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Branżowy Bilans
Kapitału Ludzkiego II

Sectoral Human Capital Study II

Chemical Sector

Survey results summary – 1st edition

European Funds
Knowledge Education Development

Republic of Poland

European Union
European Social Fund

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About the project

Project name:

Sectoral Human Capital Study II
Chemical Sector

Study Objective:

To increase the knowledge about the current and future demand for skills in the chemical sector

Research dates:

1st edition of the study:
August 2020 – May 2021

including quantitative research:
April – May 2021

Respondents:

qualitative research: employers, industry experts, education and HR experts

quantitative research: employers and employees representing the key positions from the chemical sector

About the sector

The chemical sector includes:

manufacturing and processing of coke and refined petroleum products (PKD C19)

manufacturing of chemicals and chemical products (PKD C20)

manufacturing of basic pharmaceutical substances and medicines and other pharmaceutical products (PKD C21)

manufacturing of rubber and plastic products (PKD C22)

Number of employees:
323 thousand*

* Statistics Poland data for 2020; third largest employment market in the country

Number of companies:
7 500*

* estimates based on ZUS data as of 2020, excluding the self-employed

Key players in the Polish chemical sector:

- PKN Orlen
- LOTOS
- Azoty
- Michelin Poland
- Bridgestone Poland
- Dębica (Goodyear)

Key business processes

New product development

- Development of new product concepts
- Development of new product syntheses
- Carrying out chemical processes
- Compiling of documentation
- Substance enhancement

Development of product formulations

- Product testing
- Preparation of samples for testing
- Development of applications
- Preparation of production and setting up experimental facilities
- Compiling of documentation

Production

- Planning of production works
- Implementation of chemical processes
- Supervision of production
- Preparation of raw materials in terms of quality and composition
- Supervision of inventory levels
- Purification of raw materials
- Production execution
- Operation of machines
- Selection of proportions – formulation
- Formulation of aroma compositions
- Production of packaging

Customer acquisition

- Contacts with clients
- Researching clients' needs
- Customer-oriented product design

Quality control

- Verification of deliveries
- Machine operation control
- Production control
- Substance control
- Verification of the quality of substances according to their specifications

Warehousing/transport/logistics:

- Ensuring warehouse traffic
- Releasing goods
- Operating positions related to warehouse operations, transport, and logistics
- Preparation of goods
- Purchase of raw materials
- Unloading of deliveries/ acceptance of goods
- Placing orders
- Product delivery
- Verification of products according to order specifications
- Storage of raw materials

Key job positions

Chemical sector's machines and equipment operator / Plastics processing machines and equipment operator

Production worker

Production foreman ★ ★ ★

Quality controller

Technologist

Chemical analyst/laboratory technician/ laboratory assistant

Head of laboratory ★ ★ ★

Production manager ★ ★ ★

Employment

Expected changes in employment levels over the next 12 months – according to employers:

74% employment will remain unchanged

8% employment will increase

6% employment will decrease

Increase in employment expected mainly by:

15% of medium-sized enterprises (50-249 employees)

17% of companies from the sub-sector manufacturing and processing coke and refined petroleum products

According to employers, in the next 5 years, greatest increase in employment will affect the following key positions (% of answers):

13% production workers

12% machine and equipment operators

9% technologists

Source: BBKL II Chemical Sector, Employers' Survey – 1st Edition 2021 (n=808)

Employee retention

91% of the surveyed employees working in the key positions in the chemical sector are satisfied with their jobs

Employees' evaluation of the particular aspects of their jobs; % of „rather satisfied" and „satisfied" answers

- Relations with co-workers: **92%**
- Relations with superiors: **90%**
- Working conditions: **90%**
- Employment security: **89%**
- Work-life balance: **80%**
- Initiative and autonomy: **78%**
- Personal development and competence enhancement: **77%**
- Salary: **73%**
- Promotion prospects: **63%**

94% of employees do not plan to change jobs in the 12 months following the survey

Recruitment strategies

Only **16%** of companies were recruiting employees in the 12 months prior to the survey

- most of the companies that were recruiting **(35%)** are involved in the manufacturing of basic pharmaceutical substances and medicines and other pharmaceutical products
- reasons for difficulties in the recruitment process according to employers:
- little interest in the job offer: **47%**
  - candidates not meeting the expectations: **45%**
  - candidates' dissatisfaction with employment conditions: **37%**

