term people shortages is that production processes where people are lacking are provided by machines, and available people are used in processes where the use of people is more profitable than the use of machines.
4. The issue of process outsourcing is about ensuring selected internal business processes through external providers and sources, which generally brings cost savings, reduced risks, and missing know-how (Morgulets et al., 2020). From the point of view of the long-term people shortages, it is about an external provision of processes for which the business does not have enough qualified workers.
5. The issue of talent development is about attracting and keeping individuals promising for high performance and development potential (Miceli, 2022). Such talents can be obtained within or outside the business and the investment in their training and development can help to deal with long-term people shortages by preparing them for hiring and promotion from within.

The introduction of such organizational and technical measures to deal with long-term people shortages usually requires investment in changes to the entire human resource management system (Larsson & Edwards, 2022), which should enable the organization to acquire, retain, and develop enough talented people in all key professions and positions (Younas & Bari, 2020).

6. CONCLUSION

Analyzing the experience of a sample of 478 manufacturing and non-manufacturing businesses across the Czech Republic with the employment of foreign workers the paper proposes possible solutions to long-term people shortages of surveyed businesses experiencing a serious shortage of technical and manual workers, who are mostly hired from third countries (outside the EU).

The findings analyzed and discussed confirm a hypothesis that surveyed manufacturing businesses employ more foreign workers, including more third-country foreign workers, than surveyed non-manufacturing businesses. Manufacturing businesses seem to be more sensitive to changes in the demand for their production. They change the workforce demand and the number of employees more often. At the same time, they need more capacity, including employees, which increases the need to employ foreign workers. Dealing with long-term people shortages the manufacturing and non-manufacturing businesses can apply various organizational and technical measures related to working hours (overtime and shift work), job design (job rotation, job enlargement, and job enrichment), process automation (introducing machines instead of human labor), process outsourcing (ensuring selected internal business processes through external providers and sources), and talent development (attracting and keeping individuals promising for high performance and development potential).

Although the sample of manufacturing and non-manufacturing businesses is not very large and includes only businesses in the Czech Republic, the findings analyzed and discussed demonstrate a serious business issue of a lack of quality workforce challenging businesses across the European Union. This situation encourages further research on dealing with people shortages in various industries and professions. The solutions to long-term people shortages presented could be beneficial for both manufacturing and non-manufacturing businesses

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