

Lack of Skills of Human Resources in the Machine Construction Industry

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The paper summarises the results of a questionnaire survey that took place in January 2015 in order to assess the current and prospective standard of the qualification of human resources in machine construction companies in the Czech Republic. The questionnaire survey included 23 small machine construction companies (less than 50 employees), 24 medium-sized machine construction companies (50-249 employees), and 53 larger machine construction companies (250 and more employees). The results of the survey indicated that almost one half (43%) of respondent machine construction company top management members planned to hire new employees this year. In addition, 50% of them confirmed their endeavour to keep the current headcount and a mere 7% of them specified problems that would lead to the dismissal of employees. However, what is bothering machine construction top management members is the lack of qualifications and practical experience of job seekers they have to deal with. The intention of the authors is to define the main reasons and propose possible solutions of this problem within human resource management in machine construction companies.

Keywords: machine construction, competitiveness, qualifications

Introduction

Despite the fact that each company bases its operations on a different competitive strategy and another process management model (Břečková & Havlíček, 2013; Šumpíková, Nemeč, Petrová, & Mikušová, 2012), the basic principles of the operation of prosperous companies are basically the same. Their success is based on taking the right the competitive advantage resulting from the efficient exploitation of available sources including but not limited to human resources (Šikýř, 2011). With regard to the constant and radical changes of the competitive environment of the global economy, qualified human resources are considered a unique wealth of every company (Šafránková, Šikýř, & Boyko, 2014) and human resource management concentrates on the efficient creation and development of the company's human capital in the form of knowledge, skills, and capacities of their workers (Kucharčíková, 2014).

The strategic significance of skilled human resources in the machine construction industry stems not only from its branch diversity in the Czech Republic but also from the difficult working conditions, complexity, responsibility, and hard work, difficult working modes or harmful and risky working environment as well as difficult political, economic, legal, social, cultural (such as lots of bureaucracy, poor legislation), technical,

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demographic, and natural conditions where individual machine construction companies fight for their place in the market (Maloney, 1997).

Lack of skills in this context means lack of qualified workers in the labour market with regard to the needs of Czech machine construction companies. Czech industry employs more than 40% of all economically active population and machine construction is an essential part of it.

Czech Processing Industry Development in the Years of 2008-2014

The processing industry, including machine construction industry, largely affects the level of Czech industry as a whole as its share in the creation of capital goods is enormous being one of the core sources of the generation of the gross domestic product.

The 2008 share of the processing industry in gross added value amounted to 25.1%. It was a 1.4% decline compared to 2007. The share of the processing industry in total sales (in current prices) in industry fell to 89.3% in 2008 (92.6% in 2007).

In 2009, the share of the processing industry in gross added value amounted to 23.6% (in current prices). The share of the processing industry in total industry sales fell to 87.8%.

In 2010, the share of the processing industry in gross added value was 23.3% in current prices. The share of the processing industry in total industry sales saw a 2% year-to-year growth to 89.6%. The number of people employed in the processing industry continued to fall.

In 2011, the share of the processing industry in gross added value was 23.9%. The share of the processing industry in total Czech industry sales grew by 0.9% (compared to 2010) to 90.5%.

In 2012, the share of the processing industry in total gross added value amounted to 24.6%. Since 2009, the share of the processing industry in gross added value had grown by 2%.

In 2013, the share of the processing industry in total gross added value was 25.1%. The share of the processing industry in total sales of the Czech industry amounted to 90.9% in the Czech Republic. The number of employed people in the above referred to years is shown in the following diagram (see Figure 1).