Skills assessment

55% of employees had their skills assessed by the employers in the 12 months prior to the survey

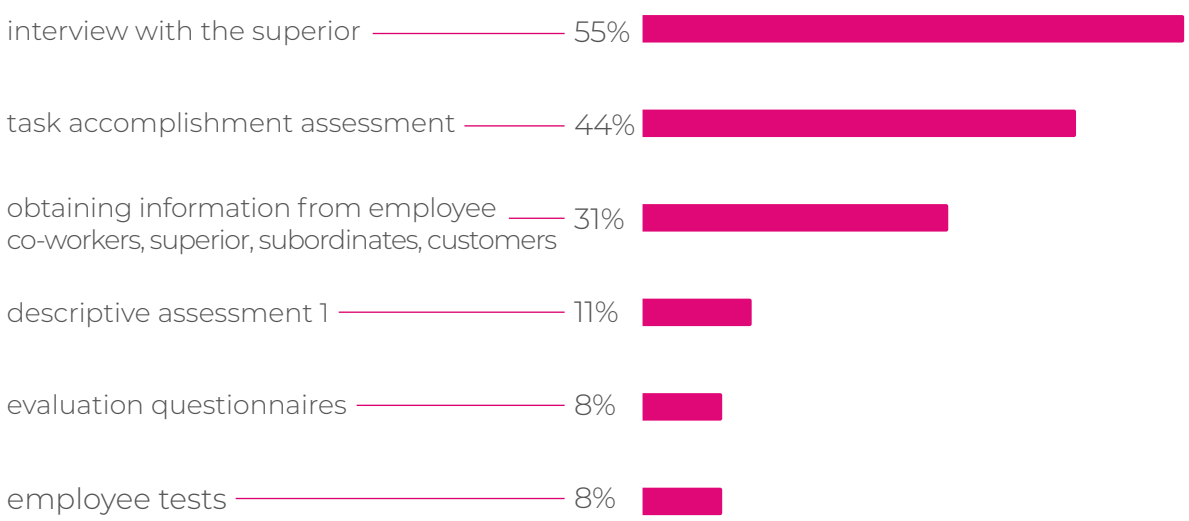
» systematically: **19%** » occasionally: **36%**

Regular assessment of employees' skills is most often **(40%)** conducted in the subsector **manufacturing of basic pharmaceutical substances and medicines and other pharmaceutical products**

67% of employers declare that they assess what skills they need from employees at a given point in time:

» systematically: **25%** » occasionally: **42%**

Methods of employees' skills' assessment



Source: BBKL II Chemical Sector – 1st edition 2021; Employers assessing what skills employees need (n=567)

Employee skills development

Employers' opinions on chemical sector's employees' skills level:

- **49%** believe that employee skills require some improvement in certain areas
- **46%** believe the skills are fully satisfactory

87% of new hires receive in-house training before starting work in the companies:

- **45%** of employees need some induction training
- **29%** need more training
- **13%** need full training

62% of employers train their employees if those do not have the skills the company requires

In the 12 months prior to the survey:

- **44%** of employees participated in various types of courses and training (including mandatory on-the-job training)
- **41%** of employees used the development offer inside the company (e.g., training, study tours, job-shadowing)

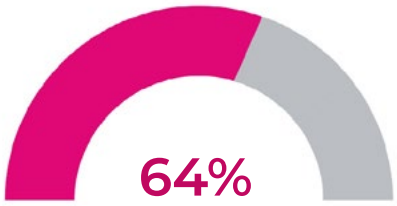
89% of the surveyed employees believe that the training and development offer in their companies is satisfactory:

these are employees in the subsector manufacturing of basic pharmaceutical substances and medicines and other pharmaceutical products that are most likely to be satisfied with the development offer (43% of answers)

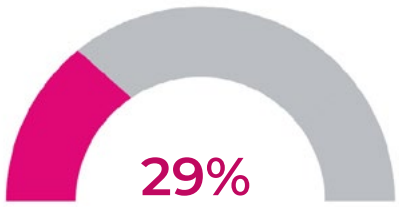
20% of employees want to develop their skills in the 12 months following the survey, by participating in various forms of education and development programs offered by the company

Their motivations for skills' development include:

