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# DETERMINANTS OF EMPLOYMENT IN INDUSTRIAL ENTERPRISES IN POLAND

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## ABSTRACT

This paper analyzes determinants of employment of new employees in industrial enterprises in Poland. The industry is an important sector of the economy not only because of its ability to absorb employment but also because of its numerous links to the science and implementation of new technologies. Therefore, particular attention is paid to issues related to implementation of innovations and changes in employment in the surveyed entities.

**Key words:** industrial enterprises, industrial sector, demand for labor, employment, innovation

## INTRODUCTION

Employment is a key indicators of the efficient use of the available human resources in an economy. Its quality and size of the labor force determine the size of a society's economic achievements. Poland is a country with substantial labour resources. In 2011, the number of the economically active population was 18 million and activity rate was 56,1%. Employment rare was only 50.8% of the working-age population worked. This is one of the lowest employment rates among the OECD countries. In Poland 9.7% of the economically active population has difficulty finding a job. Exclusion of such a large number of people from participating in social wealth creation results in enormous losses, in both economic and social terms [10].

Based on a three-sector division of the economy, comprising the agricultural, industrial and service sectors, it can be stated that industrial sector is important to the Polish economy. Industrial sector include mining, manufacturing industries and construction. In 2011, the industrial sector in Poland constituted the primary activity for 193.8 thousand businesses [2]. Total industry sales amounted to 1.095 billion PLN in 2011. The industrial sector is a major source of demand for labor. In 2011, the industry employed 2 534.6 thousand people, which constituted 29.9% of total employment [1]. Figure 1 shows that employment in the industrial sector increased until 2008, but it decreased since then. In 2011, 12.3% fewer people worked in the industry than in 2008. Despite the downward trend in industrial employment, the importance of this sector in terms of the employment absorption is still very high.

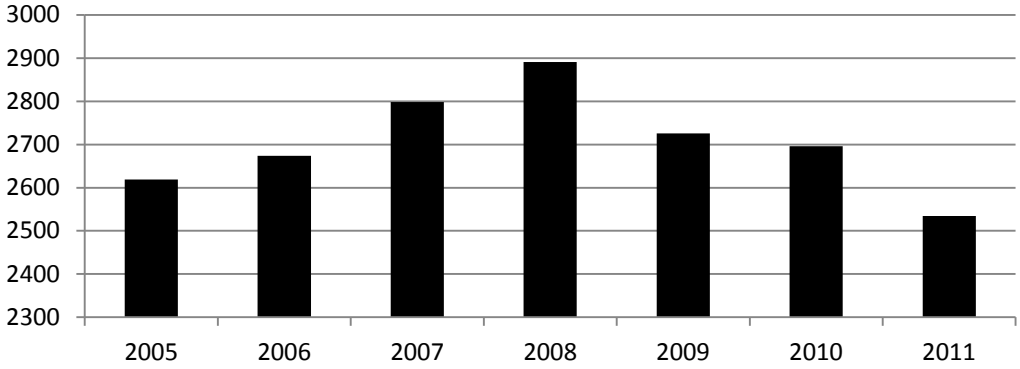


Chart 1. People employed in the industry in 2005-2011 (in thous.)
Source: author's own compilation, data from the Polish Central Statistical Office (GUS).

As a share of total employment and total added value by the industry, the most important role is played by the manufacturing industry, which generates 76% of gross value added of the industry and employs 83% of those working in the industrial sector.

The purpose of this article is to present the determinants and barriers to demand for labor in industrial enterprises. The study attempts to assess which business entities (micro-, small, medium or large) created new jobs, and also examines whether there is a link between implementing innovations and job creation.

## MATERIAL AND METHODS

The state and development of the industrial sector in Poland has both an economic and social dimension. First, the sector is an important source of demand for labor. The demand for labor is defined as a number of jobs that the economy offers in certain social and economic conditions. The aggregate demand for labor consists of the sum of jobs taken, as measured by the number of employees, and job vacancies (the so-called unrealized demand for labor). Job vacancies are positions created as a result of employment change or newly created positions. The mechanism of new job creation is directly related to decisions and policies of businesses, which is determined, inter alia, by economic growth, domestic demand, export, import, investment, the tax levels and labor costs [6]. It is well known that job creation and liquidation processes take place both in conditions of decreasing and increasing employment. These changes are the result of adjusting production and technology, management processes to the changing business environment.

The study used a database derived from surveys of Study of Human Capital in Poland of 2011. The analysis drew on information from 3867 business entities engaged in the manufacturing.

Most of the companies surveyed are medium-sized (38% of the surveyed companies) and small-sized companies (34.4%). The entities comprising more than 250 employees accounted for 17.3% of the surveyed companies, and those employing up to nine employees accounted for 10.3% of the surveyed entities.

The statistical analysis was done using the STATISTICA 10 programme.

## RESULTS AND DISCUSSION

In 2011, 28% of the surveyed companies were looking for employees (1072 companies). Table 1 shows that 41.3% of the large companies were looking for employees. In contrast, one out of five micro- and small-sized companies had a job vacancy.

