

BALANCE OF COMPETENCES IN THE INDUSTRY OF TRANSPORT AND LOGISTICS

REPORT ON THE CONDUCTED RESEARCH



REPORT COMMISSIONED BY THE
CRACOW CITY HALL, PREPARED BY
THE CENTRE FOR EVALUATION
AND ANALYSIS OF PUBLIC POLICIES
AND THE INTERDISCIPLINARY
CENTRE FOR ORGANISATIONAL
RESEARCH AND DEVELOPMENT
JAGIELLONIAN UNIVERSITY

CRACOW, NOVEMBER 2015

ABSTRACT

This report presents the results of research conducted as part of the project “Balance of competences of Cracow research centre” in the industry of transport and logistics. Even though this industry is developed in Cracow to a limited extent, it is crucial for the city's development and implementation of its strategies, especially in the context of planned and implemented investments.

For the purposes of this research, a limited definition of the industry of transport and logistics, including **companies dealing with road transport of goods, their storage and activities related to support for this process** (excluding railway and air transport and transportation of people) was adopted.

As part of the work carried out, based on the analysis of job advertisements and in-depth interviews with opinion leaders and representatives of companies, a few dozen of competences expected from graduates of Cracow universities, which have different importance for development of the industry, were inventoried. These competences are divided into four areas: **specialist knowledge and skills** (11 competences), **business knowledge and skills** (9 competences), **soft skills** (11 competences) and **language skills and other requirements** (13 competences). In consecutive steps, quantitative research on demand for competences (the analysis included the results of 20 companies from the industry of transport and logistics employing over 1200 employees), which were then set within a balance against the results concerning the supply of competences (4 subjects of study, including three full-time and one part-time, which more than 200 students will graduate from in 2016) were conducted.

On the side of demand analysis, the report includes information on the most important competences currently sought by employers – in the industry of transport and logistics they include **integrity, knowledge of transportation, knowledge of English, care for quality, ability to cope with stress, verbal and written communication, using office packages, customer focus, sales and marketing, and having driving licence, category B.**

In the next five years, in addition to the aforementioned competences which will remain important, **organisation of own work** and **knowledge about new trends in the industry**, among other things, will be also particularly important.

From among the important competences, on the labour market, **in the industry of transport and logistics it is the hardest to find those which are related to care for quality, customer focus, initiative and innovativeness, knowledge about the industry and new trends and cognitive abilities.**

In the industry of transport and logistics, entrepreneurs are quite moderately optimistic about the future, predicting a slight increase in employment dynamics. The report also includes information on the positions for which the Cracow employers in the analysed industry recruit most often – in a vast majority, these are positions of drivers, however, logisticians, shipping agents and office workers are also recruited.

The side of supply analysis provides information about the subjects of study whose profiles, according to employers, correspond best to the needs of the industry of tourism and shipping and the assessment of achieving effects of education important from the point of view of employers. From among the competences important to employers, according to the universities,

the most often achieved ones include **transportation, knowledge about the industry and new trends, integrity, care for quality/conscientiousness, designing logistics processes, law and regulations** and **using MS Office, OpenOffice or Google Docs**.

At the moment, cooperation of universities and representatives of business in the industry of transport and logistics is not of a systemic nature. It is worth ensuring that the representatives of the industry, both on the side of business and universities, have more opportunities to establish more or less formalised contacts – particularly in creating a positive image of the industry as well as building bridges facilitating practical education of industry competences. An important postulate is also intensification of cooperation between the Cracow City Hall and business for facilitating employees acquiring professional skills and strategic planning of transport development of the city.

In the industry of transport and logistics, both experts and employers noted the shortage of employees among graduates of vocational schools (which were not included in the analyses in this report) **and a competence shortage among graduates of higher education institutions** (mainly the lack of useful attitudes and professional skills). Also representatives of universities agree with such a diagnosis, pointing to the risks associated with lower motivation and commitment of students.

At the end, the report presents conclusions resulting from the analyses along with suggestions of activities aimed at development of universities and companies operating in the industry.

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INTRODUCTION

Thanks to the initiative and commitment of the Cracow City Hall, for the fourth time we have the pleasure to present the results of the “Balance of competences of Cracow research centre” related to the research on the relationship between demand and supply of competences in key areas of functioning of business and higher education. In three previous years, the scope of research included 9 industries:¹ outsourcing (BPO and ITO), life science, power industry, creative industry, passive construction and energy-saving construction, construction industry, architectural industry, computer industry together with IT technologies. In 2015, work focused on the following industries:

1. Tourism
- 2. Transport and logistics**
3. Cross-cutting research of foreign languages

This year, a unique solution was the extension of strictly industrial research to the cross-cutting research of supply and demand related to foreign languages.

Although the research was conducted locally and focuses on Cracow, the effects have a countrywide impact, being, e.g., an inspiration to carry out nationwide industry research as part of the programme Study of Human Capital.

Similarly to the previous years, the reports present demand of Cracow companies for specific competences on the one hand, and supply of competences of the Cracow higher education institutions on the other hand. The objectives set before the research team, which focus around the questions about the expectations of employers related to the graduates of Cracow universities and the actual level of education of these competences in the education industry, have not changed.

In terms of the methodology used, in comparison with research conducted in 2013 and 2014, except for the Balance of foreign languages carried out for the first time, there have been no major changes. All the modifications introduced were to reduce the burden of time for the respondents, while maintaining high quality of collected data.

The conclusions presented in the reports have been formulated on the basis of questionnaires and a few dozen of interviews with industry experts, representatives of companies and higher education institutions. The subject of research were also recruitment advertisements and, to a lesser extent, the documents related to the curriculum in selected subjects of study at the universities. In the case of the Balance of languages, surveys among students and in language schools, interviews with the representatives of recruitment companies and a detailed analysis of job advertisements were carried out additionally.

¹ Research carried out in 2012 and 2013 was commissioned by the Cracow City Hall and the Provincial Labour Office in Cracow; in 2014, as a supplement to research in the construction industry, research commissioned by the PLO in Cracow was conducted at the level of upper-secondary schools.

² The list of companies takes into account only entities which have agreed to put their names in the report. Both in the case of companies and higher education institutions, the list takes into account the institutions which filled in partially or fully the research questionnaire or took part in in-depth interviews.

³ Prepared on the basis of the Balances of competences from 2012, 2013 and 2014. We refer readers interested in detailed assumptions to the publications from the previous years. The research methodology and the use of tools

The project was commissioned by the Cracow City Hall and implemented by the Centre for Evaluation and Analysis of Public Policies of the Jagiellonian University (UJ) and the Interdisciplinary Centre for Organisational Research and Development at the UJ Institute of Psychology. It would not be possible to conduct research if not for the kindness and professional support of representatives of the CCH, the PLO in Cracow, business, representatives of Cracow universities and language schools, business environment institutions and students. In particular, we would like to thank, at the same time taking full responsibility as the research team for any possible imperfections and shortcomings of the report, the **ASPIRE Association**, the partner of the Balance of foreign languages.

We owe special thanks to (in alphabetical order):

- Industry experts and people who enabled us to understand the essence of functioning of all the analysed industries in a broader context and submitted their comments, often very critical, improving the quality of tools and definitions used: Małgorzata Bednarczyk (Jagiellonian University), Adam Biernat (Provincial Labour Office in Cracow), Barbara Bukowska (Tourist Guides Association in Cracow), Mirosław Furmanek (Provincial Labour Office in Cracow), Andrew Hallam (ASPIRE), Grzegorz Jurczyk (Quality Centre of the Cracow University of Technology), Joanna Kaim-Kerth (ASPIRE), Wojciech Kardas (Wo-Kar), Zygmunt Kruczek (University of Physical Education; Malopolska Tourist Guides Association), Rafał Kulczycki (Cracow City Hall), Konrad Kuźma (Cracow City Hall), Maria Leńczuk (Provincial Labour Office in Cracow), Wojciech Liszka (Z-Factor), Piotr Litwiński (Association of International Road Transport Carriers; Litwiński), Anna Malina (University of Economics), Joanna Ostrowska (Kossak Hotel), Dariusz Pastuła (Aon Corporation), Artur Paszko (Kraków Nowa Huta Przyszłości), Jan Paździorko (F.H.U. Liber), Rafał Perłowski (Cracow City Hall), Agata Piątek (Hays), Andrzej Poznański (Cracow City Hall), Jerzy Raciborski (University of Physical Education), Magdalena Radwan (AG Test HR), Tomasz Turaj (Nowe Centrum Administracyjne), Jan Sala (University of Economics), Andrzej Sowa (Cracow University of Technology), Monika Stawicka (Jagiellonian Language Centre), Andrzej Witek (Witek Hotel-Conference Centre), Katarzyna Wysocka (Cracow City Hall), Tomasz Ziaja (MTD Tomasz Ziaja),
- Representatives of companies from the industry of tourism and logistics:² Atu Logistic sp. z o.o. sp. k, Cool Chain Group Pl sp. z o.o., "LIBER" Jan Paździorko, Global Motion, KMC-Services sp. z o.o., OTTO LOGISTICS ŻEBROWSKA I HONISCH SP J, P.U. Jabex Bartosz Bytnar, PL LOGISTIC Jarosław Baran, Trado transport, trans comfort, Trans Europe Grzegorz Łoboda.
- Representatives of higher education institutions associated with the industry of tourism and logistics: AGH University of Science and Technology (Faculty of Management), Cracow University of Technology (Faculty of Mechanical Engineering, Faculty of Civil Engineering, Centre of Training and Organisation of Quality Systems).

² The list of companies takes into account only entities which have agreed to put their names in the report. Both in the case of companies and higher education institutions, the list takes into account the institutions which filled in partially or fully the research questionnaire or took part in in-depth interviews.

Like in previous years, we have tried to write individual reports in such a way so that, on the one hand, employers, universities, public authorities as well as students and graduates could use them independently, and on the other hand, so that they could form a bridge and a medium of communication between these groups. We believe that the presented results of research will remain a permanent element of discussions about the relationship between the labour market and the education sector in Poland.

RESEARCH TEAM

Leading experts:

Prof. Jarosław Górniak – Ph.D., Dean of the Faculty of Philosophy of the Jagiellonian University, Head of the UJ Centre for Evaluation and Analysis of Public Policies, Head of Department of Sociology of Economy, Education and Research Methods of the UJ Institute of Sociology. Sociologist and economist, specialist in the field of social research methods and data analysis, methodology of evaluation and analysis of public policies, and sociology of economy and organisations. Head of the system research project “Study of Human Capital,” and before that coordinator of many research projects and author of studies on the labour market and public policies. Member of the Advisory Council of the Presidium of the City of Cracow.

Prof. Małgorzata Kossowska – Ph.D., Deputy Dean for Scientific Affairs of the Faculty of Philosophy of the Jagiellonian University, Head of the Institute of Psychology, President of the Polish Society of Social Psychology in 2008-2011 and 2011-2013, President of the Interdisciplinary Centre for Organisational Research and Development (ICORD) at the Institute of Psychology of UJ. She conducts research related to issues such as: individual differences, attitudes and political beliefs, conditions of political beliefs, cognitive rigidity. Winner of many prestigious awards and distinctions. Author of numerous book publications and scientific articles.

Team members:

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Grzegorz Żmuda – Doctor of Social Science, psychologist and sociologist, Managing Director of the ICORD, member of the Strategy Implementation Monitoring Team of the Jagiellonian University. He specialises in management and organisational psychology with special focus on psychological diagnosis of organisations, participation management and personnel psychology. He works on creating innovative tools for organisational development. In his ongoing Ph.D. work, he examines development of the management style preferences among young entrepreneurs; the author of numerous publications and presentations in the field of psychology of organisations.

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Policies of the Jagiellonian University, where he coordinates work of the team for educational research. Specialist in educational research and social research methodology.

Karolina Dukala – psychologist, employee of the Department of General Psychology of the Institute of Psychology of the Jagiellonian University. She specialises in psychology of interrogation and lie detection. Certified trainer, provides training mainly in the field of personal development and the use of soft skills in business, with particular emphasis on negotiations. Organiser, coordinator and manager in many research and commercial projects. As a long-time member and former President of the UJ Doctoral Society, she popularises science and promotes cooperation between representatives of science and business.

Maciej Taraday – psychologist, Ph.D. student at the Experimental Psychology Unit of the Jagiellonian University. Participant of the project of doctoral studies in the field of educational measurement. Research interests: connection between working memory and intelligence, cognitive control, research methodology and statistics. Winner of numerous awards and scholarships. He specialises in statistical analysis with the use of R software environment, SPSS, STATISTICA and AMOS.

Marianna Król – psychologist, Ph.D. student at the Social Psychology Unit of the Psychology Institute of the Jagiellonian University. As a trainer and coach, she specialises in conducting development programmes for companies and organisations as part of which she carries out training in soft skills necessary to operate effectively in a complex business environment and individual coaching sessions focused on increasing the effectiveness and motivation of employees.

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Anna Kędzierska – student of psychology, graduate of management studies at the Jagiellonian University, Erasmus scholarship holder. In her professional work, she deals with recruitment and selection of specialists from the IT industry. Co-author of tools for evaluation of employees and a system supporting self-development of organisations in the sector of NGOs. She is an

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BASIC ASSUMPTIONS OF THE BALANCE³

In the presented research, there have been no major changes in the basic assumptions and methodology used, compared to the research from 2013 and 2014. In order to ease time burden for the respondents, an attempt to reduce the list of soft and business skills by integrating them into more general categories was made. The question of responsibility attributed to higher education institutions for the education of individual competences was also eliminated – the response pattern of the previous years was consistent between remote branches and in the opinion of the team the benefit from the repetition of research in this area is much smaller than the costs associated with it. In previous years, it turned out that even though representatives of business expect developed soft and business skills from the graduates, they do not share the opinion that higher education institutions should be responsible for their education to the largest extent. Sources of development of this group of competences such as earlier levels of education and involvement of parents and guardians were indicated equally often. Representatives of universities felt responsible for development of soft skills of their graduates to a greater extent, although they indicated difficulties in carrying out this task. When it comes to specialist competences (knowledge and skills), in the vast majority of cases both business and universities were of the same opinion that it is the responsibility of higher education.

One of the most important objectives of the report is to present opinions of industry experts, representatives of companies and universities on the state of competences of graduates of Cracow schools without oversimplification and evaluation. Even though this was a considerable challenge, we have made every effort to present the flow of intellectual capital from universities to business, mutual expectations and adopted attitudes in an objective way.