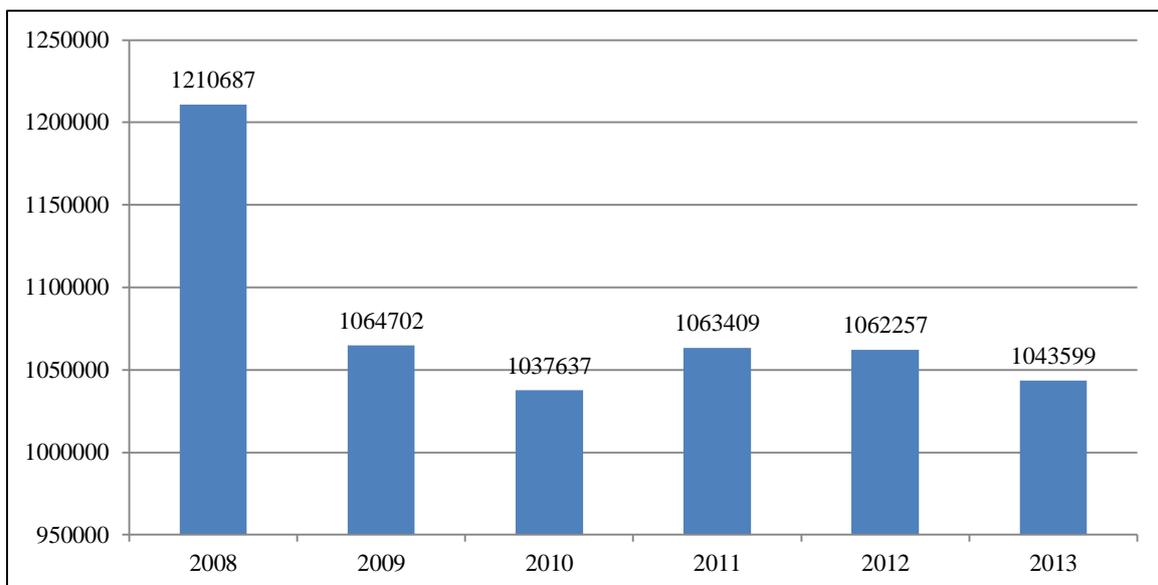


Figure 1. Number of employees in the processing industry. Source: Czech Statistical Office (2015).

The situation in the machine construction industry is likely to see an improvement in connection with the favourable economic trend in 2014 and forecast for 2015. This may be supported by both current Czech Statistical Office data and information from individual machine construction industry company representatives (see Figure 2). Estimated 2015 machine construction industry economy dynamics are showing an upward trend and it is expected that the Czech Republic will come closer to the pre-recession production volumes, sales, and other indicators.

According to the results of the study “Czech Machine Construction in Quarter 1/2015” prepared by CEEC Research (2015), the unfavourable economic situation associated with a significant decline in the number and size of contracts has forced most machine construction companies to reduce personnel costs significantly in several previous years. Most machine construction companies reduced the number and changed the structure of their highly qualified managerial positions.

The decline of the processing industrial production index (2008-2014) that expresses the very output without price effects indicates a decline in 2009 and a subsequent rising tendency.