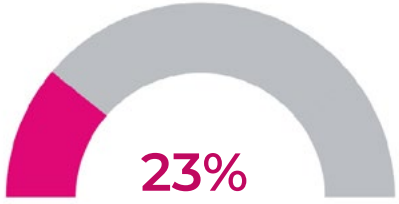
desire to improve the skills needed at work



employer's requirements



reducing the risk of losing the job



COVID-19 pandemic's impact on the sector

Employers' assessment of the impact of the pandemic on the company:

- **49%** negative impact on the company
- **39%** somewhat negative, somewhat positive impact on the company
- **8%** positive impact on the company
- **4%** don't know/hard to say

Negative impact of the pandemic:

- decline in orders: **78%** of employers' answers
- reduced customers numbers: **72%**
- reduced sales of products or services: **71%**
- problems with suppliers/customers: **60%**
- adjustment of company's procedures to safety and hygiene requirements related to COVID-19: **54%**
- maintaining liquidity: **53%**
- increase in company's operating costs: **52%***

Positive effects of the pandemic:

- increase in orders: **63%** of employers' answers
- acquisition of new customers: **59%**
- increased sales of products or services: **54%**
- acquisition of new cooperation partners: **45%***

* multiple choice question

Balance of competences (skills)

The goals:

- to assess skills' mismatch
- to identify competence gap
- to assess the importance of skills for the future

Assessment of skills' mismatch:

- scarce skills – assessed as relatively more important by employers while scoring relatively low in employees' self-assessment
- surplus skills – assessed as relatively less important by employers while scoring relatively high in employees' self-assessment
- balanced skills – assessed as relatively more important by employers and scoring relatively high in employees' self-assessment
- sufficient skills – assessed as relatively less important by employers and scoring relatively low in employees' self-assessment

Competence gap – competences that are relatively more important for employers while being more difficult to obtain as perceived by at least 50% of employers evaluating the competence profile for a given key position

Employers generally assess the skills defined in the profiles as important from the perspective of tasks performed at a given position, while employees generally consider their skills as sufficient to perform those tasks

2.4 pts* Employers' average rating of skills' importance for particular key positions

3 pts** Employees' average self-assessment of skills for all the key job positions assessed

* on a 1-3 scale

** on a 1 to 4 scale, where 4 means that the level of skills exceeds the requirements

Skills' mismatch and competence gap

Scarce skills are most likely to be observed for:

» production managers

» technologists

Balanced skills are most likely to be observed for:

» chemical sector machine and equipment operators/plastics processing machine and equipment operators

» production workers

Surplus skills are most likely to be observed for:

» heads of laboratories

» chemical analysts/ laboratory technicians/ laboratory assistants

Key positions with biggest competence gap:

» laboratory managers

» technologists

» production managers

Trends in the sector

- increasing numbers and importance of EU regulations related to the greening strategies of the Green New Deal and European Green Deal
- increasing individualisation (customisation) – adapting products to market trends and requirements of individual clients
- stronger link between the Polish economy and the world economy (globalisation) – increasing competition
- progressing development of Industry 4.0 – the so-called Fourth Industrial Revolution
- growing importance of transdisciplinary skills in the context of human capital development

Trends of greatest significance for the Polish chemical sector according to industry experts

development of Industry 4.0

globalisation

individualisation (customisation)

Most employers believe that over the next 5 years the importance of the particular skills needed for the key positions in the chemical sector will not change. This is the opinion of at least **60%** of respondents for every skill across all the assessed profiles.

Positions of the future

According to experts:

- technologist
- IT specialist
- automation specialist
- R&D specialist

According to employers:

- IT specialist (**6.2***)
- sustainable development and EU law specialist (**6.2**)
- specialist with transdisciplinary skills (**6.0**)
- marketing specialist (**5.9**)

*** average rating on a 0-10 scale: likelihood of increased demand for the position**

Challenges

According to experts:

- obtaining personnel with appropriate skills and transdisciplinary competences (**98%** of answers)
- Polish enterprises' ability to manufacture innovative products meeting EU standards, while optimising costs (**93%**)
- attracting employees able to cooperate with experts from different fields (**88%**)

According to employers:

- meeting financial expectations of employees (**57%** of answers)
- high costs of introducing innovations (**54%**)
- keeping best employees in the company (**51%**)

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Full survey results can
be found in the report (in Polish):

Sectoral Human Capital Study II
Chemical Sector

Survey Report – 1st edition:

https://www.parp.gov.pl/component/site/site/bilans-kapitalu-ludzkiego#wynikibadanbranzowych

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