Like in the previous years, the balance of competences starts from the analysis of the needs of Cracow enterprises. **In this regard, we tried to maintain the previously established standard of not creating assumptions as regards the necessity of absolute matching of the educational offer to the current shape of the labour market.** In our opinion, requirements of employers should be one of the main factors taken into account when creating curricula, but certainly not the only one. **Similarly, it is impossible, in our opinion, to maintain the view that possible cooperation problems arise only from the lack of willingness of employers and their ability to use the potential which the universities possess.**

Like in the previous editions of the project, the term “competence” shall be understood in this report as: “a set of behaviours belonging to a common category, enabling effective implementation of organisation's objectives and tasks in a given position, determined by various psychological factors.” In this sense, competences are sets of behaviours associated with the characteristics expected in a particular position. The following list includes categories of these factors identified in the demand analysis:

- **Knowledge** – information gained during education (e.g. knowledge about heat flow in a building, knowledge of trade law)

³ Prepared on the basis of the Balances of competences from 2012, 2013 and 2014. We refer readers interested in detailed assumptions to the publications from the previous years. The research methodology and the use of tools are described in more detail in Annex 2.

- **Skills** – learned activities in a certain area (e.g. MS Office, communication)
- **Abilities** – an innate predisposition in a particular area (e.g. analytical abilities)
- **Others** – characteristics which cannot be attributed to the above categories (e.g. mobility, integrity, etc.)

In the remaining part of the report, the word “competences” will be used to refer collectively to behavioural manifestations of expectations expressed in the above categories, which is consistent with the Polish research tradition and the generally accepted international convention.

Competences, which are one of the fundamental concepts in business institutions, have their university equivalent in the effects of education. As Kraśniewski writes,⁴ the essence of the effects of education “amounts to the establishment... what the learner should know, understand and be able to do after completion of a certain period (process) of education.” In Poland, the effects of education are usually divided into three categories: **knowledge, skills and social competence**, although these categories are not always separable. As part of the performed work, we made a simplifying translation of the expected competences into the language of effects of education. Similarly to the previous research, we decided to apply a fairly general catalogue of effects, so that they could be easily provided with details and adapted to the specificity of individual subjects.

⁴ See also: A. Kraśniewski (2011). Jak przygotować programy kształcenia zgodnie z wymaganiami Krajowych Ram Kwalifikacji dla Szkolnictwa Wyższego. Warszawa: MNiSW; E. Chmielecka (2010). Autonomia programowa uczelni. Ramy kwalifikacji dla szkolnictwa wyższego. Warszawa: MNiSW; Regulation of the Minister of Science and Higher Education of 2 November 2011 on the National Qualifications Framework for Higher Education

BASIC INFORMATION ABOUT THE ANALYSED INDUSTRY⁵

DEFINITION OF THE INDUSTRY

Transport and logistics includes a wide range of economic activities. Therefore, the scope which will be of interest in this research should be precisely defined. **The industry of transport and logistics shall be understood as the companies which deal with road transportation of goods and their storage as well as activities related to the support for this process.**⁶ It should be noted that the study does not cover directly the topics related to railway and air transport or issues related to transportation of people. They may be mentioned, but only in relation to the aforementioned areas of activity.

SPECIFICITY OF THE INDUSTRY IN CRACOW

Although the history of the first transport companies in Małopolska dates back to the fifties of the twentieth century, in the case of the industry of transport and logistics **it is difficult to indicate specific characteristics of Cracow companies operating in this field.** For this reason, it should be emphasised that the Cracow transport and logistics companies are subject to the same processes as the entire industry in Europe. **Transportation and logistics services are generally not very diverse, and the companies operating in the industry compete with each other mainly in terms of price.** Moreover, currently, there is a surplus of supply over demand on the market of transport and logistics services – it is the market of consumers of this type of services.⁷

Thanks to the relatively low labour costs, Polish road transport industry is present in the entire Europe. Representatives of the industry estimate that it produces about 10% of GDP, while remaining one of the fastest growing industries in Poland. This illustrates its importance for the economy of the entire country.⁸ On the other hand, it seems to be vulnerable to crises, both economic and caused by changes in regulations.⁹ This applies particularly to road transport, the functioning of which is subject to strong regulation, both at the national and European level. The rules governing operation of enterprises are related, for example, to: road safety, environmental protection standards, social conditions and wages of drivers.

Operation of transport and logistics companies located in Cracow is under the influence of the same processes which affect the functioning of companies in Poland and the European Union.¹⁰ This happens for many reasons. One of the most important ones is the

⁵ This chapter is based on desk research of documents and industry publications and information obtained through interviews from experts, representatives of companies and higher education institutions.

⁶ These are companies falling within the framework defined by the following codes of the Polish Classification of Activity (PCA): 49.41.Z: road transport of goods; 52.10.B: warehousing and storage of other goods; 52.21.Z: service activities incidental to land transportation; 52.29.C: activities of other transport agencies.

⁷ “Polish road transport: Market – Costs – Prices,” report of the Motor Transport Institute, 2012.

⁸ “Transport under the magnifying glass,” report prepared as part of the European Modernisation Programme of Polish Companies, 2013.

⁹ Examples of impact of changes in regulations on the operation of road transport enterprises are the issues raised each time attempts are made in Germany to introduce law on a uniform minimum wage, which would also include persons performing temporary work in Germany, such as lorry drivers whose route crosses this country.

¹⁰ “Where is the European Single Market heading? Impact of German MiLoG laws on the road transport sector in Poland,” report prepared by Deloitte and the Transport i Logistyka Polska association in 2015.

globalisation of this kind of activity. Transport and logistics companies conduct activities the scope of which covers a large part of Europe. For this reason, processes affecting the industry globally are also felt among the companies which are seated in Cracow. **An important reason is also strong competition of the centres neighbouring Cracow which focus this kind of activity.** We mean here, first of all, Silesia and the Katowice agglomeration. The industry and transport capacity, associated with an extensive network of roads and easily accessible storage, focused there determine the strength of the companies in the industry operating on that area. Large competitors are also transport companies operating in Nowy Sącz.

Comments of the interviewed representatives of the industry indicate that at the moment Cracow is not distinguished by anything specific as a place where transport and logistics companies are functioning. In the case of road transport, conducted activities are subject to the same regulations as in other places in Poland. Cracow, as one of the largest cities in Poland, has needs related to the internal consumption of goods, so there will always be a need to import them into the city. In contrast, due to the relatively low industrial production, at the moment there are no large needs as regards the export of goods manufactured in the city.

Transport companies in Małopolska (as well as in Cracow) are focused primarily on courses to western Europe. The road connection with motorway A4 to the west has a great impact on it. Eastern directions are serviced by companies from Podkarpacie or Lublin province.

In the case of logistics, a great problem is the price of land in Cracow and the limited ability to rent warehouse space easily. For this reason, companies often place this kind of activity in places outside the city, where land prices are lower, or in Silesia, where modern warehouse space is readily available. Currently, the activities of logistics companies are concentrated mainly in the area of Balice and Rybitwy. This is connected primarily with the road network well developed in these areas of the city, adapted to heavy traffic. Both of these areas allow for easy entrance to the city ring road and then to the motorway, linking Cracow with other centres.

COOPERATION OF BUSINESS AND SCIENCE

Companies involved in transport and logistics as well as higher education institutions and research institutes very rarely work together on joint research and teaching projects. Information obtained from interviews reveals a picture of cooperation based on personal contacts of people employed at universities or in research institutes with companies or public institutions associated with transportation. The deficit of systematic cooperation in conducting joint research projects is associated with the lack of such needs from the point of view of companies. Cracow's transport and logistics companies do not have adequate funds to carry out such activities. Their functioning is also of a service nature. For this reason, during the interviews the respondents declared openly that from the point of view of functioning of their companies **professional skills** (such as driving licence for lorries) and **integrity and commitment are much more important than formal high qualifications related to higher education, even in a given subject.**

DEVELOPMENT PROSPECTS OF THE INDUSTRY IN CRACOW

Currently, the industry of transport and logistics in Cracow does not stand out above Poland. Activities of transport and logistics companies are subject to global trends. Poland is a transit country, so the industry has potentially great development opportunities. It is important to

create conditions which maximise this potential. In this context, factors which can have a positive impact on development of this industry in Cracow can be indicated.

Issues related to development of logistics in the city are an important element of long-term strategic plans of the city's development.¹¹ The most important project in this context is "Kraków – Nowa Huta Przyszłości." It is planned to establish a Logistics Centre as its part. The land is located on the former industrial areas in the eastern parts of Cracow in Nowa Huta, dedicated to conducting activities in this field. Potentially, this location allows carrying out transport operations, based on a wide variety of transport options, the most important of which is road transport. The currently rebuilt road system in this area (creation of Igołomska node, connecting route S7 with motorway A4 and adapting the Igołomska street to heavy traffic) will significantly facilitate road traffic in this part of Cracow. This creates considerable opportunities for the future in conducting activities related to transport and logistics. This is particularly important in the context of one of the barriers mentioned by the representatives of the industry during interviews – high prices of land. Currently, logistics companies are based in the western and southern parts of the city due to the existing road infrastructure. Thanks to connecting the eastern part of Cracow to the ring road the enterprises will probably start conducting activities also there – the prices of land in this area of the city are lower. In the context of strategic development of human capital associated with the area of logistics and shipping, an important project is also the Balice Airport Park, an investment with a total area of 5.5549 hectares, carried out by Nowe Centrum Administracyjne (the New Administrative Centre), in the area adjacent to the airport in Balice, as part of which also transport and logistics companies are expected to operate.

The next factor important for development of the industry is the convenient location of the city on the road network. For many years, motorway A4 leading from Cracow towards western Europe has defined in a natural way direction in which the transport companies were operating. However, the opening of a new section of motorway A4 to Rzeszów makes it easier to operate also in new areas. At the same time, it should be noted that all the time the road leading towards Warsaw is a considerable problem. Its small flow capacity makes traffic in this direction much more difficult. In any case, this is one of the reasons why Silesia is attractive for transport and logistics companies. Its developed road network facilitates transport of goods in almost every direction. Therefore, for Cracow to become a stronger player on the transport market, the flow capacity of the main roads leading to and from the city should be increased as much as possible.

The general factor affecting the whole industry is the greater and greater technological development. In this context, a factor which is likely to affect development of the industry in Cracow is the considerable scientific potential of the city. Cracow is one of the leading scientific and academic centres in Poland. The technical universities and the research institutes located here can give companies in the industry the opportunity to access modern technologies as well as qualified employees who know how to use them. **However, a prerequisite for the full exploitation of this potential is the cooperation of companies and science. It should be**

¹¹ See "Study of conditions and directions for the spatial development of the city of Cracow," <https://www.bip.krakow.pl/?id=48>

based on system solutions, and not just personal contacts. A problem is the lack of willingness to undertake such cooperation emerging from the interviews with representatives of the industry. It probably stems from the issues related to the source of financing of joint actions – no one wants to incur additional costs, as well as from the lack of awareness of the companies of the potential profits from carrying out such projects. A possibility in this regard would be the agency actions between the local or city authorities and the use of EU funds to start such cooperation. An example of such actions is the project “SPIN – Model of innovation transfer in Małopolska,”¹² whose objective is to understand barriers in cooperation between science and business, and prepare and promote solutions which can overcome them.

PESTEL AND SWOT ANALYSES

PESTEL, that is analysis of the external environment (Political, Economic, Social, Technological, Environmental, Legal environment)

a) Political environment

Transport and logistics in Poland operate on European markets. For this reason, they are largely dependent on legal solutions applicable in different countries, and from political stability. Changes in the law (such as the establishment of the minimum wage in Germany described earlier), causing the rise in prices of the provided transport services, can lead to a crisis in the industry; similarly, tightening of border controls in response to the deepening crisis associated with the inflow of immigrants from the Middle East and Africa. All events threatening political stability of Poland or European Union pose a threat to the industry.

b) Economic environment

Transport and logistics perform the service functions in relation to the industry and people. Therefore, the overall condition of the economy is important to the functioning of this industry. The current economic growth forecasts for Poland are good, which also translates into the positive expectations in relation to the industry. However, it should be borne in mind that transport and logistics are susceptible to the occurrence of economic crises. They have a great impact on the condition of the industry. It is related to the relatively low margins of transport companies operating in Poland.¹³

c) Social environment

Transport and logistics in Poland and in Cracow operate on international markets. This means that the norm are frequent, regular contacts with representatives of other societies and cultures. Because the range of operation of transport companies located in Cracow is primarily western Europe, there is no big problem with cultural differences.

d) Technological environment

¹² More information about the SPIN project can be found at <http://www.spin.malopolska.pl/o-spin.html>

¹³ “Where is the European Single Market heading? Impact of German MiLoG laws on the road transport sector in Poland,” report prepared by Deloitte and the Transport i Logistyka Polska association in 2015.

At present, the industry of transport and logistics is subject to rapid technological changes. The impact of new information technologies used in the management of transport and logistics is increasing, which affects the scope of competences expected of candidates (on the one hand, requiring frequent changes in curricula, and on the other, limiting the scope of knowledge which must be learnt while studying). Modernisation of the transport rolling stock and infrastructure related to reloading of commodities takes place.

e) Environmental setting

Road transport is subject to strict regulations related to environmental protection. Standards of exhaust in force in Europe are a factor influencing the modernisation of the rolling stock of transportation companies. Although Cracow is not in particular danger of occurrence of natural disasters, possible remedial measures associated with active fight against air pollution, e.g. possible ban on the entry of vehicles into the city, may be important for the stability of the industry.

f) Legal environment

Changes in the regulations related to the functioning of the industry of transport and logistics have a direct impact on the companies operating in this field. The introduction of restrictions on the free movement of goods between European countries would cause a threat to the development of the industry in Cracow. Similarly, changes increasing the operating costs of transport companies could lead to the crisis of the entire industry.

SWOT analysis, i.e. a summary of strengths and weaknesses of the sector and opportunities and threats connected with the environment of the sector.

Strengths of the industry in the region:

- existing roads connecting Cracow with the motorway networks (primarily on the west-east axis);
- large internal market (Cracow), with demand for products the vast majority of which is not manufactured locally;
- considerable experience related to rich traditions of the industry in Małopolska (beginnings in the fifties of the 20th century);
- existence of a large airport in Balice.

Weaknesses of the industry in the region:

- high prices of land, which make it difficult to conduct profitable business activities in Cracow;
- difficulties in finding qualified staff, mainly drivers and shipping agents, with the appropriate professional skills, but also with highly developed soft skills;
- large fragmentation of the industry;
- the lack of strong entities in the industry.

Opportunities of the industry in the region:

- development of road network in Cracow;

- emphasis on development of logistics in long-term strategy of Cracow within the project “Nowa Huta Przyszłości;”
- providing well-connected land to conduct activities related to logistics and transport in the eastern and southern parts of the city;
- scientific research capacities of universities and research institutes located in Cracow.