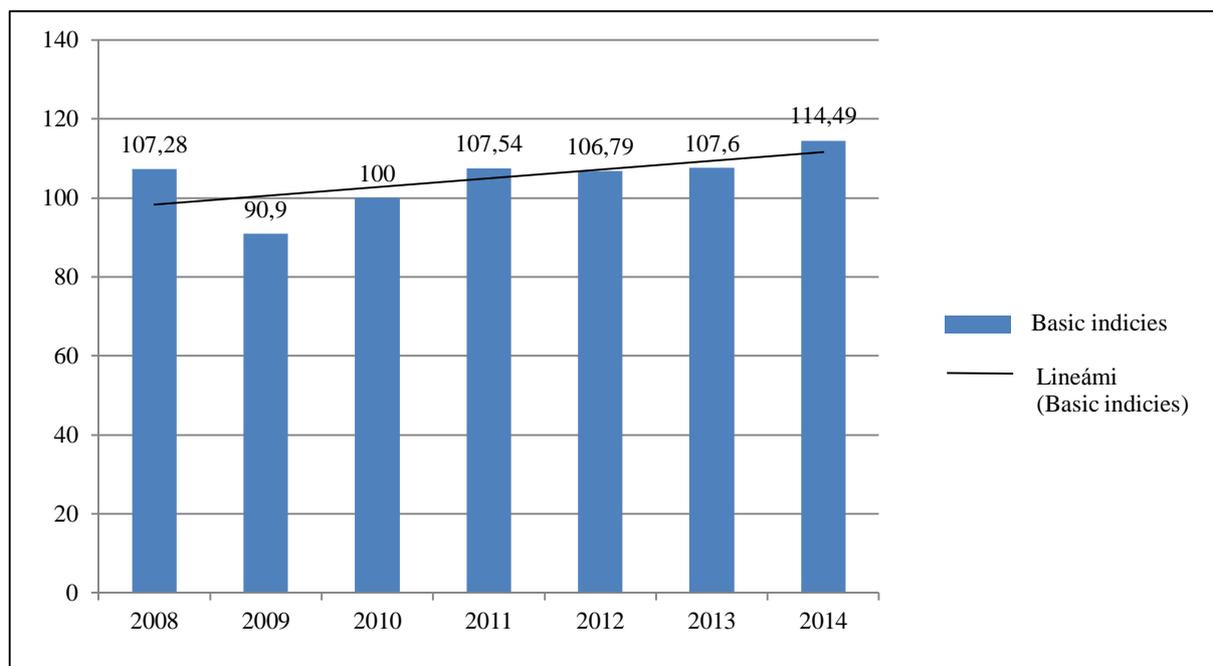


Figure 2. Processing industry production index: Basic indices. Source: Czech Statistics Office (2015).

An obstacle that prevents Czech machine construction companies from growing is the lack of skilled workers in the labour market. As demonstrated by Němec and Surynek (2013), elderly workers' reserves are limited.

Both the government and machine construction companies themselves have to clearly change their approach to human resource management at the level of apprenticeship and vocational secondary education system and technical orientation so that the apprentices and students could be internally involved and motivated to study technical subjects and know that they will be able to find a job after they have completed their education. The reasons for the above are both the average age of skilled workers and the current lack of interest in such technical subjects (Bušina, 2014). The above facts could be documented by the following data (see Figure 3).

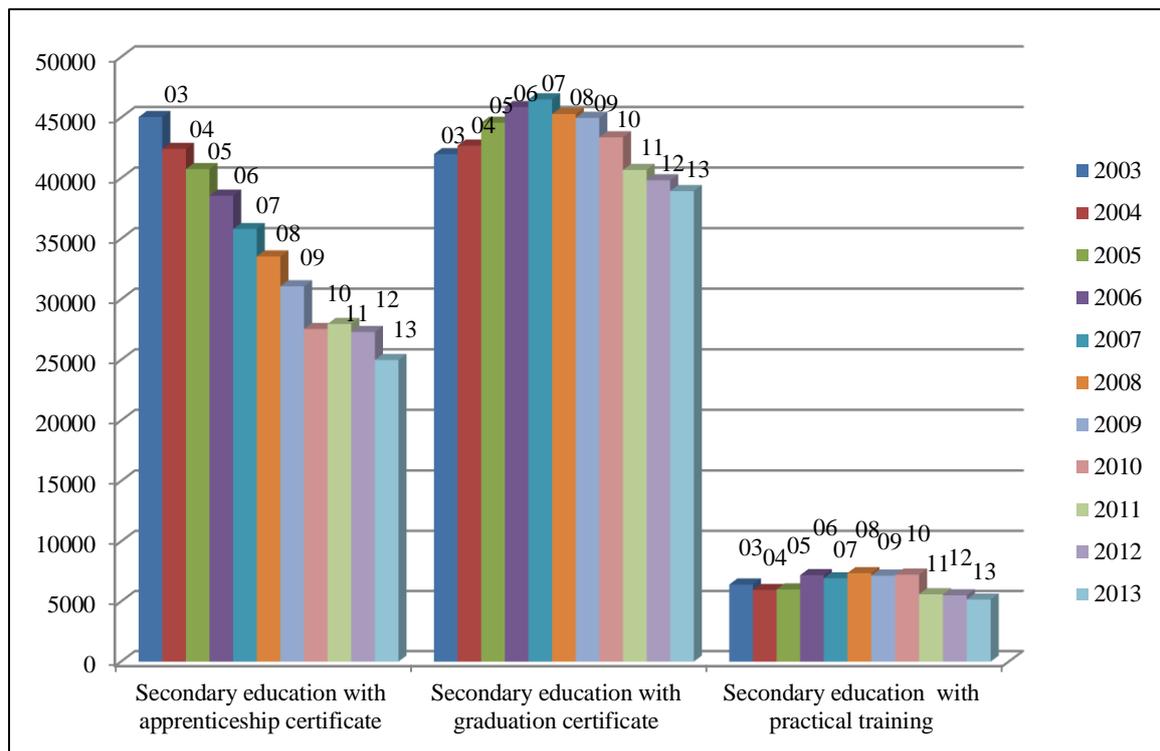


Figure 3. Survey of numbers of chosen secondary school graduates. Source: Úlovec and Vojtěch (2014); the authors.