Table 1. Job vacancies by company size (in number of vacancies and as a percent of number of vacancies in the company)

| Company size | Job vacancy | | Total |
|---|---|---|---|
| | Yes | No | |
| **Micro-** | **89** | **310** | **399** |
| % of Micro– | 22.3% | 77.7% | 100% |
| **Small** | **299** | **1030** | **1329** |
| % of Small | 22.5% | 77.5% | 100 |
| **Medium** | **407** | **1062** | **1469** |
| % of Medium | 27.7% | 72.3% | 100% |
| **Large** | **277** | **393** | **670** |
| % of Large | 41.3% | 58.7% | 100% |
| **Total** | **1072** | **2795** | **3867** |

Source: author's own compilation, data from the Study of Human Capital in Poland – 2011.

The vast majority of companies (89.8%) was looking for employees for the already existing posts, whereas only 10.2% of the surveyed entities was looking for employees for completely new positions. The study shows that new jobs were more often created by micro- and large industrial companies. Only 7.1% of the medium-sized businesses created new jobs (Table 2).

Table 2. Business size and labor demand – new jobs

| Size of the business entity | Jobs | | Total |
|---|---|---|---|
| | existing | new | |
| **Micro-** | **75** | **14** | **89** |
| % of Micro– | 84.3% | 15.7% | 100% |
| **Small** | **268** | **31** | **299** |
| % of Small | 89.6% | 10.4% | 100% |
| **Medium** | **378** | **29** | **407** |
| % of Medium | 92.9% | 7.1% | 100% |
| **Large** | **242** | **35** | **277** |
| % of Large | 87.4% | 12.6% | 100% |
| **Total** | **963** | **109** | **1072** |

Source: author's own compilation, data from the Study of Human Capital in Poland – 2011.

Chi-squared test showed a positive statistical correlation between the size of the company and the creation of new jobs (the value of the chi-square statistic is 95.296 with degrees of freedom v=6, p = 0.000).

The industrial sector is characterized by features that are not present or are much less important in other areas of the economy. These features include numerous relationships with science and technology developments and those with other sectors of the economy [5]. The relationship with science makes causes the industrial sector to be the keystone of the economy's innovation process . More about the types of innovation Nieć writes [8]. This study attempts to verify whether the introduction of new products or significant changes in the production or provision of services contributes to the increased employment in the surveyed entities. The study shows that 1720 surveyed companies (44.5%) introduced some innovations in the last 12 months (Table 3). Based on the conducted chi-squared test, the hypothesis of the lack of correlation between job vacancies and the implementation of innovation was rejected (chi–square statistics value = 84.029, v=2, p=0.000). It should be noted that 56.1% of the companies that had implemented an innovation had a job vacancy.

Table 3. Job vacancies and implementation of innovations in industrial enterprises

| Job vacancy | Innovations made | | | Total |
|---|---|---|---|---|
| | Yes | No | I do not know | |
| **Yes** | **601** | **442** | **29** | **1072** |
| % of the above line | 56.1% | 41.2% | 2.7% | 100% |
| % of all companies | 15.5% | 11.4% | 0.75% | 27.7% |
| **No** | **1119** | **1609** | **67** | **2795** |
| % the above line | 40.0% | 57.6% | 2.4% | 100% |
| % of all companies | 28.9% | 41.6% | 1.7% | 72.3% |
| **Total** | **1720** | **2051** | **96** | **3867** |
| % of all companies | 44.5% | 53.0% | 2.5% | 100% |

Source: author's own compilation, data from the Study of Human Capital in Poland – 2011.

Plans to introduce new products or new solutions relating to the production or provision of services in the next year were made by 51.5% of the surveyed industrial entities (1990 companies). Experts from the World Bank pointed out that the implementation of innovations attracts a great interest in Poland. Comparative studies conducted in Poland and Germany showed that significantly more companies in Poland plan to introduce new products or upgrade the existing ones than in Germany [12]. It may follow from this fact that the domestic market on which businesses operate is still far from saturation, and thus allows a relatively faster introduction of new products. This may be an indication that some Polish firms are still in a state of transition and may be more inclined to add more new products and even upgrade the existing ones [12].

Innovation is now recognized as one of the main drivers of economic growth, improves the competitiveness of the economy, and also increases productivity and employment [8]. The study shows that every tenth company which plans to implement some kind of innovation envisages employment growth (190 business entities), and 40% of the businesses expects a decrease in employment. In every other company changes will not affect employment (Table 4).

Table 4. Planned implementation of innovation and employment growth (N=3876 companies)

| Planned implementation of innovation | Planned changes in employment | | | | Total |
|---|---|---|---|---|---|
| | increase | decrease | no change | hard to say | |
| Yes | 190 | 741 | 950 | 109 | 1990 |
| No | 201 | 261 | 919 | 98 | 1479 |
| I do not know | 43 | 75 | 213 | 67 | 398 |
| Total | 434 | 1077 | 2082 | 274 | 3867 |
| % of all companies | 11.2% | 27.9% | 53.8% | 7.1% | 100% |

Source: author's own compilation, data from the Study of Human Capital in Poland – 2011

These findings may result from the fact that generating a large number of jobs, despite the high level and growth of labor productivity, is a hallmark of the high-technology industry [5]. According to OECD classifications, the high-technology industry includes aircraft and spacecraft industry, production of office, accounting and computing machinery, pharmaceuticals, production of radio, TV and communications equipment and production of medical precision and optical instruments [4 and 8].In Poland, only 2.4% of the entities involved in manufacturing belongs to this group, and 14.2% of the entities form part of the medium-high technology group. The companies with high and medium-high industry produce a total of 31.6% of the total production of the Polish manufacturing industry. The remaining significant part of production are the products of very low levels of knowledge and technology [3].