Threats to the industry in the region:

- competition of the companies located in Silesia and in Nowy Sącz;
- limited scope of strategic development of the transport network in the city;
- over-regulation of the industry at the regional, national and European level;
- the lack of vocational schools educating qualified personnel of transport and shipping;
- crisis related to the growing number of refugees and immigrants in European countries and possible response of the EU associated with increase in border controls;
- activities related to the regulation of air pollution;
- low margins of conducted activities, and consequently low resistance to economic crises.

DEMAND ANALYSIS: INDUSTRY'S DEMAND FOR COMPETENCE

We begin description of the results related to the industry's demand for competences with the presentation of a list of positions for which recruitment in companies is carried out most often. **Definitely, the position most often indicated by employers as essential for the industry was international driver.** This matter is especially interesting as this position requires, at the same time, academic education to the smallest extent – as the respondents claimed, what is crucial in the case of drivers is experience, and employees with large job seniority are actively acquired by the companies and may count on very attractive job offers.

Driver, International Driver
Shipping Agent, National and International Shipping Agent
Warehouse Manager, Warehouse Administrator, Warehouse Administrator Assistant
Transport Specialist
Logistician
Dispatcher
Mechanic
Accountant, Office Worker

Table 1. List of positions for which graduates in the industry of transport and logistics are recruited.

Plans for the employment of graduates in the industry of transport and logistics for 2016 and 2021 seem moderately optimistic. The comparison of the number of planned recruitment with the current state of employment shows that there will be more and more jobs for graduates. The dynamics of employment of graduates looks as follows:

Employment of graduates in 2016	Employment of graduates in 2021
5.3%*	7.5%*
Increase in dynamics of employment of graduates	

Table 2. Dynamics of employment of graduates in the industry of transport and logistics.

* graduates who will be employed in 2016 and 2021 as a percentage of current total employment (taking into account all legal forms; the outlier was excluded from the analysis)

In the industry of tourism and industry, among the companies participating in the research, a more frequent form of employment is employment contract – 63%, compared to 37% of civil law contracts¹⁴ (Fig. 1).

¹⁴ Data on the number of employees presented in the report should be treated with caution – a single company which employs a large number of warehouse workers or drivers under a civil law contract would significantly change distribution of forms of employment.

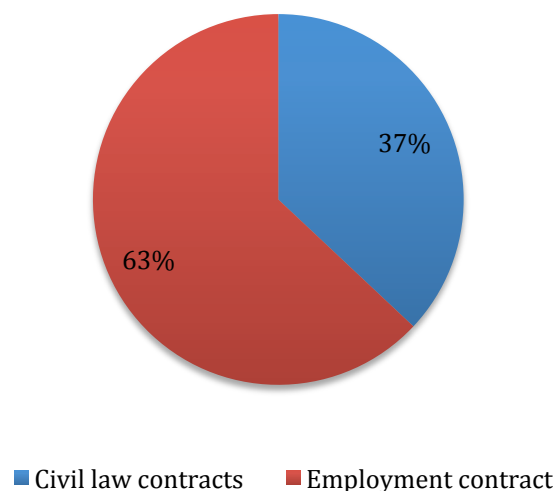


Figure 1. Structure of employment in the industry of transport and logistics as regards the type of contract.

COMPETENCE TODAY AND COMPETENCE OF TOMORROW

Like in the previous years, the analysed competences were distinguished on the basis of interviews with opinion leaders, companies and the analysis of job advertisements. They were divided into 4 groups: specialist (professional) knowledge and skills, business skills and knowledge, soft skills, foreign languages and other requirements. **Though the list of competences is extensive, it does not need not be exhaustive** – there surely is a great number of companies on the market which need other, often very specific and unique skills.

As part of preparatory work, an attempt to bring the competences sought to a similar level of generality was made. However, this was not always possible or even desired, hence **individual competences will vary in the level of detail**, which to some extent also reflects the specificity of the industry.

The companies participating in the research answered, inter alia, the questions about the importance of each competence currently and in the future. Naturally, there are quite large differences in the importance of individual competences depending on the profile of activity and specialisation of an entity. **Thus, we adopted the perspective of an entire industry, where the labour market for graduates as a whole becomes the reference point.** It should be taken into account when interpreting the results – the fact that some competence was assessed relatively low does not mean that there are no companies on the market for which this competence is of absolutely crucial importance – however, from the point of view of the overall number of graduates employed in the future its weight is adequately smaller.

It should be also noted that, similarly to the previous reports, presented data is rather a description of the opinions of people who are responsible for personnel policy or who manage companies operating in the industry, and hence it is not of a normative nature. In other words, we present the beliefs of people managing companies, abstaining from valuation whether the beliefs are right or not, and whether the operating strategy based on them is good.

Currently, competences thought to be the most important from the point of view of the labour market are, among others, **integrity, knowledge of transportation, knowledge of English, care for quality, ability to cope with stress, verbal and written communication, using office packages, customer focus, sales and marketing and driving licence, category B.**¹⁵ The structure of competences most important in the future does not change significantly. Five competences most important in the future are: **English, transportation, care about quality/conscientiousness, integrity, coping with stress.** There is only one competence which appears as the new one on the list of “the future:” **focus on development** (see Table 3).

Table below presents a set of 20 most important competences (requirements) in 2016 and 2021.

20 most important competences (requirements) currently	Importance 2016	20 most important competences (requirements) in the future	Importance 2021
Integrity	4.90	English	4.89
Transport	4.80	Transport	4.83
English	4.75	Care for quality/conscientiousness	4.83
Care for quality/conscientiousness	4.74	Integrity	4.79
Coping with stress	4.74	Coping with stress	4.78
Verbal and written communication	4.53	Organisation of own work	4.67
Knowledge of MS Office, OpenOffice or Google Docs	4.50	Sales and marketing	4.65
Customer focus	4.45	Customer focus	4.63
Sales and marketing	4.44	Knowledge of the industry and new trends	4.58
Driving licence, cat. B	4.40	Cognitive skills	4.53
Initiative/innovativeness	4.39	Knowledge of MS Office, OpenOffice or Google Docs	4.53
Organisation of own work	4.37	Verbal and written communication	4.50
Cognitive skills	4.33	Driving licence, cat. B	4.50
German	4.32	German	4.50
Designing logistics processes	4.26	Geography of Europe	4.47
Cooperation	4.26	Designing logistics processes	4.44
Goal orientation	4.22	Cooperation	4.44
Knowledge of the industry and new trends	4.21	Focus on development	4.44

¹⁵ Precise definitions of these and other competences are included in the dictionary of competences in Annex 1.

Geography of Europe	4.20	Law and regulations	4.42
Law and regulations	4.20	Initiative/innovativeness	4.41

Table 3. Competences today (regarded as important in 2016) and competences of tomorrow (regarded as important in 2021). Competences marked in orange are those which will lose their place among 20 most important competences in 5 years. Green indicates competences which will join the list of 20 most important competences in 5 years.

GROUPS OF COMPETENCES

The following charts present the importance of competences in individual groups (specialist knowledge and skills, business knowledge and skills, soft skills, languages and other requirements) in comparison of the current state and in 5 years.

In the case of specialist knowledge and skills (Fig. 2), the importance of individual competences in the coming years, according to the declarations of employers, will be relatively stable.

The exception seems to be a group of competences directly related to management of warehouses and logistics – in the coming years, according to the companies operating in the industry, the importance of **knowledge in the field of organisation of warehouses, ERP software, lean management** and **purchasing and procurement** will increase.



Figure 2. Expected importance of competences in the area of “Specialist knowledge and skills” from the point of view of employers in 2016 and 2021.

In terms of business knowledge and skills (Fig. 3), the following competences are regarded as the most important and will remain so in the subsequent years: **knowledge of office packages, customer focus** as well as **sale and marketing**. In the coming years, the increase in the importance of **sales competences** (they become the most important in this group of competences), **industry knowledge** and **project and team management** will be the greatest.

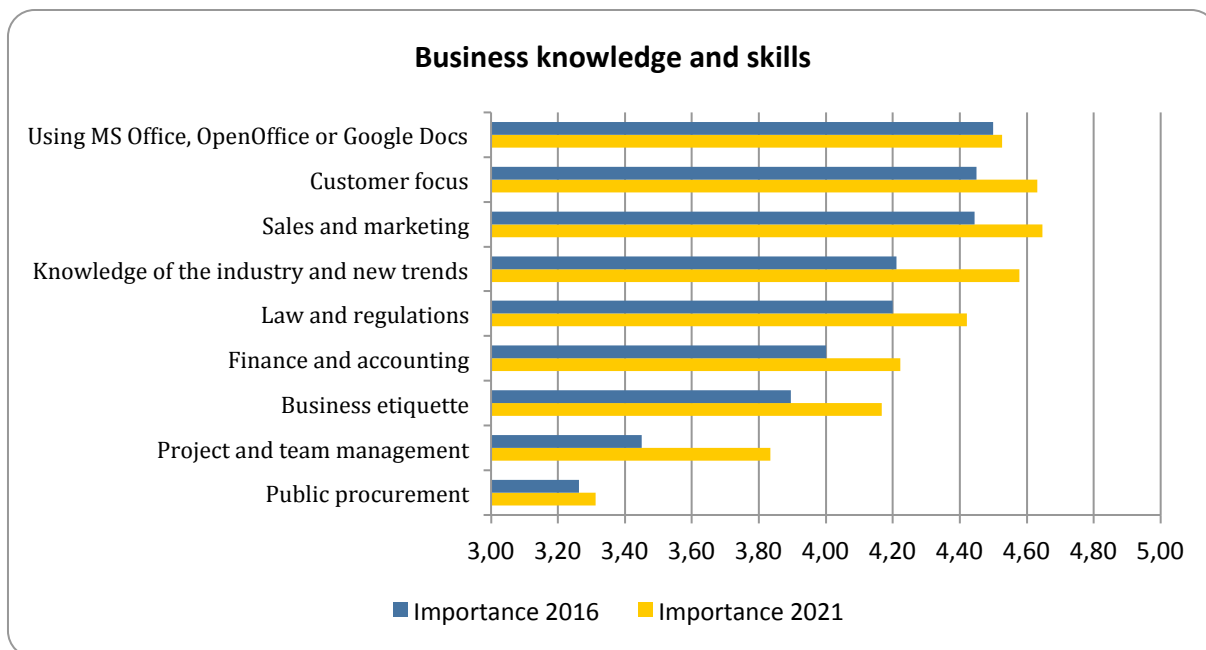


Figure 3. Expected importance of competences in the area of “Business knowledge and skills” from the point of view of employers in 2016 and 2021.

In the category of soft skills, virtually all competences, **with the exception of intercultural sensitivity**, are assessed by employers as important, however, the structure of importance will undergo some changes (Fig. 4). **Care for quality** will become the most important competence, and **organisation of own work, focus on development** and **intercultural sensitivity** (in spite of all, remaining the least important competence in this area) will also gain in importance.

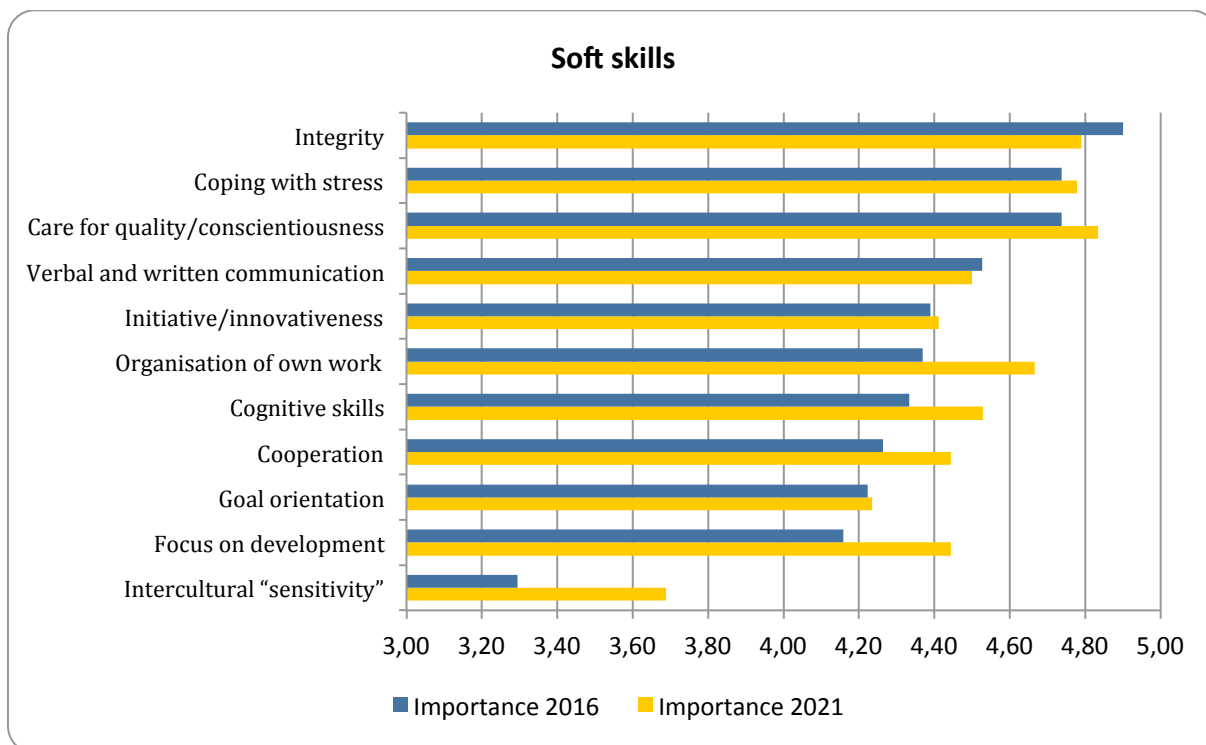


Figure 4. Expected importance of competences in the area of “Soft skills” from the point of view of employers in 2016 and 2021.

The last analysed category are foreign languages and other requirements/expectations. **English, German and driving licence** are and will remain the most important competences. In five years, technical English and German will gain in importance (see Fig. 5).

A picture confirmed repeatedly by industry experts emerges from the analysis of requirements in this area – a necessary condition for a career in transport and logistics companies is knowledge of one (preferably two) foreign language and driving licence. What distinguish people assessed high in the role of employees from these assessed low is commitment, industry knowledge and motivation to work.