North Bohemian region employers claim that there is an essential lack of qualified labour for a wide spectrum of machine construction trades. The situation is similar in other Czech regions, too. Therefore, we can conclude that the capacity of technical disciplines at schools is not met because of the general drop in the number of students and lack of interest in such branches of study. What the employers see as a basic factor is the incompatibility of the qualifications of graduates and requirements for jobs (Hajdíková, Cingr, Francířková, Pavelek, & Holečková, 2014). The same conclusion is reached in the study that was completed in the North Bohemian region where many industrial companies used to operate in the past and the region now suffers from considerable rates of unemployment.

The university graduate market faces a similar situation as the vocational educational system. Machine industry labour market requirements keep growing although some companies in this field stop operating and dismiss people. The vocational education system and secondary schools have been producing the same number of graduates over a long-term period. The graduates always have the same foreign language knowledge standard. The study of foreign languages is completed in the fourth semester and if the students do not travel abroad as part of their programme, they do not get any further opportunity of speaking any foreign language although an overwhelming majority of production companies are under foreign ownership. Why don't students think about it when at school? Companies often complain about poor technical knowledge of current graduates (NSK, 2015).

The information available indicates that what bothers most Czech machine construction companies now is the lack of labour. Companies have problems with hiring skilled engineers both at the vocational, secondary, and university education levels. The information also indicates that some machine construction companies consider moving their production plants from the Czech Republic to Germany even at a higher price because of the critical conditions in human resources.

More than one half of companies face problems resulting from the critical labour market situation and availability of technical experts. It is partly related to the fall in the population. However, primarily, it is a consequence of the long-term low number of technology university graduates (Dvořáková & Langhamrová, 2013).

Objectives and Methods

What stems from the above, i.e., declining number of employees (see Figure 1) and resulting slow rise and need of skilled labour and its lack, is the need for a more detailed analysis of the specific workforce situation in individual machine construction companies.

The objective of this work is to assess and reveal current and future (within approximately five years) deficiencies of the structure and volume of a skilled workforce in terms of the needs of Czech machine construction companies.

The collection of empiric information was based on the use of two basic sources. On one hand, secondary information contained in statistics and research reports and on the other hand information from our own survey.

The first group was based on available Czech sources on the machine construction industry and industrial organisations and other facts specified in the content hereof. Other sources of secondary empiric information were quality studies and information in specialised journals. We also used national sources of information, primarily information provided by the Czech Statistical Office, Confederation of the Industry of the Czech Republic, Association of Engineering Technology, Czech Machinery Cluster, and other public or private institutions. Other significant sources we used included special studies of consultancy and auditing companies and also information from conferences on the machine construction industry.

The above information sources were used in the description of the condition of machine construction companies where we focused primarily on the current demand for individual qualified and skilled workers.

In case of the group, we based our efforts on an empiric survey carried out by HRM Corporation and CEEC Research (2015) focusing on small, medium-sized and large machine construction companies. The survey included questions describing the situation in individual machine construction companies that indicated the need to adopt measures for issues that individual companies have to address at present.

A questionnaire was developed in order to identify the most urgent problems individual machine construction companies are facing at present. This includes the following issues:

- (1) To what extent are the capacities of individual machine construction companies utilised?
- (2) Do you plan to hire or dismiss employees?
- (3) What is your priority when hiring new employees?
- (4) What skills do you see that new secondary school and university graduates lack?
- (5) What is the length of time of the contracts you have signed?
- (6) Which type of contracts (public or private) is crucial for your company?
- (7) What are the most serious problems in terms of the operation of your company?

100 companies were addressed from January 15, 2015 to January 31, 2015. They were structured as follows:

- (1) 23 small companies (number of employees up to 50);
- (2) 24 medium-sized companies (number of employees between 50 and 249);
- (3) 53 large companies (number of employees more than 250).