Out of the 1072 surveyed companies that were looking for employees, only 38 belonged to the high-technology sector, while 90 entities represented the medium-high technology sector comprising the motor vehicles industry, chemicals excluding pharmaceuticals and production of other electrical machinery and apparatus, and railroad equipment and transport equipment [9]. The vast majority of the surveyed industrial enterprises were those belonging to the group that used medium-low technology or low technology.

**Barriers to employment growth**

Three main barriers which in the opinion of the respondents have an impact on employment growth are too high non-wage labor costs, economic instability and too high taxes (Table 5). These are external determinants associated with the applicable law and the business environment.

Non-wage labor costs refer to social insurance expenditure and labor taxes. The level of non-wage labor costs is dependent on changes in legislation and the level of gross salary.

Table 5. Barriers to employment growth in the surveyed enterprises (in %)(N=3867 companies)

| Barriers: | Total | Company size | | | |
|---|---|---|---|---|---|
| | | Micro- | Small | Medium | Large |
| Too high non-wage labor costs | 65 | 70 | 72 | 63 | 53 |
| Economic instability | 64 | 64 | 67 | 64 | 55 |
| Too high taxes | 60 | 70 | 68 | 56 | 50 |
| Strong competition in the market | 51 | 55 | 52 | 49 | 50 |
| High salary expectations of workers | 48 | 44 | 47 | 49 | 48 |
| Complicated legal provisions and regulations | 44 | 50 | 49 | 41 | 36 |
| Lack of suitable candidates for work | 41 | 45 | 43 | 39 | 40 |
| High interest rates on loans | 33 | 41 | 38 | 30 | 27 |
| Bad financial situation of the company | 20 | 21 | 23 | 19 | 15 |
| Hindered access to loans for companies | 19 | 22 | 22 | 17 | 17 |

Source: author's own compilation, data from Study of Human Capital in Poland – 2011

It should be noted that small- and medium-sized industrial firms in particular indicated the impact of these three factors as a major barrier to employment. Complicated legal provisions and regulations are burdensome for half of the companies that employed up to 9 persons. Employment growth is also dependent on investments financed with loans. For 41% of the micro-companies, high interest rates on loans were identified as a serious barrier to development.

The findings of this study may be considered in the debate on economic policies of the state. The results show that despite promoting of the development of entrepreneurship and encouraging individuals to start one's own business [7], the actions taken do not result in improving the operation of micro- and small enterprises. In 2011, the government focused on the facilitation of registration of business activities but at the same time non-payroll labor costs were pushed up as a result of an increase in a disability pension contribution paid by employers. In addition, the accident insurance premium for those working in coal mining, augmented up to 3.86% of the assessment basis, resulted in an increase of non-payroll labor costs in micro-enterprises whose level of contribution is equal to half the maximum contribution for accident insurance. This change caused a rise in premiums for micro-enterprises from 1.63% to 1.97%. The level of taxation is also an important element of the state policy with respect to the business entities [11]. Many government documents mention tax cuts as a necessary stimulus to the development of entrepreneurship in Poland. The obtained results show that this is a significant employment factor in 60% of the industrial enterprises.

## CONCLUSIONS

The following conclusions are drawn from the study:

1. The industrial sector is an important source of jobs. In industrial enterprises, 28% of the companies were looking for employees. Often, these were large companies that were looking for employees. Only one in five small businesses had a job vacancy. The study also found that 90% of the companies were looking for workers to fill the existing posts. Only 10% of the industrial entities set up new jobs. New posts were created more often by large companies and micro-enterprises.
2. Innovation is recognized as one of the main drivers of productivity growth and employment. There is a positive correlation between the entities providing jobs and innovations implemented.

3. More than half of the industrial enterprises planned to introduce a new product or make changes in the production or provision of services. However, only every tenth company that intended to introduce an innovation also planned employment growth. In 40% of the industrial companies that were planning to introduce innovative changes expected a reduction in employment. This may result from the fact that the vast majority of industrial enterprises are characterized by using low levels of technology. While the creation of a large number of jobs is a feature of high-technology industries, only 2.4% belongs to that group across the country.
4. The main factors that limit the employment growth in industrial enterprises are the same for micro-, small, medium and large companies. These are: high non-wage labor costs, economic instability and too high taxes. It should be noted that micro- and small businesses feel the impact of these factors much more than large companies.
5. Investments are needed for new job creation, and these in turn depend on interest rates levels. Small and micro-enterprises often indicated that interest rates were limiting factor of employment growth.

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