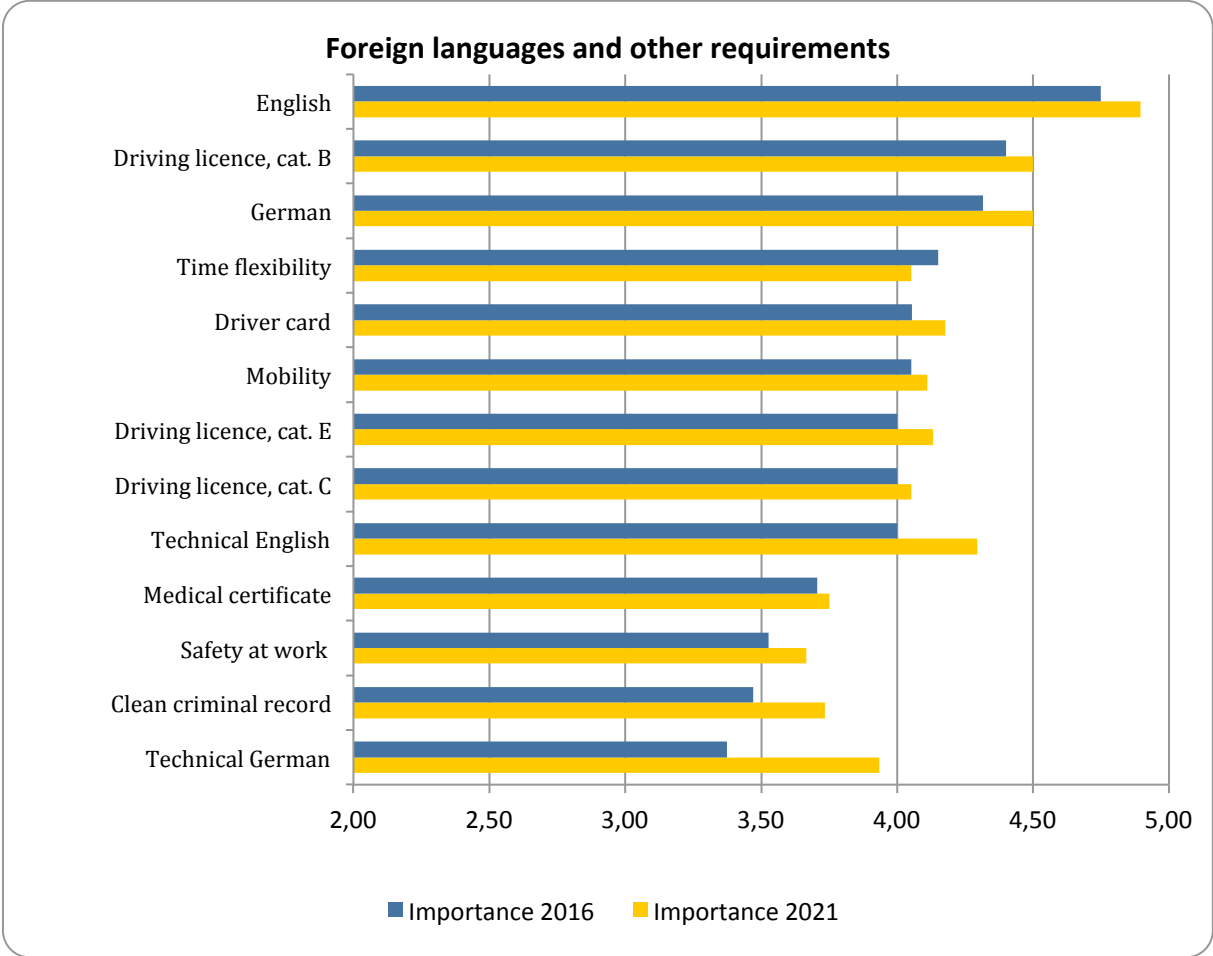


Figure 5. Expected importance of competences in the area of “Foreign languages and other requirements” from the point of view of employers in 2016 and 2021.

In order to better understand the trajectory of graduates' career in the industry of transport and logistics, we also asked employers to provide **competences which are crucial in the context of promotion**. They are listed in the table below.

List of competences/requirements of crucial importance in the context of promotion
Management, leadership, project management
Driving licence of the right category
Knowledge of the industry and industry regulations
Negotiations
Experience

Permissions
Initiative
Specialist knowledge
Integrity
Time flexibility
Self-reliance, self-organisation
Good relations with customers
Commitment, willingness to work, diligence
Focus on development
Certificate of professional competence
Reliability
Knowledge of the topography of Europe
Reporting
Coping with stress
Communicativeness
English
Additional foreign language (Czech, Italian, German, Russian)

Table 4. List of competences crucial for graduates to get promotion.

Even though some of the requirements listed above are professional qualifications, **the vast majority of competences indicated by employers as relevant for promotion are soft skills and a certain attitude.** This is important information indicating the role of these characteristics for the career development of graduates.

COMPETENCES CRUCIAL FOR THE INDUSTRY

One of the most important indicators of perception of the education market from the point of view of employers is the comparison of importance of certain expectations with the difficulty of acquiring them. As indicated by data in Table 5, the twenty most important competences include both those which are relatively easy (green colour) and difficult (red colour) to acquire on the labour market. Following this line of thought, from the point of view of supply and demand competences which representatives of the industry consider relevant, but also difficult to acquire, as they are particularly hard felt scarce goods, can be regarded as crucial.

In the case of the industry of transport and logistics, it can be said that there is a high degree of subjective lack of adjustment of the quality of competences available on the market to the needs of employers. A large part of competences important from the point of view of employers is also difficult to acquire. The crucial, scarce competences include: **knowledge of transportation, care about quality, customer focus, sales and marketing, initiative, cognitive skills, designing logistics processes, law and regulations**, and – a competence assessed as the most difficult to acquire – **knowledge of the industry and new trends**. This situation, also described in the interviews by experts and employers, is quite dangerous – which means that people starting work in transport and logistics very often do not have practical knowledge and skills very important from the point of view of the industry. This entails significant expenditure of employers and more difficult career trajectory for graduates.

The following competences were assessed as easily available on the labour market in the industry of transport and logistics: **English, verbal and written communication, driving licence and using office packages.**

20 most important competences (requirements) currently	Importance	Difficulty of acquiring
Integrity	4.79	3.00
Transport	4.83	3.53
English	4.89	2.61
Care for quality/conscientiousness	4.83	3.67
Coping with stress	4.78	3.29
Verbal and written communication	4.50	2.94
Using MS Office, OpenOffice or Google Docs	4.53	1.94
Customer focus	4.63	3.65
Sales and marketing	4.65	3.56
Driving licence, cat. B	4.50	1.53
Initiative/innovativeness	4.41	3.82
Organisation of own work	4.67	3.25
Cognitive skills	4.53	3.57
German	4.50	3.35
Designing logistics processes	4.44	3.53
Cooperation	4.44	3.31
Goal orientation	4.24	3.47
Knowledge of the industry and new trends	4.58	4.00
Geography of Europe	4.47	3.00
Law and regulations	4.42	3.56

Table 5. Twenty most important competences and difficulty of obtaining them. Green was used to indicate competences which are most easily available on the labour market, and red to indicate the ones which are the hardest to obtain.

Below we present charts reflecting the importance and the difficulty of acquiring individual competences in four groups mentioned earlier (specialist knowledge and skills, business knowledge and skills, soft skills, languages and other requirements).

In the area of specialist knowledge and skills, there is a moderate diversity in terms of difficulty of acquiring competences on the labour market (Fig. 6). In terms of the most important competences, it is relatively easy to acquire candidates with knowledge about the geography of European areas. It is much more difficult to acquire specialist competences associated with advanced logistics processes: **customs law, organisation of warehouses, ERP software, lean management, AGILE project management methodologies.**

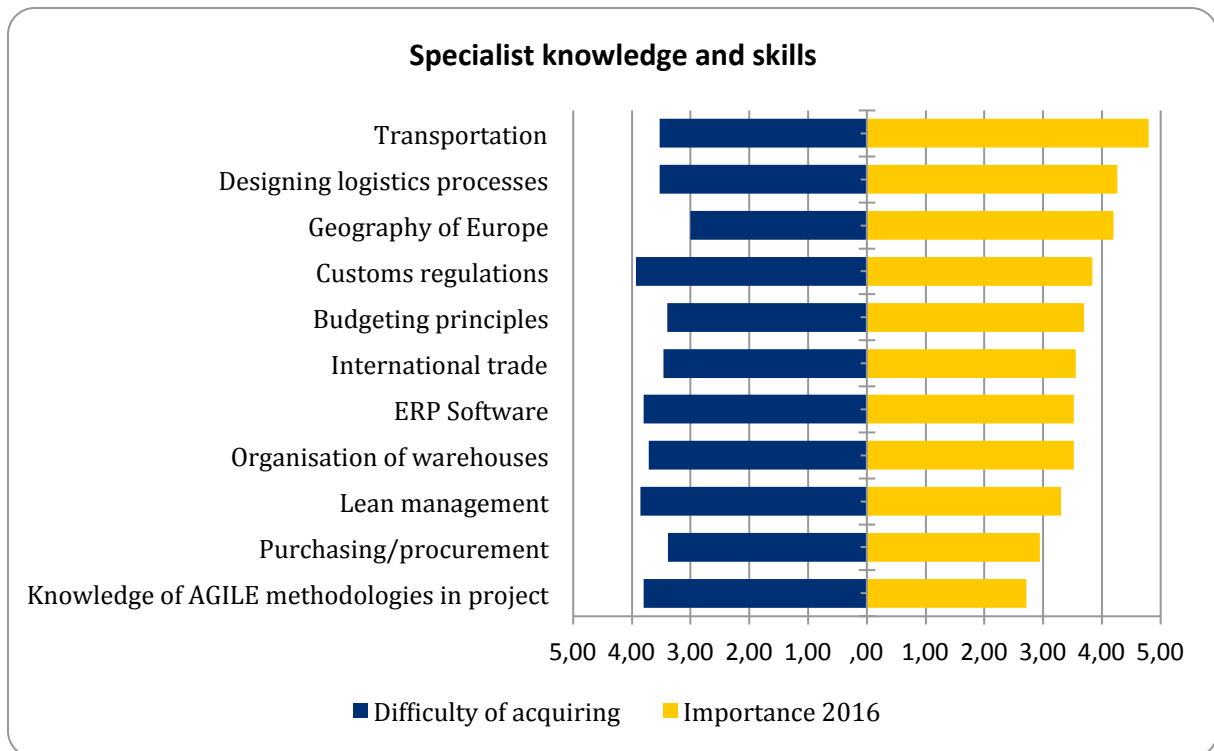


Figure 6. Importance and difficulty of acquiring competences in the area of “Specialist knowledge and skills” from the point of view of employers.

In the area of business knowledge and skills (Fig. 7), the fact that the competence related to **the use of office packages**, assessed the highest in terms of importance, is also one of the **most easily acquired competences in this group**, draws attention. Unfortunately, in the case of other competences important from the point of view of employers the situation looks completely different – both **customer focus, sales and marketing** and **knowledge of the industry and new trends** are assessed as competences important and difficult to acquire at the same time.

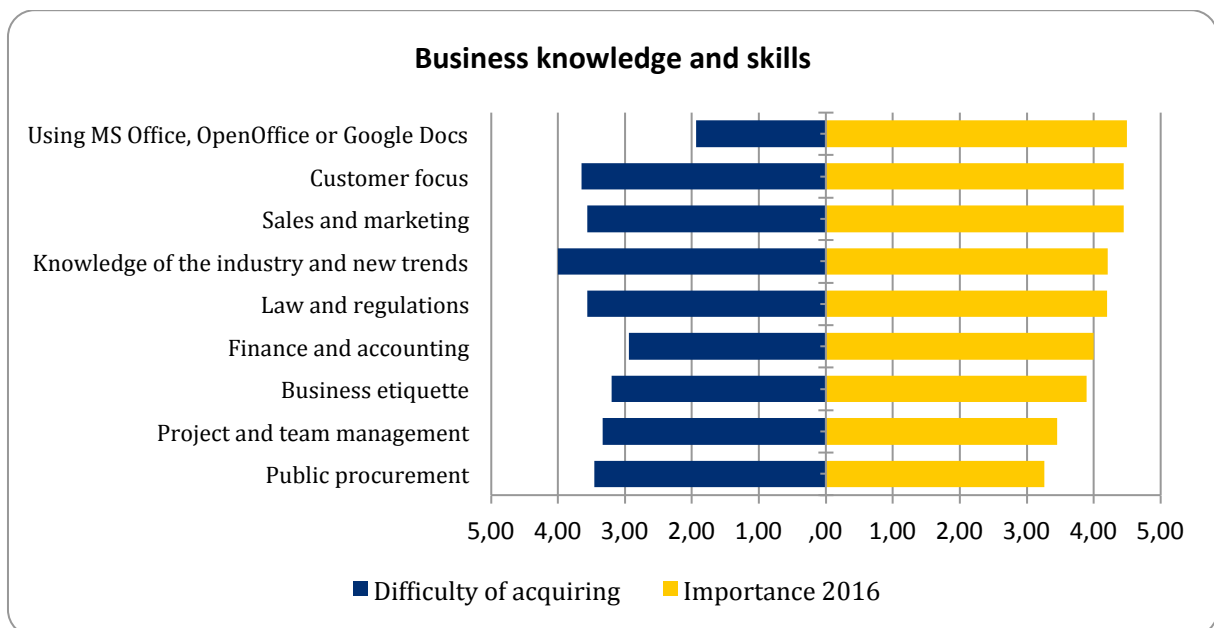


Figure 7. Importance and difficulty of acquiring competences in the area of “Business knowledge and skills” from the point of view of employers.

In the area of soft skills (Fig. 8), like in the case of business knowledge and skills, the most important competence – **integrity** – is at the same time the easiest to acquire according to the employers. **Care for quality** is very important and difficult to acquire, and this group includes also **initiative and innovativeness** and **cognitive skills**.