In all cases, the survey was based on personal interviews with company representatives. Phone interviews took place in January 2015.

The objective of the empiric survey was to describe the current situation in individual machine construction companies divided into small, medium-sized, and large companies with regard to their current requirements and needs.

The survey covered both topics concerning strategic management activities, operative management activities, personnel management activities, and lack of qualified and skilled human resources in general.

Results and Discussion

The results of the empirical survey focused on the description of the poor quality of the qualifications of job seekers that machine construction company top management teams have dealt with showed the following findings.

How Much Are Your Capacities Utilised?

The results of the empiric survey indicated that the average utilisation of capacities of individual machine construction companies was about 86%. We can see some minor deviations of approximately 2% in terms of the comparison of their size.

As to future expectations, representatives of individual companies believe that their companies will grow. Expectation differences are negligible in terms of company size. A 79% rise is expected of large companies and 75% of medium-sized and small companies.

Do You Plan to Hire or Dismiss Employees?

The results of the empiric survey indicated that four out of 10 machine construction companies would hire new employees with regard to the anticipated growth of the performance of the Czech machine construction industry in the next two years. Moreover, the survey indicates that companies planning to take this step tend to be major companies where this share is 75%. Medium-sized companies plan to keep the same number of employees as in 2014. Only 7% of the respondents plan to cut down their employee headcounts.

What is Your Priority When Hiring New Employees?

The results of the empirical survey indicated that individual machine construction companies focused on the knowledge of at least one foreign language with the following order preference: English 87%, German 63%, and Russian 31%. This is considered to be a necessary requirement for hiring any employee. Other foreign languages are required less frequently and they include French, Spanish, Arabic, etc.. The most demanding employers in terms of language skills are large companies.

The results of the empiric survey indicated that machine construction companies focused, at the beginning of the new employee recruitment process, on willingness/reluctance to work in three-shift operation mode. This fact can be described as a limiting element companies have to deal with. Many machine construction companies work in a three-shift operation and cannot diversify their employees into day and night workers. This could finally provoke conflict, affect the final quality of products, and worsen the atmosphere in the workplace.

The results of the empirical survey indicated that the machine construction industry faced a fundamental lack of skilled workers including both secondary education and university graduates. Instead of offering jobs to new candidates that are not available, they have to organise long-term costly re-training programmes to cover their needs. Finally, most respondent companies believe that the machine construction industry will face serious

problems in future because of the lack of skilled workers necessary for their production (Pozdneev, Sosenushkin, & Sutyagin, 2014).

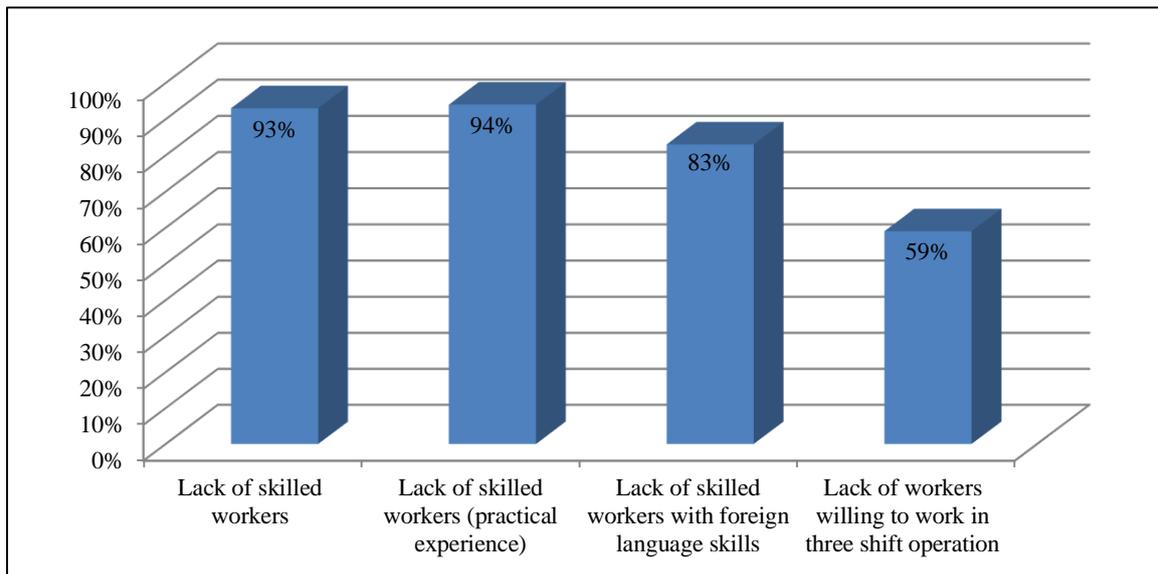


Figure 4. Problems associated with the recruitment of new employees. Source: CEEC Research (2015).