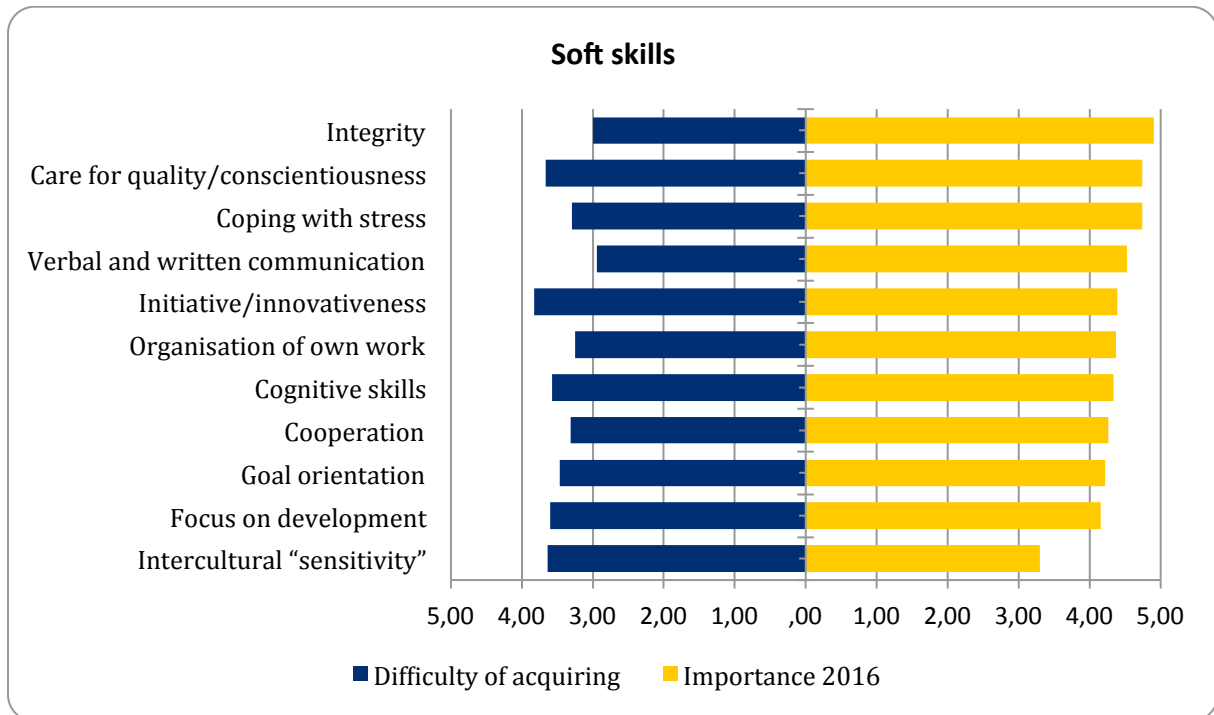


Figure 8. Importance and difficulty of acquiring competences in the area of “Soft skills” from the point of view of employers.

When it comes to foreign languages and other requirements, similarly to several other analysed industries, knowledge of **English** by graduates (very important and easily available) is growing as the advantage of the Cracow's labour market. It is even easier to acquire candidates with **driving licence, category B**; although **clean criminal record** is not as important as other requirements in this group, it is easily fulfilled by people starting work in the industry of transport and shipping.

In the group of important competences, it is much more difficult to acquire **German, technical English, time flexibility and driving licence, category E** (Fig. 9).

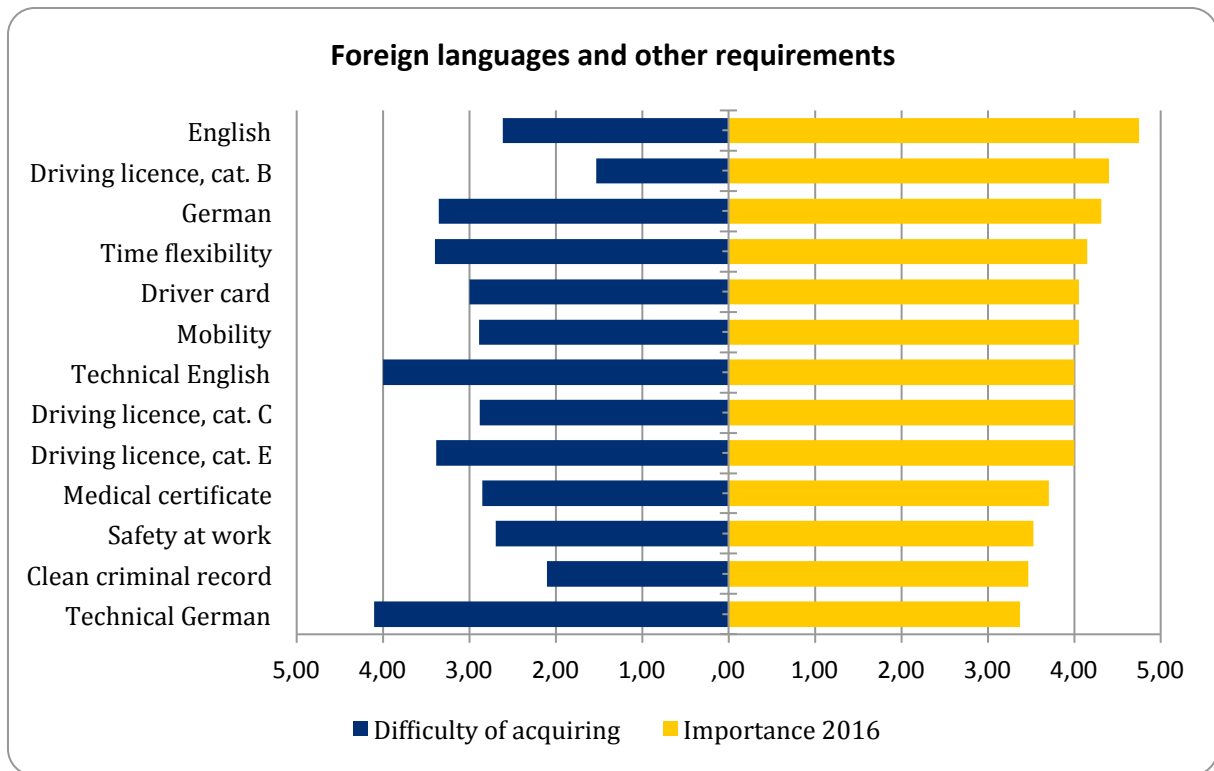


Figure 9. Importance and difficulty of acquiring competences in the area of “Languages and other requirements” from the point of view of employers.

ANALYSIS OF SUPPLY: EFFECTS OF EDUCATION RELEVANT FOR THE INDUSTRY

As already mentioned in the reports from research carried out in previous years, the analysis of the effects of education achieved in higher education institutions has a complex nature. **By definition, the effects of education are related to an “average student,” which means in practice that among the graduates leaving the university walls there are both those prepared much better and much worse than the average result suggests.** Additionally, in the case of the industry of transport and shipping, on the side of supply of competences the research included only strictly “industrial” subjects of study, and as we know from the answers of companies, they often recruit also graduates of philological subjects.

At the general level, the answers of companies and universities related to the quality of education seem to be quite consistent. **General assessment of the educational offer of Cracow is quite high, though the problem noted by the representatives of business, and which the representatives of universities are also aware of, is the insufficient development of the internship programme which would enable students to gain relevant experience.** In the case of the industry of transport and logistics in Cracow, rather low level of technological development of the industry and the nature of demand for candidates related to it is of great importance as well – employers need, much more often than graduates of higher education institutions, qualified and experienced graduates of vocational schools. In this situation, when graduates of universities begin work in the industry, employers notice their shortcomings very quickly – both in the area of specialist competences and work ethics.

Therefore, representatives of companies unanimously admit that the employed graduates often require considerable training investment. In this context, attitude of candidates to work, their desire to develop, their soft skills and a genuine desire to work in the industry are of importance.

According to the representatives of universities, in the coming years, a significant drop in the number of graduates is to be expected, however, due to a limited number of subjects of study directly related to the industry of transport and shipping, one should look at this data with caution.

The following table shows the names of subjects of study which were indicated by the representatives of companies as best matching their expectations. The presence of philologies and tourism on this list is particularly interesting; at the same time, representatives of companies almost unanimously pointed to the fact that in the case of positions for which they conduct recruitment the subject of study is of almost no significance – what matters is permissions and a general attitude towards work, while professional competences are developed during the implementation of tasks associated with the position.

Subjects/specialisations/profiles ¹⁶ of study indicated the most frequently by companies in the industry as matching their expectations
Logistics
Transportation (Cracow University of Technology)
Philologies (Russian studies, Turkish studies)
Information technology
Tourism and recreation (University of Physical Education)
Trade
Mechanics
Electronics
Management
Marketing
Accounting

Table 6. List of subjects, specialisations and profiles of study indicated by employers as educating for the needs of the industry.

The achievement of individual effects of education in each of the four groups of competences will be presented on several charts below. These will not be the average answers as in the case of demand for competences, but the percentage of surveyed subjects in which a given effect of education is achieved at the level at least average and at least good – percentage results give a better view on the situation than the application of average or weighted average.

On the other hand, curricula include effects of education which have a greatly limited significance for a given industry (hence representatives of business often unfairly claim that graduates have a lot of little useful knowledge – this knowledge may be applicable in other industries). Companies search for employees for various positions; similarly, universities educate graduates with different profiles in individual fields and specialisations. One should bear this in mind while interpreting the results.

When it comes to the effects of education in the group of specialist knowledge and skills – quite surprisingly – more than one-third of them (including **budgeting principles, geography of Europe and purchasing/procurement**) is not taught even at an average level on any of the specialist subjects. Competences educated the most often at the level at least average include **knowledge in the field of transportation and designing logistics processes** (75%); half of the subjects of study educate competences in the area of **using ERP software, organisation of warehouses, lean management and international trade** (Fig. 10).

In terms of business knowledge and skills (Fig. 11) – what is particularly interesting in light of the consensus among employers on the poor achievement of this competence by the candidates – in all the subjects **knowledge about the industry and the latest trends in it** (100%) is provided. **Finance and accounting, the use of office programmes** as well as **law and regulations** are educated to a considerable (75%) or moderate (50%) extent.

¹⁶ The original names indicated by entrepreneurs were kept; various categories are not always separable.

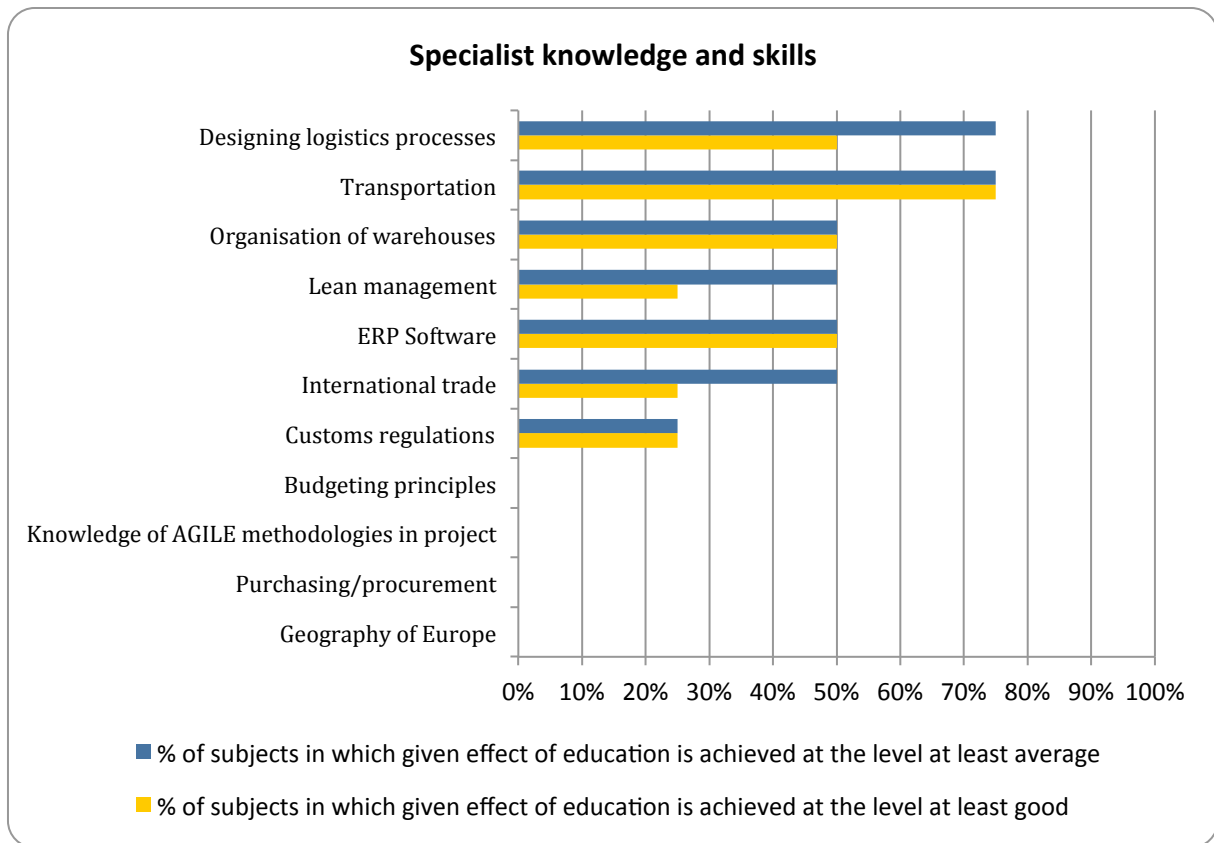


Figure 10. Percentage of subjects and specialisations in which the effects of education in the field of “Specialist knowledge and skills” are achieved at least at the average and good level (point of view of universities).

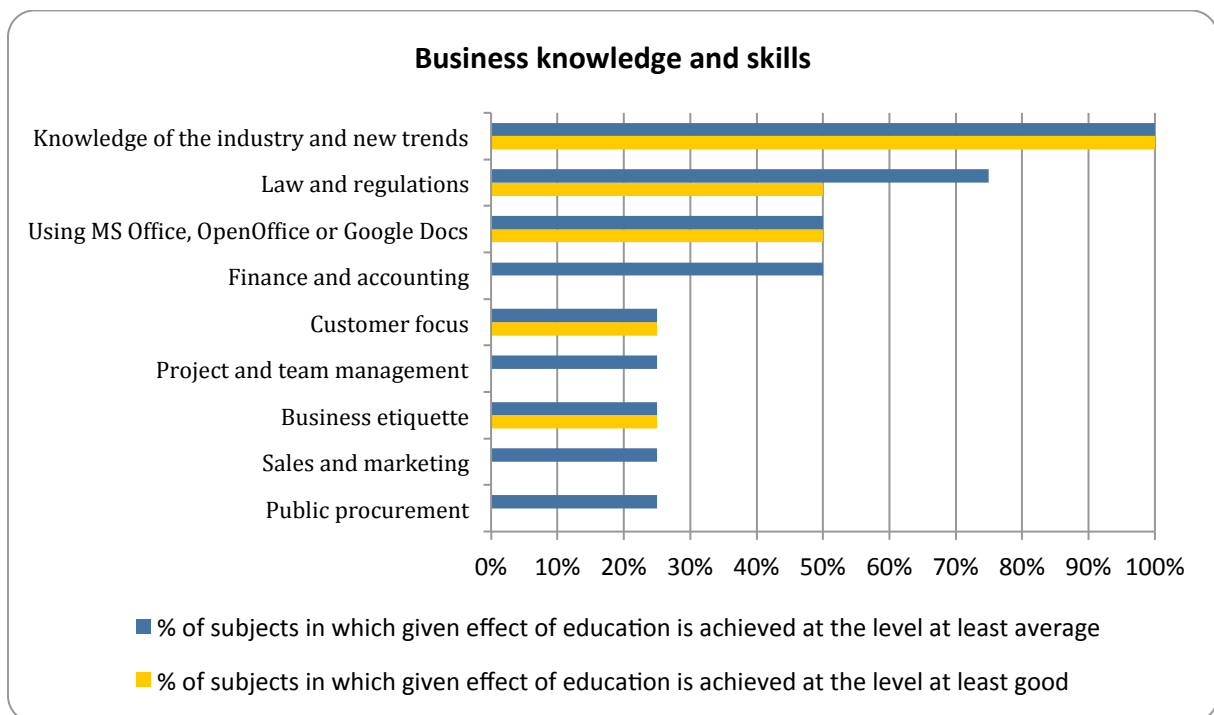


Figure 11. Percentage of subjects and specialisations in which the effects of education in the field of “Business knowledge and skills” are achieved at least at the average and good level (point of view of universities).

More than half of competences in the area of soft skills (including **initiative, goal orientation, organisation of own work, care about quality/conscientiousness and cooperation**) is educated at the level at least average in 75% of universities participating in the research (Fig. 12). A worrying fact, especially in the context of the changes associated with globalisation, is that **cultural sensitivity** is not educated at the level at least average on any of the universities.

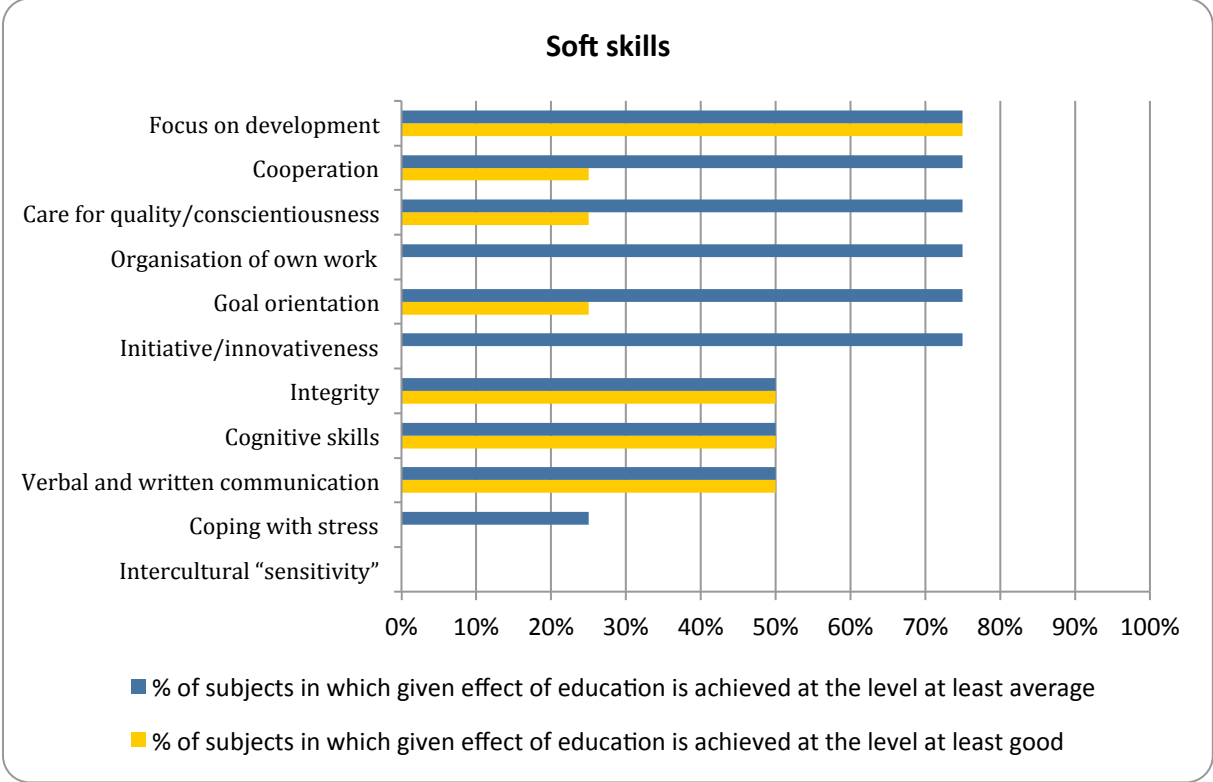


Figure 12. Percentage of subjects and specialisations in which the effects of education in the field of “Soft skills” are achieved at least at the average and good level (point of view of universities).

As for other requirements (Fig. 13), from among which only one competence was a skill which can be trained in a higher education institution – **safety at work** is educated at the average level in 75%, and at a good level in half of the universities participating in the research.

When it comes to teaching language skills, their quality is the direct responsibility of language colleges. Typically, the obligatory foreign language course in the analysed subjects of study is English, and students may attend free of charge one extra language classes in any other modern language. Due to the status of teaching foreign languages at universities, in practice, in this case students are the ones who may have a deciding vote by signing up or not for selected classes and developing language skills of their choice at least at a basic level (learning a new language from scratch at a higher level is much more difficult due to the limited number of hours).

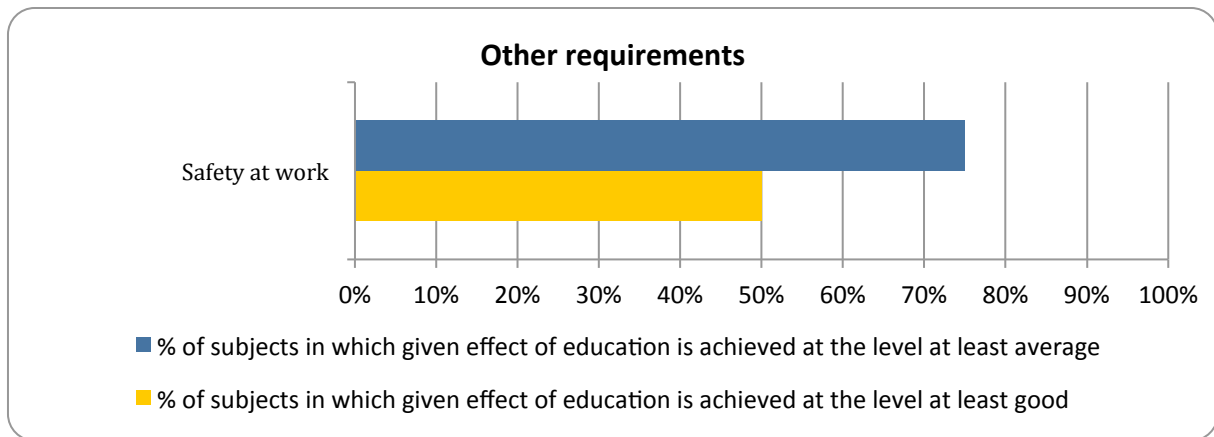


Figure 13. Percentage of subjects and specialisations in which the effects of education in the field of “Other requirements” are achieved at least at the average and good level (point of view of universities).

Representatives of universities were also asked to indicate additional effects of education which may be important for employers and which are not included in the catalogue of analysed competences. We present them in table below.

Additional effects of education achieved in subjects related to the industry
Statistical analysis of data
Stockpile management
Knowledge of the principles of functioning of analogue and digital tachographs
Knowledge of the principles of functioning of logistics chains and the essence of logistics as well as domestic and foreign shipping
Knowledge of the principles of keeping records of drivers' hours of work
Knowledge of the principles of organisation of the market of road transport services of people and goods
Knowledge of the types of forms of insurance related to road transport of people and goods
Knowledge of issues related to preventive health care and the provision of first aid

Table 7. List of additional effects of education

BALANCE OF COMPETENCES: TRANSFER OF COMPETENCES FROM UNIVERSITIES TO BUSINESS

Our analysis of demand indicated competences crucial from the point of view of the industry, trends of their importance in the future and difficulties experienced by employers in relation to the recruitment of graduates with specific knowledge and skills. In turn, the analysis of supply showed what effects of education are achieved in subjects related to the industry and what the degree of comprehensiveness of education in this field is. The following section presents a summary of these two perspectives, focusing on a comparison of difficulty of acquiring competences with the average level of their achievement at universities. Like in research conducted in previous years, it is important to make one important objection related to the potential discrepancies between the assessment of difficulty of acquiring and educating in universities.

In the case of perfect unanimity of opinions of business and higher education institutions, we would have to deal with a situation when competences which are difficult to acquire according to employers are not educated according to universities. In the case of the presented results, such unanimity in the industry of transport and logistics does not occur; the correlation coefficients both for business knowledge and skills and for soft skills turned out to be close to zero (correlation $r=0.04^{17}$ and $r=-0.02$, respectively). There is a moderate correlation, however in the opposite direction (correlation $r=0.33$) in the case of specialist knowledge and skills. **This means that, in general, in the area of specialist competences, competences which are difficult to acquire on the market are, at the same time, declaratively implemented as effects of education in the subjects of study related to logistics, transport and shipping.**

In this case, we would like to point out that such a situation does not mean that the exclusive “fault” lies with the universities which assess their teaching offer inadequately. Although to some extent this may be one of the reasons for the discrepancy of assessments, several other interpretations are equally probable (they were described in the reports from the previous years, their summary is shown below).

One of them is associated with the observed diversity of the level of development of HR processes in companies – the problem with finding suitable candidates may, therefore, result from the use of inappropriate tools of recruitment and selection, remuneration policy or onboarding programmes. The second reason may lie in the way the effects of education are defined. They are related to the qualifications gained by an average student – which means that there are graduates of both higher and lower level than this on the labour market. Another reason may be the fact that graduates of subjects identified as matching the profile of the industry are also employed in other sectors of the economy (e.g. in tourism industry, outsourcing industry), in other cities and even abroad. Individual competences can be also understood differently by representatives of universities and business – what for some is a

¹⁷ The correlation (or Pearson's r) is a measure of the linear relationship of two variables, in the range from -1 (perfectly negative relationship – any increase in the first variable is accompanied by a corresponding reduction in the second variable), through 0 (total lack of a relationship – any increase in the first variable is accompanied by a random change in the second variable), to 1 (perfectly positive relationship – any increase in the first variable is accompanied by a proportional increase in the second variable).

satisfactory level, for others may be below the acceptable minimum. Finally, not all of the sought competences can and should be educated by higher education institutions. Thus, the presented results of the balance of competences should be treated as a tool which should be used both by the universities and the companies to effectively establish cooperation and discuss curricula.

Figure 14 shows the relationship between the difficulty of acquiring specific competences and the achieved effects of education related to them for twenty most important competences in the industry of transport and logistics (where 20 most important competences included those not analysed on the side of supply – e.g. English, they were replaced by the most important competences next on the list). The range of presented values, which allows showing clearly a division into competences which are the most difficult and relatively easier to acquire along with a division into effects achieved to a greater and lesser extent, was adopted arbitrarily on the chart (without this, most of competences would have to be regarded as relatively difficult to acquire and educated at the same time).

In the industry of transport and logistics, the results show a convergence of assessments of companies and universities as regards such competences as **using office packages, integrity and verbal and written communication** (educated and readily available) as well as **customer focus, sales and marketing, coping with stress, business etiquette** (less accessible and educated to a smaller extent). The largest discrepancies are related to several key competences which are relatively difficult to acquire and at the same time educated by universities. This applies, among others, to **knowledge of the industry and new trends, care for quality, cognitive skills, law and regulations** and **knowledge of transportation**.

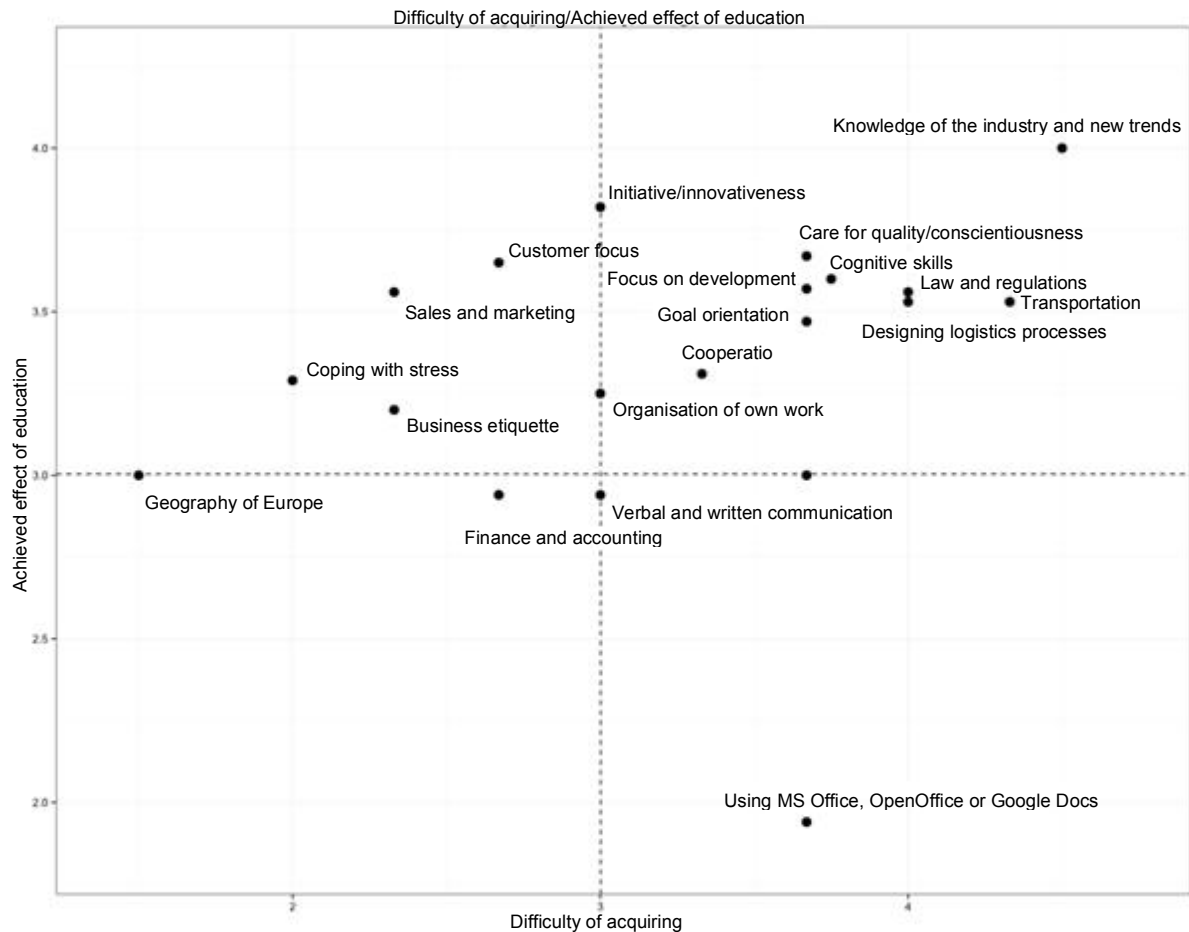


Figure 14. The matrix illustrating the interrelation between the difficulty of acquiring specific competences (point of view of employers) and the achieved effects of education (point of view of university) for 20 most important competences. For greater legibility, a truncated scale was used on the chart (from 1.5 to 5.0 for difficulty, and from 1.5 to 4.5 for the effects achieved).