The results of the empirical survey indicated that the machine construction industry faced a fundamental lack of skilled workers (see Figure 4). This fact may be attributed to the high attractiveness of social sciences in recent years and principal decline of interest in technical disciplines. In their response to this fact, the Ministry of Industry and Trade launched a programme promoting technical disciplines and declared 2015 the year of industry and technical education although the labour market demand and qualifications of graduates could be harmonised using the so-called dual education that combines theoretical learning and practical experience at companies. This system has a tradition for instance in Germany and Austria.

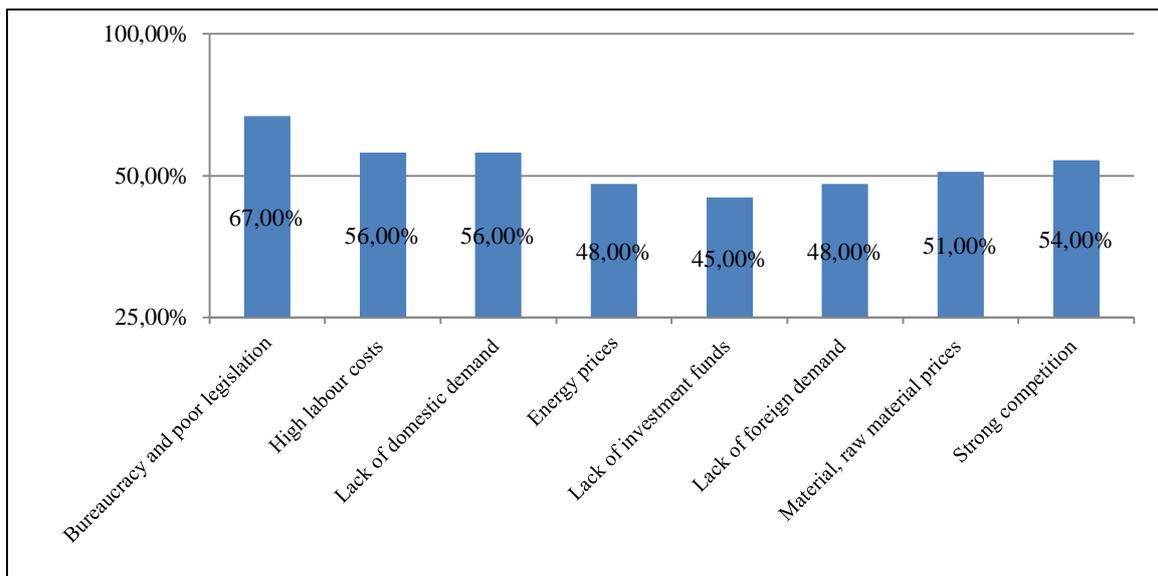


Figure 5. Factors limiting growth of machine construction companies. Source: CEEC Research (2015).

Moreover, the results of the empirical survey showed the most serious problems faced by individual machine construction companies (see Figure 5). The most often mentioned problem affecting companies was government bureaucracy including both legitimate government requirements and unsystematic and often changing behaviour of the government placing useless requirements on machine construction companies that prevents them from making long-term plans for activities and pricing in some cases. Another problem is the lack of support from the government in terms of the economy and marketing.

Conclusion

The article deals with the relationship between economic growth and the Czech machine construction industry labour market situation. Statistical data show gradual and slow production growth. The number of machine construction industry employees has a stagnating tendency. The labour market faces problems associated primarily with the lack of secondary education qualified workers and university graduates. The difference between the groups resides in the number of students. The number of secondary school students is falling meanwhile the number of university students does not show any changes. The empirical survey revealed the demand for qualified workforce, too.

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