In the area of specialist knowledge and skills, in the opinion of employers, there is a significant gap between the assessment of the achievement of the effects of education at the universities and difficulty of acquiring them – such competences as **organisation of warehouses, transportation or designing logistics processes** are difficult to acquire and, at the same time, educated to a considerable extent. The situation looks different in the case of such competences as **budgeting principles, purchasing and geography of Europe**, which are, at the same time, moderately difficult to acquire and educated by universities to a very limited extent (see Fig. 24). Higher education institutions and employers agree on one thing – **AGILE project management methodologies** are difficult to acquire and not educated at universities.

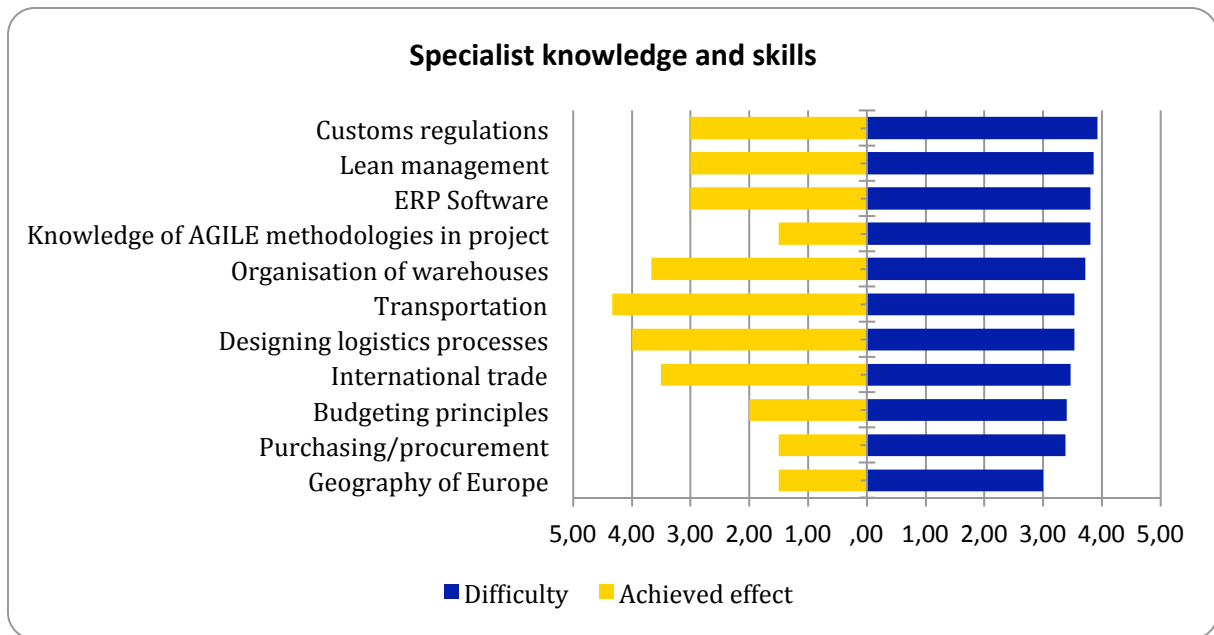


Figure 24. Comparison of difficulty of acquiring competences (point of view of employers) with the achieved effects of education (point of view of universities) in the area of “Specialist knowledge and skills”

Competences in the area of business knowledge and skills which are difficult to acquire and educated to a moderate extent at the universities include: **customer focus, sales and marketing, public procurement, project and team management** and **business etiquette**. “Conflict” competences, difficult to acquire and educated at the universities, include **knowledge of the industry and new trends** and **law and regulations** (see Fig. 25).

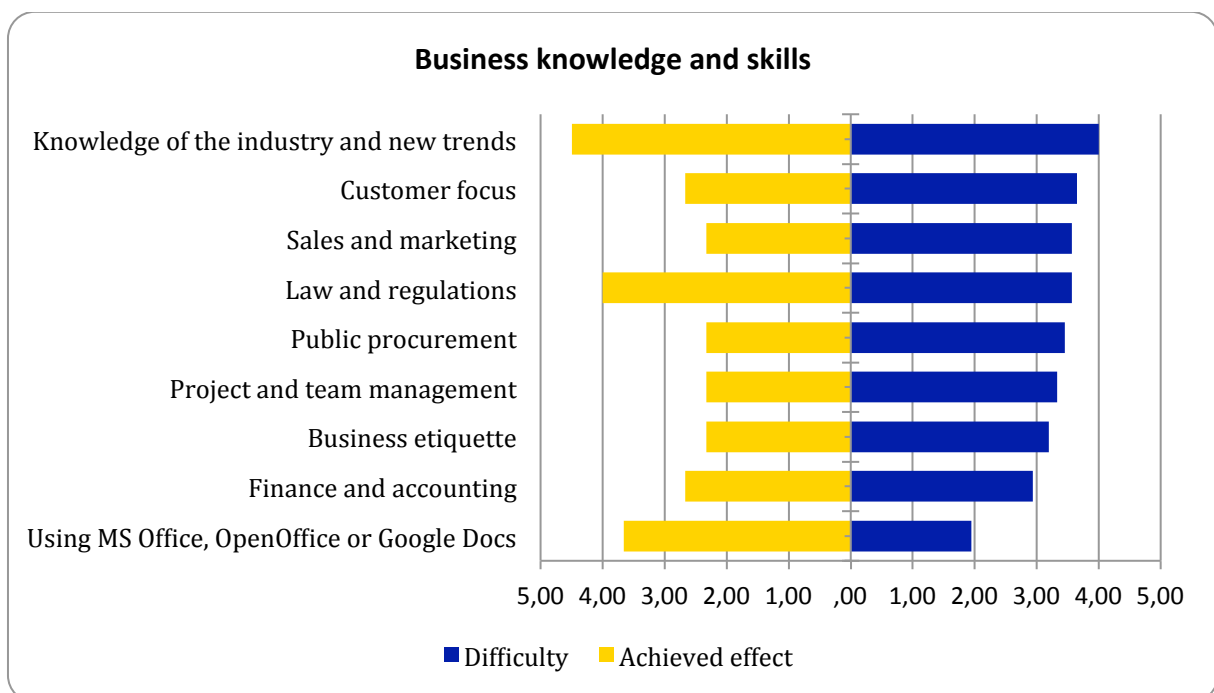


Figure 25. Comparison of difficulty of acquiring competences (point of view of employers) with the achieved effects of education (point of view of universities) in the area of “Business knowledge and skills”

In terms of soft skills (Fig. 26), there are the greatest discrepancies in the industry of transport and logistics in the case of **care for quality, focus on development, cognitive skills and goal orientation**. Employers and universities seem to have a similar opinion as to the quality of teaching **intercultural sensitivity** – it is difficult to acquire this competence, while schools admit that they teach it to a very limited extent.

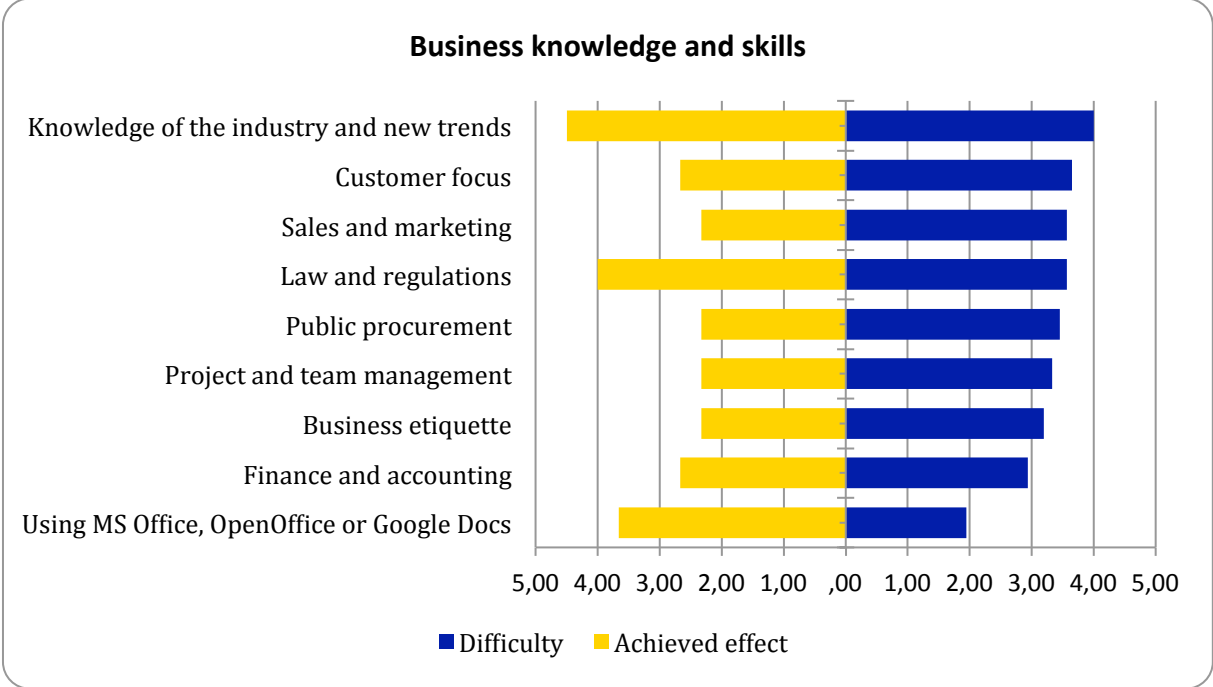


Figure 26. Comparison of difficulty of acquiring competences (point of view of employers) with the achieved effects of education (point of view of universities) in the area of “Soft skills”

In the case of other requirements relating to **safety at work**, there is unanimity (see Fig. 27) – this competence is considered to be relatively easy to acquire, while universities admit that they teach it at a fairly high level.

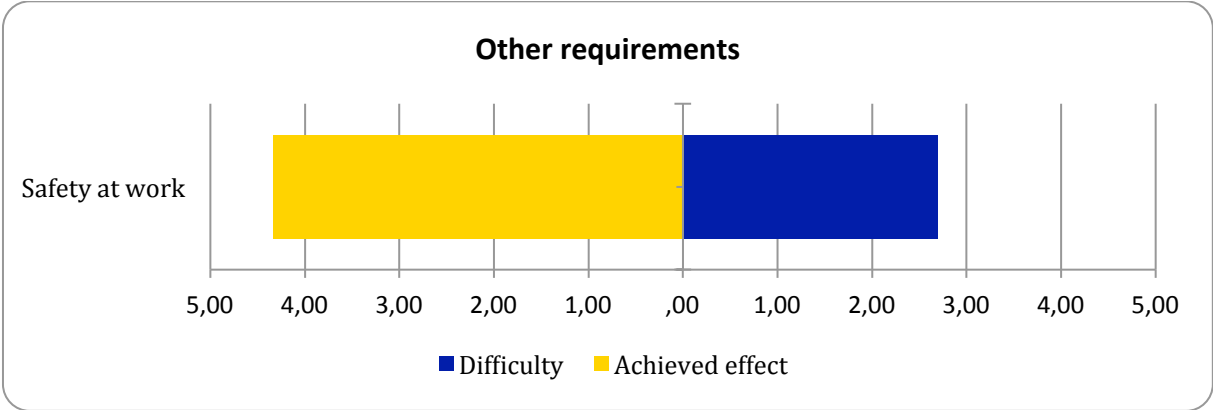


Figure 27. Comparison of difficulty of acquiring competences (point of view of employers) with the achieved effects of education (point of view of universities) in the area of “Other requirements”

FINAL CONCLUSIONS AND RECOMMENDATIONS

The industry of transport and logistics has a special place in the strategic development plans of Cracow. On the one hand, as indicated by the quantitative studies and numerous interviews with experts in the field, **transport and logistics are not among the largest or the most rapidly growing industries in Cracow**. On the other hand, because of its unique transport location, rich traditions and investment plans, **Cracow seems to offer unique opportunities for growth of the industry in the next five years**. This potential should be used, and for this purpose it is necessary to rely on the awareness of what kind of challenges and opportunities the Cracow labour market offers in the industry of transport and logistics.

Employers working in the industry of transport and logistics indicate a number of challenges associated with the shortages of competences of candidates for the position of driver, warehouse manager, shipping agent or logistician. **The first major challenge is quite uncomplicated nature of the positions for which recruitment in the industry is carried out**. Most experts and employers indicated that at the current level of development, the industry does not need university graduates – where work is simple graduates of vocational schools are enough (although huge deficits are indicated in this area), and where it is more complex a relatively short training is enough, without the need to hire people with higher education. Some employers even suggested that for them the best reservoir of personnel are philologies, which brings the industry of transport and logistics closer in this respect to the industry of ITO/BPO and the tourism industry. **The second challenge is the nature of academic education in the field of transport and shipping**. Many employers indicated that the graduates of Cracow's universities coming to them lack basic knowledge about the industry and, worse, a set of behaviours which could be called culture or ethics of work (reliability, conscientiousness, integrity, motivation and commitment). **The third challenge is the image of the industry**. Employers pointed out that work in the industry of transport and shipping very rarely is the first choice of people starting work in it. This may be partially related to the specificity of work (both work of a driver and of a shipping agent is associated with high levels of stress, effort, atypical working hours and certain entitlements, such as driving licence or Certificate of professional competence), however partially to the stereotypes about the industry. **The fourth challenge is the direct competition of other companies in Małopolska (especially in Nowy Sacz) and in Silesia, and abroad**. Employers suggested that development of employees in the industry is associated with huge risk, because a trained employee increases his/her market value and is often directly recruited by companies from outside of Cracow or outside Poland.

Another group of restrictions on development of the industry is related to barriers of economic, administrative and legal nature, which hinder investments and discourage potential investors. Employers and experts pointed out that potential employees of the industry cannot count on direct support from the state or the city in terms of financing of courses or certificates allowing for a job in the profession. In this regard, employers also indicated that they do not feel sufficient support from the Road Transport Inspectorate, which, from their point of view, has become an instrument of fiscalism instead of help.

Summary of the most important findings of the research related to supply of and demand for competences is presented in Table 13.

While interpreting the results one should bear in mind, what has already been mentioned several times – even though transport and shipping companies are focused on simple tasks, they

search for a wide range of employees. This means that the **catalogue of the most important competences for the industry of transport and logistics is, as a matter of fact, a conglomerate of different expectations, which are not always related to only one position** and it is not possible for a graduate of one subject of study to have them all.

The most important competences currently sought by employers	Integrity, transportation, English, care for quality/conscientiousness, coping with stress, verbal and written communication, using MS Office, OpenOffice or Google Docs, customer focus, sales and marketing, driving licence, cat. B, initiative/innovativeness, organisation of own work, cognitive abilities, German, designing logistics processes, cooperation, goal orientation, knowledge of the industry and new trends, geography of Europe, laws and regulations
The largest relative increase in the importance of competences in 5 years	Technical German, lean management, purchasing/procurement, intercultural "sensitivity," project and team management, knowledge of the industry and new trends, organisation of warehouses, ERP software, organisation of own work, technical English, focus on development, business etiquette
Competences which are hardest to get on the labour market and important at the same time	Care about quality/conscientiousness, transportation, initiative/innovativeness, knowledge of the industry and new trends, customer focus
Competences most easily available on the labour market and important at the same time	Driving licence, cat. B, using MS Office, OpenOffice or Google Docs, English, integrity, verbal and written communication
Effects of education achieved most often, according to the universities, important from the point of view of employers	Transportation, knowledge of the industry and new trends, integrity, care for quality/conscientiousness, designing logistics processes, law and regulations, using MS Office, OpenOffice or Google Docs

Table 13. Synthetic summary of research results of the balance of competences for the industry of transport and logistics.

Cooperation between higher education institutions and representatives of the industry seems to be very limited, based on individual projects and personal ties, which does not allow for efficient flow of competences, but it also makes it difficult to create a positive image of the industry. **It seems that a solution here would be to establish relationships between companies and subjects of study identified as potential reservoirs of candidates (logistics, shipping, transportation, but also philologies, administration or management) as regards internships, study visits or short training** – we know from the previous research that there is a relationship between involvement in this kind of cooperation and efficiency of recruitment of high quality candidates.

As for the comments of employers in terms of competence shortages of graduates, as indicated by collected data and in-depth interviews, this diagnosis is very often understood and confirmed by universities. It seems that this is another area in which cooperation between companies and universities could bring them benefits. **Joint informational and promotional activities addressed to students, but also students of upper-secondary schools would certainly be also beneficial for them, allowing them to select the optimal career path.**

A major constraint and challenge for companies in the analysed industries are formal, legal and administrative issues. The challenge indicated by some experts is, for example, protracted process of establishing the Centre for Self-Improvement of Driving Technique, as part of which a field for exercise was to be made available – this type of issues can build a common understanding between business and the CCH and create a friendly atmosphere of cooperation.

As the last key element in building success of the industry, some representatives of the companies emphasised the aspect of city's development, creating an atmosphere of support for investors and strategic approach to the communication network. **According to experts, even more intense, long-term approach to the city's development in terms of roads and public transport is necessary so that the investment created would not lead to even greater communication challenges.** It was pointed out that the city needs courage in making far-reaching, even unpopular investment decisions, such as metro or commuter train, creating new image and spatial structure of the city.

ANNEX 1. LIST OF COMPETENCES AND EFFECTS OF EDUCATION¹⁸

Specialist knowledge and skills		
No.	Name	Description of competences and effects of education
1	Geography of Europe	Knowledge in the field of geography of the European area
2	Purchasing/procurement	Knowledge in the field of purchasing/procurement
3	Transportation	Knowledge in the field of transportation
4	International trade	Knowledge in the field of international trade
5	Customs regulations	Knowledge of customs law/Customs Code
6	ERP Software	Ability of practical use of software used to operate the enterprise resource planning (e.g. SAP)
7	Lean management	Ability to apply the principles of lean manufacturing in management
8	Knowledge of AGILE methodologies in project management	Ability to work effectively in groups using soft project management methodologies (AGILE, SCRUM, etc.)
9	Designing logistics processes	The skills of designing logistics processes
10	Budgeting principles	Ability to put the principles of budgeting expenditure of an enterprise into practice
11	Organisation of warehouses	Ability of effective organisation of work and spatial planning of warehouses

Business knowledge and skills		
No.	Name	Description of competences and effects of education
1	Law and regulations	Knowledge and understanding of the law, rules, regulations, acts and norms and standards specific to the functioning of the industry
2	Public procurement	Knowledge of the current legislation on public procurement
3	Knowledge of the industry and new trends	Knowledge about the entities operating in the industry and their environment, understanding the specificity and the context of functioning of the industry and knowledge of new trends and directions of development
4	Finance and accounting	Knowledge and understanding of the fundamental economic aspects of activities of companies in the industry. Understanding financial ratios and knowledge of the basis of accounting.
5	Sales and marketing	Ability to prepare and analyse trade and business offers, including diagnosis of customer needs and expectations. Ability to conduct trade negotiations. Knowledge of marketing methods and techniques
6	Business etiquette	Knowledge of and ability to use in practice the rules of business savoir-vivre. Ability to behave according to the standards, choose the right outfit and language adequate to the situation, also in the context of customer relations and international cooperation
7	Project and team management	Ability to work effectively in groups using industry-specific project management methodologies. Ability to direct the work of a project team.

¹⁸ The catalogues of competences and effects of education presented here are the result of analysis of job advertisements, existing data and consultation with the industry experts and companies. There is an important reservation related to the fact that companies recruit for various positions, requiring diverse catalogue of competences (often also intersectoral). This Balance of competences adopted the perspective of a comprehensive demand for competences in each of the analysed industries. Thus, this does not mean that all competences presented here should be educated in one subject or held by a particular employee – in both cases it would be impossible. Detailed structure of demand for competences is presented in the section “Demand Analysis.”

8	Using MS Office, OpenOffice or Google Docs	Effective use of the possibilities of basic office software packages
9	Customer focus	Meeting the needs and expectations of a customer, taking into account the customer's point of view in offering solutions

Soft skills		
No.	Name	Description of competences and effects of education
1	Initiative/innovativeness	Starting and carrying out new activities and implementing innovative, original solutions to improve work
2	Verbal and written communication	Preparation and submission of written and verbal communications, drafting clear written reports and fluency in speech
3	Goal orientation	Commitment to the achievement of short- and long-term goals established for the position
4	Organisation of own work	Planning own work and organisation of activities aimed at implementation of a plan, prioritising tasks
5	Care for quality/conscientiousness	Acting in accordance with the rules, regulations and procedures of an organisation, precision and meticulousness in performing tasks
6	Cooperation	Effective teamwork, focus on achieving group objectives
7	Intercultural "sensitivity"	Putting knowledge of intercultural differences into practise, adapting own actions to different cultural patterns
8	Cognitive skills	The ease, speed and reliability of collecting, processing and assimilating new knowledge and actions in changing conditions
9	Coping with stress	Easiness and effectiveness of acting in difficult situations
10	Integrity	Observing the accepted moral standards
11	Focus on development	Desire to develop own knowledge and skills, also in new fields and areas

Foreign languages and other requirements		
No.	Name	Description of competences and effects of education
1	English	Ability to speak foreign language enabling efficient and effective communication, both verbal and written.
2	German	Ability to speak foreign language enabling efficient and effective communication, both verbal and written.
3	Technical English	Ability to use a specialist foreign language enabling preparation, understanding and creation of technical documentation, efficient and effective communication with other representatives of the industry, both verbal and written.
4	Technical German	Ability to use a specialist foreign language enabling preparation, understanding and creation of technical documentation, efficient and effective communication with other representatives of the industry, both verbal and written.
5	Safety at work	Knowledge in the field and understanding of health and safety at work and fire protection
6	Time flexibility	Flexibility in terms of working hours, taking overtime with the possibility of using it later
7	Mobility	Accepting proposals for trips related to the performance of official duties or learning (conferences, training) outside the place of work
8	Driving licence, cat. B	Having driving licence, category B
9	Driving licence, cat. C	Having driving licence, category C
10	Driving licence, cat. E	Having driving licence, category E
11	Driver card	Having a driver card for persons driving cars equipped with digital tachographs
12	Medical certificate	Having a recent medical certificate and psychometric test

13	Clean criminal record	Having a certificate of clean criminal record
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ANNEX 2. METHODOLOGY AND DESCRIPTION OF TOOLS USED

The methodology used was based almost entirely on the models developed in the previous years. At the initial stage, a number of consultations with industry experts and the analysis of job advertisements were conducted. The preliminary lists of competences developed this way were then consulted with the representatives of companies in the course of in-depth expert interviews. After completion of the qualitative research, in-depth quantitative research was conducted among companies and universities, and additionally further in-depth interviews were carried out with the latter.

In terms of selection of a sample, where it was possible, we followed the Polish Classification of Activity (PCA), supplemented with the indications of experts and the analysis of trade fairs of the industry and registers of companies. In this context, we would like to thank once again the representatives of ASPIRE, whose assistance proved to be extremely important. In each of the analysed industries, invitation to participate in the research was sent to all major companies seated in Cracow and to a selected purposive sample of smaller entities. Even though a direct consequence of this approach is the inability to evaluate the overall employment in the industry (lack of a random sample) and certain limitation in conclusions, as demonstrated by previous research, this approach allows much better estimation of the market trends and the expected dynamics of demand for competences.

In order to ease time burden for the respondents, an attempt to reduce the list of soft and business skills by integrating them into more general categories was made. The question of responsibility attributed to higher education institutions for the education of individual competences was also eliminated – the response pattern of the previous years was consistent between remote branches and in the opinion of the team the benefit from the repetition of research in this area is much smaller than the costs associated with it.

We present all the key stages of conducted research, step by step, below:

1. Preliminary stage
 - a. In-depth interviews with experts, people associated with the industry and consultation with the Cracow City Hall and the Provincial Labour Office in Cracow, aimed at clarifying definition of the industry, specifying the context of its operation and identification of key actors (on the side of business and universities).
 - b. Desk research of the industry and analysis of job advertisements, the main objective of which was to identify the key challenges facing the industry and to create a preliminary list of competences sought by employers.
2. Analysis of demand for competences
 - a. In-depth interviews with representatives of selected companies giving an insight into the experience of the industry related to recruitment, selection and development of employees, assessing and supplementing the list of sought competences (sheet of demand).
 - b. Creating and testing the Sheet of demand tool.
 - c. Creating a research sample of companies (in the case of the industry of transport and logistics, on the basis of the PCA, desk research, industry registers and indications of experts and companies, the initial list of companies invited to

participate in the research consisted of 103 entities, of which 20 responded to the survey).

- d. Survey of companies, allowing to collect quantitative data on current and projected market needs in terms of the most important competences of graduates of Cracow higher education institutions and assess the difficulty of acquiring them. Additionally, information related to employment plans (in 2016 and 2021), competences which are necessary for graduates to get promotion in a company and the best, from the point of view of companies, subjects and specialisations whose profile matches activities of the company was also collected (the analysis used data from 24 companies, employing in various forms over two hundred employees).

3. Analysis of supply of competences

- a. Development and testing the Sheet of supply tool.
- b. Creation of a research sample of subjects of study and specialisations in higher education institutions (based on information obtained from desk research, indications of experts and companies, the initial list of subjects of study, including postgraduate studies, invited to participate in the research amounted to 9).
- c. Structured interviews combined with filling in the sheet of supply aimed at, in addition to obtaining quantitative data about the currently achieved effects of education and projections of the number of graduates in the future, familiarising with the general context of functioning of a given subject, challenges in cooperation with business and expectations towards the company and the CCH.
- d. On-line survey among the representatives of universities responsible for shaping the curricula. The main objective was to collect quantitative data on the currently achieved effects of education and projection of the number of graduates in the future. Moreover, information on additional effects of education achieved in a given subject, which may be important for the industry, was obtained. The analysis used data from 4 subjects of study, which will be completed by more than 200 people in 2016.

SHEET OF DEMAND

A tool dedicated to study demand for competence was used in two forms: an electronic on-line (using the LimeSurvey software) and MS Excel worksheet (when the interviewed company preferred direct contact with the interviewer).

The tool consisted of 3 parts:

1. Imprint and plans of the company

- name of the company;

- number of people employed by the company or its Cracow branch on the basis of employment contract;

- number of people employed by the company or its Cracow branch on the basis of civil law contracts or self-employment;

- names of positions for which recruitment is conducted in the company most often (up to 5 positions);

- plan for employment of graduates (those who completed higher education in the last 12 months) on the basis of an employment contract, civil law contracts or self-employment (in 2016 and 2021).

2. Assessment of competences from 4 thematic groups (in the following order: specialist knowledge and skills, business knowledge and skills, soft skills, foreign languages and other requirements – the list is available in Annex 1) based on three criteria:

- importance at present (How important from the point of view of your company is it for students and graduates to have a given competence, where 1 means “particularly unimportant” and 5 means “crucially important”);

- importance in 5 years (How important from the point of view of your company will it be for students and graduates to have a given competence in 5 years, where 1 means “particularly unimportant” and 5 means “crucially important”);

- difficulty in acquiring (How difficult it is at present to acquire a person with the expected level of a given competence, where 1 means “very easy to acquire” and 5 means “very difficult to acquire”);

- identification and assessment according to the same criteria of up to four additional competences in each category, not included on the previously presented lists.

3. Additional information:

- indication of 5 subjects of study best suited to the needs of the company (up to 5 subjects; if it is relevant, indication of the name of the university);

- indication of a maximum of 5 competences which are crucial in the context of promotion of a graduate employed in the company;

- additional comments.

SHEET OF SUPPLY

A tool dedicated to the study of supply of competences, similarly to demand, was used in two forms: an electronic on-line (using the LimeSurvey software) and MS Excel worksheet (when the person representing a given subject preferred direct contact with the interviewer).

The sheet of supply consisted of 3 parts:

1. Imprint:

- name of the university, faculty/department, institute and subject of study;

- indication of modes of education available in the subject (full-time, part-time, etc.);

- indication of the levels of study offered in a given subject (first degree, second degree, postgraduate studies, etc.);

- indication of different specialisation paths/profiles/specialities achieving effects of education similar from the point of view of the analysed industry;

- planned number of graduates of each of the above-mentioned paths (in 2016 and 2021).

2. Assessment of competences from 4 thematic groups (in the following order: specialist knowledge and skills, business knowledge and skills, soft skills, other requirements – the list is available in Annex 1) based on one criterion:

- achieved effect of education (In your opinion, to what extent are given effects of education achieved in the subject of study which the survey concerns?, where 1 means “Not at all achieved,” and 5 means “Achieved to a very high degree”).

3. Additional information:

- indication of additional effects of education achieved with regard to a given subject which were not included on the list, and are or potentially can be important from the point of view of the industry;

- indication of information about the obligatory classes in modern language and the possibility of benefiting from education of other languages free of charge;

- additional comments.